Metadata of Cornell University's DSpace Repository

through July 31, 2007

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Kenneth M. King
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The Internet-First University Press
Ithaca, NY

Abstract: This report contains the metadata (or card catalog) for the current contents of the DSpace digital repository managed by the Cornell University Library. This project was initiated by J. Robert Cooke and Kenneth M. King with the funding provided by The Atlantic Philanthropies. Supplementary funding was provided for the immediate-past academic year by the Office of the Vice Provost for Research at Cornell University. Many major projects came to completion this year and the metadata has swelled four-fold. This project's goal is to promote movement to open access availability of all of the scholarly output of higher education. We fully embrace Cornell's motto of inclusiveness, "I would found an institution where any person can find instruction in any study", by making these resources on the broadest possible range of topics openly available to the widest possible audience.

The Internet-First University Press, Cornell University, Ithaca, New York 14853.
http://ecommons.library.cornell.edu/handle/1813/62

Cornell's DSpace Metadata, July 2007

This is the second edition of the metadata compilation that describes the cumulative contents of this evolving open access digital repository at Cornell University. The first edition was released a year ago and is also available in this repository at http://ecommons.library.cornell.edu/handle/1813/3460, but those contents are included herein.

The size and breadth of the collection has expanded considerably. Many videos and books (new and republished) have been added, as well as individual articles and even websites. A particular effort has been made to capture and make available in digital form some of the important documents of institutional history, e.g., the complete set of more than 100 years of *The Cornell Alumni News*, the complete collection of the *Cornell Chronicle*, and the complete set of *The Engineering Quarterly*.

Department histories so far include: Agricultural Economics (Stanton), Animal Science (Turk; Elliot), Biological and Environmental Engineering (Furry), Chemical Engineering (Smith), Chemistry and Chemical Biology, Food Science (Bandler and Holland) and Physics (Hartman).

Multimedia documents are an especially important focus. Included are DVDs about some prominient Cornell faculty – including Simon Bauer, W. Donald Cooke, Dale R. Corson, Robert H. Foote, Hans Bethe, Roald Hoffmann, Frederick G. Marcham, Fred McLafferty and Harold Scheraga.

Other important collections include: *Bulletin of The New York Agricultural Experiment Station (NYSAES) at Geneva*, (to be placed online in September 2007) *The Bulletin of the Cornell University Experiment Station (CUAES)* and an archival subset of the Global Performing Arts Consortium (GloPAC).

Earlier we have published conferences, e.g. a symposium on the future of the research university (in honor of Dale Corson) and the changing nature of the library collections (Janus Conference).

The collection of videos by Phillip and Maddy Handler having a focus on Cornell AAP Alums now includes: *Portrait of a Cornell Artist: Elsie Dinsmore Popkin, BFA'58; Being Eisenman: Peter Eisenman '54; True Big Red: Professor Don Greenberg '55; Journey from Sibley: Jill Lerner '75; and this year added Big Red/Meier White: A Cornell story of architect Richard Meier '56*.

DSpace also hosts scholarly work by our students – scholarly journals and honors theses of undergraduates, as well as a growing collection of graduate theses and dissertations. Surprisingly, some undergraduate course projects archived here are among the most frequently accessed (BEE 453).

Earlier we augmented the DSpace software with quick submission templates and a counter of the number of times each item has been viewed. The most popular items have been accessed more than 10,000 times (up to 17,000), revealing the power of indexing engines (i.e., Google Scholar) and the interest in open access publishing. A listing of the most frequently accessed follows.

The most frequently accessed items

Rank	Creator	Title	Views
1	Lembo, Arthur J. Jr.	How Do I Do This in ArcGIS/Manifold?:...GIS	17,435
2	Strogatz, Steven H	Nonlinear dynamics and chaos: Lab demos...	16,807
3	Rose, David H.; et al.	"I Can Do That!" : Hans Bethe's First 60 Yrs at ...	13,224
4	Walker, Kizer; et al.	Report of the CUL Task Force on Open Access...	12,630
5	Butterfield, Rex M.;Berg, Roy T.	New Concepts of Cattle Growth	10,237
6	Zehnder, Alan	Lecture Notes on Fracture Mechanics	9,387
7	van Beek, Eelco;Loucks, Daniel	Water Resources Systems Planning... Ch 2	8,020
8	Calhoun, Karen	The Changing Nature of the Catalog...	8,013
9	CUL Task Force on Open Access Publishing	Calculating the Cost per Article...	7,479
10	Baker, Robert C.	Barbecued Chicken and Other Meats	6,587
11	Zhu, B.;Zhou, X.;Zhang, L.;et al.	CIGR E-Journal Volume 5	6,573
12	van Beek, Eelco;Loucks, Daniel P.	Water Resources Systems Planning... Ch1	6,453
13	Brazell, Karen;Bethe, Monica	Dance in the Noh Theater, Volume 1: Dance...	6,401
14	Orear, Jay	Enrico Fermi-The Master Scientist	6,307
15	Munack, A.;Nova, A.;;et al.	CIGR E-Journal Volume 3	5,878
16	Isbell, Billie Jean	De inmaduro a duro: lo simbolico femenino...	5,810
17	Tsai, Christine;Munaretto; et al.	Transdermal Scopolamine Drug Delivery...	5,810
18	Panda, Puneet;Siryk, Christina;et al.	Risks of LASIK Corrective Eye Surgery:...	5,674
19	Hirtle, Peter B.	Archives or Assets?	5,645
20	van Wagenberg, A.;et al.	CIGR E-Journal Volume 6	5,581

Materials archived or published here are being found and accessed! Remarkably, 28% of the items have been accessed more than 1,000 times. Five items have been accessed more than 10,000 times.

Note that not all items have been available for the same time span and that frequency is only one metric of interest. Nevertheless, it is clear that the number of submissions and the usage is growing, with a promise that this digital repository is increasing in value.

url: http://hdl.handle.net/1813/34
date: 2003-07-28
creator: Brazell, Karen;Bethe, Monica
viewed: 6401
title: Dance in the Noh Theater, Volume 1: Dance Analysis
abstract: "A thoroughly scholarly, very revealing work which is a major contribution to drama study on Japan . . . . All arts librarians ought to have it." --The Japan Times.
A comprehensive analysis of the fundamentals of noh dance, its structure and patterns, and their correlation to music, text, costumes and props. Originally published in three interconnected volumes, it elucidates the inner workings of noh dance on many levels. Monumenta Nipponica calls it "a landmark in English language noh studies."

url: http://hdl.handle.net/1813/49
date: 2003-10-23
creator: Brazell, Karen;Bethe, Monica
viewed: 4074
title: Dance in the Noh Theater, Volume 3: Dance Patterns
abstract: "A thoroughly scholarly, very revealing work which is a major contribution to drama study on Japan . . . . All arts librarians ought to have it." --The Japan Times.
A comprehensive analysis of the fundamentals of noh dance, its structure and patterns, and their correlation to music, text, costumes and props. Originally published in three interconnected volumes, it elucidates the inner workings of noh dance on many levels. Monumenta Nipponica calls it "a landmark in English language noh studies."

url: http://hdl.handle.net/1813/52
date: 2003-11-24
creator: Hirtle, Peter B.
viewed: 5645
title: Archives or Assets?
abstract: Hirtle presented an abbreviated version of this address as his presidential address at the opening plenary session of the 67th annual meeting of the Society of American Archivists in Los Angeles on Aug. 21, 2003.This paper discusses the nature of ownership of archival holdings, with special emphasis placed on issues of intellectual property, and the implications such ownership may have on the exploitation of those works. In order to respect the public's interest in archival materials, licensing schemes must be skillfully crafted. If archives are careful not to compromise their own fundamental values when seeking to generate revenue, and if they respect the public?s interest in public domain material, they will be able to avoid much of the criticism that many museums have received over their jealous attempts to monopolize and control their collections.

url: http://hdl.handle.net/1813/53
date: 2003-11-25
creator: Hirtle, Peter B.
viewed: 2200
title: Digital Preservation and Copyright
abstract: This article discusses provisions in US Copyright law which regulate the preservation of digital materials. In particular, Hirtle examines Sections 117, 108 and 107. Hirtle also looks at ongoing efforts to archive the World Wide Web and the various copyright issues that surround these efforts. Last, Hirtle examines how recent rulemaking from the Librarian of Congress concerning DMCA impacts digital preservation.

url: http://hdl.handle.net/1813/54
date: 2003-12-01
creator: Welsch, Wolfgang
viewed: 3971
title: Reason and Transition: On the Concept of Transversal Reason
abstract: This paper redefines the notion of reason as a core intellectual capacity, contrasts it with the concept of multiple rationalities, and shows how it is essential for taking a detached view of ones own position. Reason aims to be as neutral as possible, and provides the capacity to move or see across multiple positions ("transversal reason"). Reason does not necessarily lead to final conclusions, but permits the individual to accommodate irreconcilable perspectives.

url: http://hdl.handle.net/1813/55
date: 2003-12-01
creator: Welsch, Wolfgang
viewed: 5576
title: Rationality and Reason Today
abstract: We live in a conceptual world of divergent paradigms that are entangled with each other. Rationality is therefore characterized by an extreme disorderliness. Only the faculty of reason is capable of looking across this diverse and disorderly condition. Reason does not privilege itself with respect to rationality, but relates to rationality on the basis of logical principles only.

url: http://hdl.handle.net/1813/56
date: 2003-12-01
creator: Welsch, Wolfgang
viewed: 4114
title: Reason: traditional and contemporary, or Why should we still speak of reason at all?
abstract: Reason was once considered a higher order faculty than rationality. Beginning with Kant, rationality began to eclipse reason in significance. Today, we assume the existence of multiple rationalities, each with its own guiding principles. It is now time to resuscitate and redefine reason as a faculty that allows the individual to understand and live with the plurality of rationalities that characterize postmodern thought.

url: http://hdl.handle.net/1813/57
date: 2003-12-05
creator: Mason, Quentin
viewed: 2803
title: High Precision Lattice QCD: Perturbations in a Non-Perturbative World
abstract: The High-Precision QCD collaboration has embarked on a ground-breaking survey of strongly interacting Standard Model phenomenology from lattice QCD using the improved staggered action for light quarks, NRQCD for the heavy quarks and one-loop Symanzik improved gluons. This program requires one- and two-loop perturbative renormalisations of action parameters, matrix elements and currents. The current techniques for lattice perturbation theory are very cumbersome and inflexible, built for individual one-loop applications. Very few two-loop results are known, even for the simplest actions. A new method for performing perturbative calculations in Lattice QCD is presented. The combination of easily determining Feynman rules for arbitrary actions and automated diagram generation has enabled the calculation of six related three-loop quantities for several different actions including the most highly improved, ``Asqtad'' that is being used for the most realistic lattice simulations ever. The necessity of choosing an appropriate scheme and scale for lattice expansions is demonstrated. Further improvements to the scaling in the quark sector

are investigated and a new action with three times smaller errors is obtained. The connection between the lattice and continuum couplings is determined to two-loops for these actions which is a pre-requisite for any future perturbative calculations. Third-order Wilson loops up to 2x2 are calculated for the first time which can be used to determine the strong coupling constant at energies relevant to simulations and to experimenters. The quark mass is renormalised to one-loop in order to determine the mass of the strange quark and compare to sum rules.

url: http://hdl.handle.net/1813/58
date: 2003-12-05
creator: Hirtle, Peter B.
viewed: 5367
title: Unpublished Materials, New Technologies, and Copyright: Facilitating Scholarly Use
abstract: Presented at the Interdisciplinary Conference On The Impact Of Technological Change On The Creation, Dissemination, And Protections Of Intellectual Property, The Ohio State University College of Law, Columbus, OH. March 8-10, 2001.The paper is divided into three parts. The first part explores why, at least with regard to the use of unpublished materials, current interpretations of copyright law have become an impediment to creative endeavors rather than an encouragement to them. Two factors are at work. The first factor is that copyright law imposes on unpublished materials a set of rules and viewpoints meant to govern published material. The second factor that has made the use of unpublished material more problematic is the rise of the Internet and the ease with which people can uncover potential infringing acts. Technology has not changed the law, but it has affected how people interpret the law ? with potentially disastrous results as far as unpublished material is concerned. The second part of the paper considers one possible solution advanced by the Copyright Office to address the problem of what they call ?orphan works? ? works whose copyright owner cannot be located. The last part of the paper considers what might constitute reasonable investigation of the copyright ownership of unpublished works. It may be that the standard for reasonable investigation would be enough to establish a fair use defense of the material, obviating the need for compulsory payments.

url: http://hdl.handle.net/1813/59
date: 2003-12-23
creator: Werling, Benjamin
viewed: 3876
title: ONION MAGGOT DELIA ANTIQUA (DIPTERA: ANTHOMYIIDAE) ADULT ACTIVITY AND OVIPOSITION IN NEW YORK ONION FIELDS: IMPLICATIONS FOR MANAGEMENT
abstract: Brian Nault, Jan Nyrop, Alan TaylorInsect pest activity is often concentrated in certain areas within crops. Past research has suggested that onion maggot, Delia antiqua (Meigen) (Diptera: Anthomyiidae), adult activity and oviposition may be concentrated along onion field edges and may be affected by the surrounding landscape. To examine this further yellow sticky cards were placed at varying distances along transects extending from edges of commercial onion fields that either bordered or did not border woods. Sticky cards were collected and replaced weekly throughout the 2002 and 2003 growing season. To determine if oviposition by first-generation onion maggot is concentrated along wooded field edges, potted onion plants were placed along edges and in centers of onion fields that either bordered or did not border woods. Results indicate that adult activity of both sexes is concentrated along edges of onion fields during the first- and second-generations of onion maggot, especially next to woods in the first generation. These “edge effects” lessened as the season progressed and were not present during the third-generation. Oviposition was uniform with respect to distance from the edge and type of bordering habitat. It may be possible to limit application of insecticides targeting adult onion maggot to wooded field edges during the first-generation or to deploy cultural controls here.

A delay in planting the onion crop has been recommended, but never evaluated, as a method of reducing

onion maggot damage. A delay in planting will also result in plants being younger at the time onion maggot becomes damaging, and plants may be more susceptible to onion maggot when they are young. In contrast, planting early might result in onions being older and inherently more tolerant of onion maggot damage. To determine how planting date affects levels of onion maggot damage, damage was evaluated in three sequentially-planted onion plots in a commercial onion field in 2003. Earliest plantings coincided with the earliest commercial sowing date and delayed plantings were made three and six weeks later. To determine how plant age affects resistance to onion maggot, damage to onions of different ages was evaluated in the laboratory after they were infested with varying densities of onion maggot eggs. Ovipositional preference by onion maggot for differently aged onions was also investigated in the lab to determine if a preference for early plantings could result in egg densities being greater on these plants in the field. Onion maggot damage was high in earliest plantings (37%), lower but economically unacceptable in intermediate plantings (21%), and lowest in late plantings (2%). While the latest planting provided acceptable control, planting this late is not currently feasible for New York growers because they prefer to plant as early as possible to maximize size of onion bulbs at harvest. Onion maggot laid more eggs on older than younger plants in choice tests; therefore more eggs may be laid on early vs. delayed plantings in the field. Older plants were more resistant to maggot attack than younger plants at low egg densities, but not at high ones. This may explain why early plantings are more heavily damaged than delayed ones in the field; greater numbers of eggs may be laid on early plantings if they are preferred for oviposition, resulting in damage being higher in early than delayed plantings.Department of Entomology New York State Agricultural Experiment Station

url: http://hdl.handle.net/1813/60
date: 2004-01-06
creator: Tisi, David
viewed: 3490
title: EFFECT OF DENSE PHASE CARBON DIOXIDE ON ENZYME ACTIVITY AND CASEIN PROTEINS IN RAW MILK
abstract: Non-thermal methods of reducing bacterial numbers have been studied for more than a century. A majority of this work has focused on high pressure processing (>100 MPa). The addition of carbon dioxide (CO2) at lower pressures (<100 MPa) is a relatively new process, but has demonstrated similar bactericidal effects. Pressurized CO2 has also been shown to inactivate enzymes, but this ability has not been studied in milk. Dense phase CO2 is defined as CO2 which exists in the liquid or supercritical state. A proprietary piece of equipment designed by Praxair (Chicago, IL) applied dense phase carbon dioxide to milk in a continuous manner. Enzyme activity was assayed by acid degree value and protein breakdown. Temperatures between 15?C and 40?C and pressures between 7 MPa and 62 MPa were investigated. Because of milk?s susceptibility to pH change, the process?s effect on casein proteins was also studied. At higher temperatures (40?) and CO2 concentrations, the process was shown to significantly reduce the proteolytic and lipolytic endproducts. However, these conditions also changed the structure of the underlying casein protein. By reducing the severity of treatment both in terms of temperature and CO2 content, no change to the casein was observed. However, in these less severe conditions no significant effect on the rate of lipolysis or proteolysis was observed.

url: http://hdl.handle.net/1813/64
date: 2004-01-19
creator: Pierce, Mark R.;Laquatra, Joseph
viewed: 3813
title: Waste Management at the Construction Site
abstract: A print on demand of these books and articles can be obtained from Cornell Business Services (CBS) Digital Services by sending e-mail to digital@cornell.edu or calling 607.255.2524. In the body of the message include the identifier.uri for the book or article, and ask to be contacted regarding payment. The

construction of a single-family home typically produces more than two tons of debris. This material is becoming increasingly difficult and expensive to discard. This publication assists builders in determining both cost-effective and environmentally sound methods for handling and disposing of construction waste. Cornell Cooperative Extension

url: http://hdl.handle.net/1813/65
date: 2004-01-19
creator: Hyngstrom, Scott E.; Curtis, Paul D.; VerCauteren, Kurt C.; DeNicola, Anthony J.
viewed: 4309
title: Managing White-tailed Deer in Suburban Environments
abstract: A print on demand of these books and articles can be obtained from Cornell Business Services (CBS) Digital Services by sending e-mail to digital@cornell.edu or calling 607.255.2524. In the body of the message include the identifier.uri for the book or article, and ask to be contacted regarding payment. Deer populations in suburban environments are soaring, resulting in an increase in deer-related conflicts such as property damage, vehicle collisions, and altered forest ecology. This publication describes strategies and methods for controlling deer populations in suburban environments and provides extensive resource contacts and a list of state wildlife agencies. Cornell Cooperative Extension
The Wildlife Society
Northeast Wildlife Damage Management Research and Outreach Cooperative

url: http://hdl.handle.net/1813/66
date: 2004-01-19
creator: Curtis, Paul D.;Craven, Scott R.;Smith, Arthur E.
viewed: 4074
title: Managing Canada Geese in Urban Environments
abstract: This manual complements the video, Suburban Goose Management, Searching for Balance, which can be obtained from the Cornell University Resource Center. Phone 607-255-2080 or email resctr@cornell.edu.A print on demand of these books and articles can be obtained from Cornell Business Services (CBS) Digital Services by sending e-mail to digital@cornell.edu or calling 607.255.2524. In the body of the message include the identifier.uri for the book or article, and ask to be contacted regarding payment. In many areas of the United States and Canada, the Canada goose has adapted to urban landscapes, foraging on mowed lawns and nesting near ponds and reservoirs. Geese may congregate at parks, golf courses, and athletic fields and create nuisance situations. This manual helps wildlife professionals, turfgrass managers, and homeowners select appropriate management strategies for alleviating problems caused by resident, nonmigratory geese. Cornell Cooperative Extension
Jack H. Berryman Institute, Utah State University
The Wildlife Society
The University of Wisconsin

url: http://hdl.handle.net/1813/67
date: 2004-01-19
creator: McKay, Steven; Reisinger, Richard; Merwin, Ian; Bushway, Lori; Cramer, Craig; Pritts, Marvin; Eames-Sheavly, Marcia
viewed: 5460
title: Cornell Guide to Growing Fruit at Home
abstract: A print on demand of these books and articles can be obtained from Cornell Business Services (CBS) Digital Services by sending e-mail to digital@cornell.edu or calling 607.255.2524. In the body of the message include the identifier.uri for the book or article, and ask to be contacted regarding payment. Growing fruit at

home can be an enjoyable activity that provides nutritious food for your family. This publication describes how to choose the best varieties; select sites; prepare soil; plant, prune and train shrubs and trees; and deal with diseases and pests. Cornell Cooperative Extension
Department of Horticulture, Cornell University

url: http://hdl.handle.net/1813/68
date: 2004-01-19
creator: Rossi, Frank S.; Gussack, Eva
viewed: 4509
title: The Homeowner's Lawn Care and Water Quality Almanac
abstract: A print on demand of these books and articles can be obtained from Cornell Business Services (CBS) Digital Services by sending e-mail to digital@cornell.edu or calling 607.255.2524. In the body of the message include the identifier.uri for the book or article, and ask to be contacted regarding payment. All land is in a watershed. Therefore, lawn care practices have a direct impact of the quality of water in a watershed. This publication provides a month-by-month plan for lawn care that results in a healthy lawn while preventing environmental damage. Cornell Cooperative Extension
New York Community Trusts' Henry Philip Kraft Family Memorial Fund
Westchester Community Foundation
New York City Department of Environmental Protection
New York State Integrated Pest Management program

url: http://hdl.handle.net/1813/69
date: 2004-01-20
creator: Maxwell, Lorraine E.
viewed: 4833
title: Designing Child Care Settings: A Child-Centered Approach
abstract: A print on demand of these books and articles can be obtained from Cornell Business Services (CBS) Digital Services by sending e-mail to digital@cornell.edu or calling 607.255.2524. In the body of the message include the identifier.uri for the book or article, and ask to be contacted regarding payment.T his manual is designed to help child care providers (including directors and staff of day care centers, Head Start centers, nursery schools, and family child care) design indoor and outdoor settings for infants, toddlers, preschoolers, and younger school-age children. It stresses the importance of the physical environment on influencing children's experiences. The manual also contains information on designing a new center and working with an architect. Cornell Cooperative Extension
Department of Design and Environmental Analysis, College of Human Ecology, Cornell University

url: http://hdl.handle.net/1813/70
date: 2004-01-20
creator: Bristow, Barbara J.
viewed: 4017
title: It All Adds Up
abstract: A print on demand of these books and articles can be obtained from Cornell Business Services (CBS) Digital Services by sending e-mail to digital@cornell.edu or calling 607.255.2524. In the body of the message include the identifier.uri for the book or article, and ask to be contacted regarding payment. This manual is a consumer education program for teens. It provides a basic understanding of the responsible handling of money, including savings and checking accounts, shopping, understanding the role of advertising, and using credit. The intended audience is 13- to 19-year-olds.Cornell Cooperative Extension, New York State 4-H Foundation,
Department of Policy Analysis and Management, College of Human Ecology, Cornell University

url: http://hdl.handle.net/1813/71
date: 2004-01-20
creator: Haugen, Heidi L.
viewed: 3997
title: Prevention of Youth Violence
abstract: A print on demand of these books and articles can be obtained from Cornell Business Services (CBS) Digital Services by sending e-mail to digital@cornell.edu or calling 607.255.2524. In the body of the message include the identifier.uri for the book or article, and ask to be contacted regarding payment. This publication is designed to to assist those who provide programs aimed at preventing violence among young people. In an analysis of the problem and literature review, it discusses risk factors that lead to violence, strategies for preventing violence, implementing prevention programs, and categories of prevention programs. An extensive annotated bibliography lists and describes books, videos, and other programs that serve as resources for those implementing a program to prevent youth violence. Cornell Cooperative Extension; Reducing Risks and Increasing Capacity (RRIC) Initiative; Children, Youth, and Families (CYFAR) initiative

url: http://hdl.handle.net/1813/72
date: 2004-01-20
creator: Curtis, Paul D.; Smith, Charles R.; Schneider, Rebecca; Goff, Gary R.; Kelley, John W.; Decker, Daniel J.
viewed: 3769
title: Enhancement of Wildlife Habitat on Private Lands
abstract: A print on demand of these books and articles can be obtained from Cornell Business Services (CBS) Digital Services by sending e-mail to digital@cornell.edu or calling 607.255.2524. In the body of the message include the identifier.uri for the book or article, and ask to be contacted regarding payment. This publication describes methods to enhance wildlife populations on private lands. It includes illustrations and instructions for 10 low-cost to moderate-cost projects to provide desirable habitats. Many of the projects are applicable for urban parks, suburban backyards, and rural areas. It also introduces the concept of protecting biological diversity through ecosystem management. Cornell Cooperative Extension; American Wildlife Research Foundation, Inc.; Department of Natural Resources, College of Agriculture and Life Sciences, Cornell University

url: http://hdl.handle.net/1813/73
date: 2004-01-20
creator: Earle, Brian O.
viewed: 3452
title: The First-Year Experience: A Guide to Best Practices at Cornell University
abstract: A print on demand of these books and articles can be obtained from Cornell Business Services (CBS) Digital Services by sending e-mail to digital@cornell.edu or calling 607.255.2524. In the body of the message include the identifier.uri for the book or article, and ask to be contacted regarding payment. A survey of Cornell University students indicated that many feel isolated and are dissatisfied with their interactions with faculty and with other students. This paper looks at current best practices at Cornell in order to make the first-year experience more enjoyable for Cornell students. Department of Communication, College of Agriculture and Life Sciences, Cornell University

url: http://hdl.handle.net/1813/74
date: 2004-01-27
creator: Orear, Jay

viewed: 6307
title: Enrico Fermi-The Master Scientist
abstract: A print on demand of these books and articles can be obtained from Cornell Business Services (CBS) Digital Services by sending e-mail to digital@cornell.edu or calling 607.255.2524. In the body of the message include the identifier.uri for the book or article, and ask to be contacted regarding payment. Cornell Emeritus Professor Jay Orear discusses his relationship with his former professor and mentor Enrico Fermi. The book also includes discussions of Fermi by other scientists, most of whom presented their papers at various symposia honoring Fermi's career.

url: http://hdl.handle.net/1813/75
date: 2004-01-27
creator: Oliver, Jack E.
viewed: 3239
title: Shakespeare Got It Wrong, It's Not "To Be," It's "To Do." The Autobiographical Memoirs of a Lucky Geophysicist.
abstract: A print on demand of these books and articles can be obtained from Cornell Business Services (CBS) Digital Services by sending e-mail to digital@cornell.edu or calling 607.255.2524. In the body of the message include the identifier.uri for the book or article, and ask to be contacted regarding payment. Cornell Emeritus Professor Jack Oliver reflects, often quite humorously, on his life and career. Includes stories of his boyhood in Ohio, his college days at Columbia, and his years teaching and conducting research at Cornell. Also includes discussions of his breakthrough work in plate tectonics.

url: http://hdl.handle.net/1813/77
date: 2004-01-28
creator: Burris, Simon
viewed: 3496
title: Refrains in Ancient Greek Poetry
abstract: What do refrains contribute to ancient Greek poetry? Modern scholarship has usually limited its treatment of ancient Greek refrains to considerations of their external associations. The tendency has been to explain refrains, both individually and as a formal type, by reference to assumed origins for the refrain form and its use in primitive song, for which we have little or no evidence. By contrast, I have attempted to explain the refrain form as an established feature within the ancient Greek poetic tradition. I am interested in two questions. First, what do individual refrains contribute to the individual poems in which they appear? Second, what literary refrain tradition is indicated by the surviving examples? Obviously the answering of one question involves the answering of the other.
Before an examination can be made of individual refrains in context, there are some general questions that must be asked. In CHAPTER 2, I examine the treatment of refrains by ancient Greek scholarship. This involves examining the scholarly terminology associated with refrains, especially the term "ephymnion". In CHAPTER 3 I test the commonly held hypothesis that refrains are sung by a chorus in response to stanzas provided by a soloist. In CHAPTER 4 I address the question of the often assumed relationship between sub-literary song and the refrains in surviving Greek poetry. I do this by investigating ritual cries and their use both within and outside the context of formal refrains.
Once these general questions have been addressed, we may consider individual refrains in context. Since, as I shall argue, refrains find their most natural "home" in the monostrophic and triadic structures of non-dramatic lyric, I begin there in CHAPTER 5. Then I examine refrains in the antistrophic context of dramatic lyric in CHAPTER 6. I conclude my examination with the refrains of bucolic hexameters in CHAPTER 7. As it happens, this order coincides (very broadly speaking) with chronological order and thus reflects what I shall argue is the development of a continuous refrain tradition in ancient Greek poetry.

url: http://hdl.handle.net/1813/78
date: 2004-01-28
creator: Hoaglin, David C.;Velleman, Paul F.
viewed: 4884
title: Applications, Basics, and Computing of Exploratory Data Analysis
abstract: A print on demand of these books and articles can be obtained from Cornell Business Services (CBS) Digital Services by sending e-mail to digital@cornell.edu or calling 607.255.2524. In the body of the message include the identifier.uri for the book or article, and ask to be contacted regarding payment. This book provides an introduction to the methods of exploratory data analysis as originally developed by John Tukey. For each of nine methods it discusses and illustrates the methods, provides background derivations and explanations, and presents programs in Fortran and BASIC. For most of these methods, this was the first source of such programs.

url: http://hdl.handle.net/1813/79
date: 2004-01-28
creator: Rand, Richard H.
viewed: 4131
title: Lecture Notes on Nonlinear Vibrations
abstract: A print on demand of these books and articles can be obtained from Cornell Business Services (CBS) Digital Services by sending e-mail to digital@cornell.edu or calling 607.255.2524. In the body of the message include the identifier.uri for the book or article, and ask to be contacted regarding payment. Cornell engineering professor Richard Rand has collected his lecture notes covering 13 topics related to nonlinear vibrations.

url: http://hdl.handle.net/1813/80
date: 2004-01-28
creator: Bethe, Hans
viewed: 5119
title: Quantum Physics Made (Relatively) Simple: Personal and Historical Perspectives of Hans Bethe
abstract: In 1999, the legendary theoretical physicist Hans Bethe delivered three lectures to his neighbors at the Kendal of Ithaca retirement community. The lectures are presented with Dr. Bethe's notes and archival material. An introduction and appreciation is provided by Professor Silvan S. Schweber, the noted science historian who is also Dr. Bethe's biographer, and Edwin E. Salpeter, the J. G. White Distinguished Professor of Physical Science Emeritus at Cornell, who was a post-doctoral student of Dr. Bethe's.
Running Time: Approximately 180 minutes Executive Producer: Edward Hershey, Cornell Communication and Marketing Services
Technical Advisor: Dale Corson

url: http://hdl.handle.net/1813/81
date: 2004-01-29
creator: Ginet, Carl
viewed: 3246
title: Knowledge, Perception, and Memory
abstract: A print on demand of these books and articles can be obtained from Cornell Business Services (CBS) Digital Services by sending e-mail to digital@cornell.edu or calling 607.255.2524. In the body of the message include the identifier.uri for the book or article, and ask to be contacted regarding payment. This book attempts a general definition of what it is to know that a thing is so. The book gives accounts of two

fundamentally important kinds of knowledge: that based on perception and that based on memory. Regarding the justification of claims to know, it takes a fundamentalist approach.

url: http://hdl.handle.net/1813/82
date: 2004-01-29
creator: Rudan, John W.
viewed: 3542
title: The History of Computing at Cornell
abstract: A print on demand of these books and articles can be obtained from Cornell Business Services (CBS) Digital Services by sending e-mail to digital@cornell.edu or calling 607.255.2524. In the body of the message include the identifier.uri for the book or article, and ask to be contacted regarding payment. John W. Rudan, Director Emeritus of the Office of Information Technologies at Cornell University, describes the development of computing at Cornell, from the earliest punchcard tabulating equipment used in the 1920s to the establishment of the Supercomputing Center in the late 1980s and subsequent activities in the 1990s.

url: http://hdl.handle.net/1813/83
date: 2004-01-29
creator: Oliver, Jack E.
viewed: 4571
title: The Incomplete Guide to the Art of Discovery
abstract: A print on demand of these books and articles can be obtained from Cornell Business Services (CBS) Digital Services by sending e-mail to digital@cornell.edu or calling 607.255.2524. In the body of the message include the identifier.uri for the book or article, and ask to be contacted regarding payment. Cornell emeritus professor Jack Oliver draws on his nearly 50 years as a scientist to explore the strategies, tactics, and personal traits and attitudes necessary for fruitful scientific discovery.

url: http://hdl.handle.net/1813/84
date: 2004-01-30
creator: For Rose Films, Inc.; Directed and Edited by David H. Rose; Camera: Michael Champlin; Additional Camera: Slawomir Grunberg; Sound: David Huntley, Bill Shakleton; Hershey, Edward
viewed: 13224
title: "I Can Do That!" Hans Bethe's First 60 Years at Cornell
abstract: Executive Producer: Edward Hershey, Cornell Communications and Marketing Services
Associate Producer: Robert Rieger This video provides a brief overview of Hans Bethe's life and career, from his childhood and early career in Germany to his 60 years at Cornell. Colleagues Dale Corson, Robert Wilson, John Bachall, Sylvan Schweber, and Edwin Salpeter reflect on Bethe's role in putting Cornell's Physics Department on the international physics scene, his Nobel Prize, his days at Los Alamos and later anti-weapons stance, his involvement in Cornell politics, and his remarkable productivity that continued well into his 80s.
A streaming video version of this file, designed for high speed networks, is available at http://streaming1.video.cornell.edu:8080/ramgen/bethe/can_do.rm.
Copyright (1995) Department of Physics, Cornell University Cornell University

url: http://hdl.handle.net/1813/85
date: 2004-01-30
creator: Videography: Brian Steblen; Associate Producer: Carole Stone; Narrator: Molly Cummings; Animator: Dan Lansing Brumley; Produced by the Office of Communication Strategies, a division of University Relations, Cornell University in association with Rose Films, Inc.; Hershey, Edward

viewed: 3593
title: Dale Corson-Cornell's Good Fortune
abstract: Executive Producer: Edward Hershey, Cornell Communications and Marketing Services; Associate Producer, David H. Rose This video chronicles the life of Cornell President Emeritus Dale Corson, from his boyhood and college years in Kansas to his distinguished career at Cornell. Commentary by various Cornell colleagues includes discussion of Corson's roles as Chair of the Physics Department, Dean of the College of Engineering, Provost, and President. The program also looks at Corson's very active post-retirement life, including his role in the creation of the Kendal at Ithaca retirement community. A streaming media version of this file is available http://streaming1.video.cornell.edu:8080/ramgen/corson/corson.rm.

url: http://hdl.handle.net/1813/86
date: 2004-02-06
creator: Cope, E. A.; Winch, Fred E. Jr.; Cope, J. A.
viewed: 4774
title: Know Your Trees
abstract: A print on demand of these books and articles can be obtained from Cornell Business Services (CBS) Digital Services by sending e-mail to digital@cornell.edu or calling 607.255.2524. In the body of the message include the identifier.uri for the book or article, and ask to be contacted regarding payment. This publication describes 50 common trees native to New York State and other parts of the United States. The bark, twigs, winter buds, leaves, fruit, and distinguishing features of each are described in detail. Illustrations enhance the reader's ability to study the trees in their natural settings. Cornell Cooperative Extension, Bailey Hortorium at Cornell University

url: http://hdl.handle.net/1813/87
date: 2004-02-09
creator: Gardiner, Steven Lester
viewed: 3440
title: MASCULINITY, WAR, AND REFUSAL: VICISSITUDES OF GERMAN MANHOOD BEFORE AND AFTER THE COLD WAR
abstract: A Dissertation Presented to the Faculty of the Graduate School of Cornell University in Partial Fulfillment of the Requirements for the Degree of Doctor of Philosophy. May 2004. Department of Anthropology. MASCULINITY, WAR, AND REFUSAL: VICISSITUDES OF GERMAN MANHOOD BEFORE AND AFTER THE COLD WAR
Steven Lester Gardiner, Ph.D.
Cornell University 2004
Over the course of the last two centuries, Germany has experienced several shifts in its position in what I refer to as the war system. The war system is an important determiner of masculinity such that variations in one impact the other. The total surrender of Germany in 1945, combined with the association of the Nazi regime with heroic, soldierly masculinity, has opened the door in post-World War II Germany for new forms of masculinity to arise. A key value in the new configuration is the increased importance of refusal and the decreased importance of obedience and subordination. Between 1945 and 1990, Germany remained a nation both divided and occupied. This, combined with the literal feminization of German society in the immediate post-war period, led to the valorization of refusal. In effect, in an occupied society, the relationship of masculinity to nation-state is shifted. At the same time, of course, market pressures have led to a more individuated society? yet it is important to point out that though refusal has become much more common in all Western societies, in none of the traditional Great Powers has the culture of the military itself become so accommodating to the idea of refusal. This shift, I think, can be attributed to the institutionalization of refusal within the Bundeswehr, and its valorization in German society as a whole, as subsequent generations

encounter the failed refusal of the Nazi period in a war system context that has isolated the German military from deadly combat? a situation which is, of course, changing in the here and now. These trends can only really be understood through an analysis that triangulates on changing masculinity by making use of a variety of evidence, historical, literary, institutional and personal. Finally, the relationship between war and masculinity itself should be seen in a longer evolutionary perspective and assumptions about inevitability challenged through comparative ethnography and review of the archeological evidence.

url: http://hdl.handle.net/1813/89
date: 2004-03-01
creator: Cobble, Willie Eugene Jr
viewed: 1887
title: The Politics of Identity and Interest in European Defense Industrial Collaboration
abstract: Dr. Judith Reppy, Committee Chair
Dr. Jonathan Kirshner, Committee Member
Dr. Thomas Christensen, Committee Member
Dr. Matthew Evangelista, Proxy/Reader This dissertation is a social constructivist analysis of the ideational foundations of West European defense industrial cooperation. Traditional analytical approaches within International Relations theory, namely structural realism, do not highlight the role that social identity may play in shaping state behavior? except to regard it conceptually as predetermined, as methodologically unapproachable, or as epiphenomenal. The study of European armaments collaboration, however, demands that scholars consider identity as both official elite rhetoric and mass surveys maintain that an emergent, transnational European identity not only exists within the member societies of the European Union (EU), but it may also shape certain areas of state activity. This thesis uses social constructivism as an explanatory framework in order to ascertain the degree that this regional identity facilitates the Europeanization of defense production within the EU.

This dissertation explores five episodes of multinational European defense industrial collaboration conducted between 1967 and 1997: Tornado, Eurofighter, Field Howitzer 70, Self-Propelled Howitzer 70, and the Anglo-French Reciprocal Purchasing Agreement. Further, these cases are divided into high-technology and low-technology categories, with Tornado and Eurofighter forming a high-tech dyad, while the others denote examples of low-tech industrial and market-oriented cooperation. I hypothesize that the production of high-tech military equipment is bound to conceptions of self and of self-interest that promote nationalist behavior and thus restricts the potential for multinational procurement collaboration. Low-tech weapons, on the other hand, do not challenge national identity and thus may reveal the influence of an emerging, cross-cutting transnational identity. This identity subsequently can be manifest in the potential willingness of states to rationalize intra-regional production and to integrate national defense equipment markets. I find, however, that while a distinct European identity exists, its effects do not extend far into the procurement field regardless of the level of technology involved within a given collaboration. Weapons procurement in the European Union remains intrinsically national in orientation.

url: http://hdl.handle.net/1813/90
date: 2004-03-04
creator: Brazell, Karen; Bethe, Monica
viewed: 5399
title: Dance in the Noh Theater, Volume 2: Plays and Scores
abstract: "A thoroughly scholarly, very revealing work which is a major contribution to drama study on Japan . . . . All arts librarians ought to have it." --The Japan Times.
A comprehensive analysis of the fundamentals of noh dance, its structure and patterns, and their correlation to music, text, costumes and props. Originally published in three interconnected volumes, it elucidates the

inner workings of noh dance on many levels. Monumenta Nipponica calls it “a landmark in English language noh studies.”

url: http://hdl.handle.net/1813/91
date: 2004-03-05
creator: Mentis, Helena
viewed: 2892
title: OCCURRENCE OF FRUSTRATION IN HUMAN-COMPUTER INTERACTION: THE AFFECT OF INTERRUPTING COGNITIVE FLOW
abstract: Despite a growing awareness of the importance of emotion, HCI has emphasized the severity of usability incidents as the best method towards creating an enjoyable experience. This study collected the remembered frustrating incidents with technology of 66 participants (132 incidents). Incidents were then coded into one of the five high-level categories of the User Action Framework, a schema for classifying incidents in relation to their occurrence in the interaction cycle.
It was found that the majority of remembered frustrating incidents occur in the Outcome phase, which addresses issues with the system’s internal response to the user’s actions. This is in contrast to where most usability issues occur, in the Translation phase, which addresses issues with the user translating intentions into plans for physical actions. In addition it was found that remembered Outcome incidents are more often low priority usability incidents whereas remembered incidents in Translation are usually high priority usability problems. Finally, those incidents remembered in the Outcome phase are primarily incidents that interrupt cognitive flow.

url: http://hdl.handle.net/1813/92
date: 2004-03-09
creator: Thayer, John Gregg
viewed: 4715
title: SEARCH FOR THE RARE DECAY OF A B MESON TO A K MESON AND TWO NEUTRINOS
abstract: James Alexander: chair,
Matthias Neubert,
Lawrence Gibbons We search for the exclusive decays B -> (K+,KS,K*+,K*0)nu nubar in a sample of 9.7 million charged and neutral B meson decays recorded by the CLEO detector at the Y(4S)resonance. The technique was one of full event reconstruction where after electing a signal B candidate the remainder of the event is required to be consistent with a hadronic B -> D(*)(npi) decay. No signals were observed so 90% confidence level upper limits were set at: B (B+ -> K+ nu nubar) < 6.1 ? 10?4,
B(B0 -> KS nu nubar) < 2.3 ? 10?3,
B(B+ -> K*+ nu nubar) < 2.0 ? 10?3,
and B(B0 -> K*0 nu nubar) < 2.6 ? 10?3.

url: http://hdl.handle.net/1813/93
date: 2004-03-09
creator: Nice, Eryk
viewed: 3583
title: Design of a Four Rotor Hovering Vehicle
abstract: Raffaello D’Andrea, committee chair;
Mark Campbell;
Ephrahim Garcia Potential applications of autonomous vehicles range from unmanned surveillance to search and rescue applications dangerous to human beings. Vehicles specifically designed for hover flight have their own possible applications, including the formation of high gain airborne phased antenna arrays. With this

specific application in mind, the Cornell Autonomous Flying Vehicle (AFV) team sought to produce a four rotor hovering vehicle capable of eventual untethered acrobatic autonomous flights.
The mechanical design of the AFV included both the selection of a battery-motor-gearing-prop combination for efficient thrust production and the design of a lightweight yet sufficiently stiff vehicle structure. The components chosen were selected from the variety of brushless motors, battery technologies and cell configurations, and fixed pitch propellers suited to use in a four rotor hovering vehicle. The vehicle structure settled upon achieved a high degree of stiffness with minimal weight through the use of thin walled aluminum compression members supported by stranded steel cable.
In addition to an efficient mechanical design, the vehicle also required onboard control and inertial navigation. In order to evaluate a variety of potential vehicle sensor, actuator, estimation, and control scenarios, a fully configurable nonlinear simulation of vehicle and sensor dynamics was also constructed. For the current iteration of the vehicle, a square root implementation of a Sigma Point Filter was used for estimation while a simple Linear Quadratic Regulator based on the nonlinear vehicle dynamics linearized about hover provided vehicle control. Sensory feedback on the current vehicle included an onboard inertial measurement unit and a human observer, to be eventually replaced by GPS or an indoor equivalent.
While a hardware failure prevented the completion of a full range of tests, the team was able to complete a hands-free hover test that demonstrated the capabilities of the vehicle. Supplemented with various other final hardware tests, the vehicle demonstrated stable hover flight, potential vehicle endurance in the range of 10-15 minutes, and possible vertical acceleration of 0.8g beyond hover thrust. The final vehicle represented a significant achievement in terms of overall design and vehicle capability while future improvements will demonstrate more advanced nonlinear control algorithms and acrobatic flight maneuvers. Air Force Grant F49620-02-0388

url: http://hdl.handle.net/1813/95
date: 2004-03-11
creator: Stone, Doug; Lin, Tianai; Degrow, Stephen; Chhaochharia, Vidhi; Kulmar, Tulika; Parikh, Rushi; Wei, Thomas; Bluestein, Andrew; Roth, Jason; Rogers, Michael; Pedersen, Linda; Cheng, Samson; Zhang, Jeffrey; Ko, Rosy; Fatehi, Leili; Lubin, David; Hall, Justin; Nesterova, Anna
viewed: 3532
title: The Visible Hand, Volume XI, Issue 1
abstract: Editor: Anna Nesterova This is the Fall 2003 edition of Cornell University's longest running undergraduate Economics and Business journal. This issue's topics focus on international economy, including research on Russia, China, Iraq, and Sweden. Also covered are domestic fiscal policies, on-campus issues, and many other subjects in the world of economics and business.

url: http://hdl.handle.net/1813/96
date: 2004-04-02
creator: [CITE], Cornell Interactive Theatre Ensemble; Brown, Kimberly; Cruz, Dane; Relta, Vivian; Dewey, Martha
viewed: 4675
title: "One Vision, Many Voices: First Year Diversity Initiative" featuring the Cornell Interactive Theater Ensemble's presentation of "Being Antigone."
abstract: This video documents "One Vision, Many Voices", Cornell's annual orientation program for first year students, which augments the Provost's First Year Reading Project. CITE's interactive scenario, "Being Antigone", contemporizes themes and relationships from Sophocles' Antigone, the text for the '03 Reading Project. The interactive theatre medium stimulates dialogue from multiple points of view about how to listen to and learn from one another when we profoundly disagree. All first year students attend the program during the first three weeks of the semester. For more information about the scenario and the program's "learning

points", see the attached document "Introduction_to_CITE"...
About CITE: www.arts.cornell.edu/cite ...
PRESENTERS: Opening Speaker: Erica Kagan;
CITE Facilitator: Vivian Relta;
CITE Actors: Patrick Reynolds, Kimberly Brown, Martha Dewey, Dane Cruz.
CITE Stage Director: Greg Bostwick;
Closing Speaker: Robert L. Harris, Jr. ...
SPONSORS of "One Vision, Many Voices":
Vice Provost for Undergraduate Education: Isaac Kramnick;
Vice Provost for Diversity and Faculty Development: Robert L. Harris, Jr.;
Dean of Students: Kent Hubbell;
Vice President of Student and Academic Services: Susan Murphy ...
COORDINATORS of "One Vision, Many Voices": Dean of Students Office: Ednita Wright, Lynn Delles; Community Development: Don King, Anu Lyons, Beth O'Neill; Robert Purcell Community Center: William Horning ...
VIDEO PRODUCTION:
Cornell Information Technologies [CIT] Distributed Learning Services ...
CONTACT: CITE Administrative Director: Dane Cruz Telephone: 607- 254-8851 Email: dcc16@cornell.edu

url: http://hdl.handle.net/1813/97
date: 2004-04-14
creator: Strogatz, Steven H.
viewed: 16807
title: Nonlinear dynamics and chaos: Lab demonstrations
abstract: This video shows six laboratory demonstrations of chaos and nonlinear phenomena, intended for use in a first course on nonlinear dynamics. Steven Strogatz explains the principles being illustrated and why they are important. The demonstrations are: (1) A tabletop waterwheel that is an exact mechanical analog of the Lorenz equations, one of the most famous chaotic systems; (2) A double pendulum, a paradigm of chaos in conservative systems; (3) Airplane wing vibrations and aeroelastic instabilities, as exemplars of Hopf bifurcations; (4) Self-sustained oscillations in a chemical reaction; (5) Using synchronized chaos to send secret messages; and (6) Composing musical variations with a chaotic mapping. Strogatz is joined by his colleagues Howard Stone, John Dugundji, Irving Epstein, Kevin Cuomo, and Diana Dabby.

url: http://hdl.handle.net/1813/98
date: 2004-04-21
creator: Mateescu, Raluca
viewed: 2560
title: EFFECT OF TESTOSTERONE ON IGF-I, AR AND MYOSTATIN GENE EXRESSION IN SPLENIUS AND SEMITENDINOSUS MUSCLES IN SHEEP
abstract: Testosterone is known to act differentially on skeletal muscle from different regions. Two genes likely to mediate the testosterone effect are insulin-like growth factor-I (IGF-I), an important growth regulator acting in an autocrine and paracrine way, and androgen receptor (AR), as receptor density could account for differential muscle growth. Another muscle-specific gene that may play a role in differential muscle growth is myostatin, a member of the transforming growth factor-beta superfamily, shown to be a negative regulator of skeletal muscle mass. The objective of this study was to quantify and compare the expression of these three genes in two different skeletal muscles in sheep. East Friesian x Dorset sired ram lambs born from Dorset ewes were used in a 2 x 4 factorial experiment. Eighteen sets of twins were assigned to four age groups corresponding

to 77, 105, 133 and 161 days of age and one individual from each set was castrated at birth. Total RNA was extracted from samples of semitendinosus (ST) and splenius (SP) muscles collected at the time of slaughter. Insulin-like growth factor I mRNA was measured using competitive reverse-transcription-polymerase chain reaction (RT-PCR). Androgen receptor and MSTN mRNA were measured by ribonuclease protection assay (RPA) with standard curves. Splenius muscle weight was greater than semitendinosus muscle weight in rams compared with wethers at 105, 133 and 161 days ($p = 0.05$, $p = 0.04$ and $p = 0.02$). The difference in IGF-I mRNA levels between the two muscles was higher in rams than in wethers at 133 and 161 days ($p < 0.05$) and the difference in AR mRNA levels was higher in rams than in wethers at 105, 133 and 161 days ($p < 0.05$), with higher expression in the SP. No difference was found in the MSTN mRNA level between the two muscles in rams and wethers at any age. These results show that locally produced IGF-I and the regulation of AR expression are important for sexually dimorphic muscle growth patterns.

url: http://hdl.handle.net/1813/99
date: 2004-04-23
creator: Ghosh, Soumyadip
viewed: 2845
title: Dependence in Stochastic Simulation Models
abstract: There is a growing need for the ability to model and generate samples of dependent random variables as primitive inputs to stochastic models. We consider the case where this dependence is modeled in terms of a partially-specified finite-dimensional random vector. A random vector sampler is commonly required to match a given set of distributions for each of its components (the marginal distributions) and values of their pairwise covariances. The NORTA method, which produces samples via a transformation of a joint-normal random vector sample, is considered the state-of-the-art method for matching this specification. We begin by showing that the NORTA method has certain flaws in its design which limit its applicability.
A covariance matrix is said to be feasible for a given set of marginal distributions if a random vector exists with these properties. We develop a computational tool that can establish the feasibility of (almost) any covariance matrix for a fixed set of marginals. This tool is used to rigorously establish that there are feasible combinations of marginals and covariance matrices that the NORTA method cannot match. We further determine that as the dimension of the random vector increases, this problem rapidly becomes acute, in the sense that NORTA becomes increasingly likely to fail to match feasible specifications. As part of this analysis, we propose a random matrix sampling technique that is possibly of wider interest.
We extend our study along two natural paths. First, we investigate whether NORTA can be modified to approximately match a desired covariance matrix that the original NORTA procedure fails to match. Results show that simple, elegant modifications to the NORTA procedure can help it achieve close approximations to the desired covariance matrix, and these modifications perform well with increasing dimension.
Second, the feasibility testing procedure suggests a random vector sampling technique that can exactly match (almost) any given feasible set of marginals and covariances, i.e., be free of the limitations of NORTA. We develop a strong characterization of the computational effort needed by this new sampling technique. This technique is computationally competitive with NORTA in low to moderate dimensions, while matching the desired covariances exactly.

url: http://hdl.handle.net/1813/100
date: 2004-04-29
creator: Fried, David
viewed: 2853
title: The Design, Fabrication and Characterization of Independent-Gate FinFETs
abstract: The Independent-Gate FinFET is introduced as a novel device structure that combines several innovative aspects of the FinFET and planar double-gate FETs. The IG-FinFET addresses the concerns of

scaled CMOS at extremely short channel lengths, by offering the superior short channel control of the double-gate architecture. The IG-FinFET allows for the unique behavioral characteristics of an independent-gate, four-terminal FET. This capability has been demonstrated in planar double-gate architectures, but is intrinsically prohibited by nominal FinFET integration schemes. Finally, the IG-FinFET allows for conventional CMOS manufacturing techniques to be used by leveraging many of the FinFET integration concepts. By introducing relatively few deviations from a standard FinFET fabrication process, the IG-FinFET integration offers the capability of combining three-terminal FinFET devices with four-terminal IG-FinFET devices in one powerful technology for SoC or Analog/RF application, to name only a few.
The IG-FinFET device is examined by device modeling, circuit simulation, testsite design, fabrication and electrical characterization. The results of two-dimensional device simulations are presented, and the effects of process variations are discussed in order to understand the desire for a fully self-aligned double-gate architecture. Circuit design is investigated to demonstrate the capabilities of such a double-gate device. Physical designs are also examined, and the layout penalties of implementing such a device are discussed in order to understand the requirement of double-gate and independent-gate integration. A test vehicle is designed and presented for the structural integration and fabrication process development necessary for the demonstration and validation of this novel device architecture. The processing and results of several fabrication experiments are presented, with physical and electrical analysis. The integration changes and process modifications suggested by this analysis are discussed and analyzed. Fabricated devices are then electrically and physically characterized. The final set of fabricated devices show excellent agreement with simulated devices, and experimental verification of double-gate device theory. The results of this work provide for a new and novel device architecture with wide ranging technology application, as well as a new fabrication platform with which to study double-gate device theory and further technology integration.

url: http://hdl.handle.net/1813/101
date: 2004-04-29
creator: Cohn, Monica
viewed: 2603
title: Reassessing Ancient History: Trends in 20th Century Historiography
abstract: MA Committee Members: Professor Robin McNeal, Cornell University; Professor Sherman Cochran, Cornell University.ABSTRACT
Chinese historians at the end of the twentieth century have reexamined the issues that Republican era historian Gu Jiegang addressed at the beginning of the twentieth century confronted: the relationship between politics and scholarship, the role of archaeology in historical studies, and historical methodology. The issues Gu Jiegang raised remain pertinent to historical studies, and by referring to Gu Jiegang's work for understanding of these issues, historians have attested to his work's durability and flexibility, and even, its controversial nature. Today, as during the Republican period, historians have regarded Gu Jiegang as a revolutionary in the field of historical studies, but while some have admired his role, others have criticized it. However, close examination of Gu's work shows that Gu was not the iconoclast he and contemporary scholars have portrayed him as. Rather, like scholars of the dynastic period and many contemporary historians, he relied upon a thorough knowledge and dedication to the Classical texts, texts that he claimed to disavow.

url: http://hdl.handle.net/1813/102
date: 2004-04-30
creator: Keegan, Mark E.
viewed: 4603
title: Biodegradable Microspheres with Enhanced Capacity for Surface Ligand Conjugation
abstract: This item is a DISSERTATION.
Committee Chair: W. Mark Saltzman

Committee Members: Judith Appleton, Michael ShulerA poly(lactic-co-glycolic acid) (PLGA) microsphere formulation was developed which incorporates carboxylic acid groups into the microsphere surface. These functional groups are suitable for coupling to a variety of ligands, and form linkages that remain stable in aqueous environments for extended periods of time. The ligand binding capacity of these microspheres compares favorably to that of comparably sized carboxylated microspheres, which are commonly used as model particles for targeted microsphere delivery studies. The morphology and drug release kinetics of this PLGA microsphere formulation are not significantly different from those of microspheres made with traditional reagents. A variety of different protein ligands can be conjugated to the surfaces of these microspheres. These microsphere-ligand conjugates were then used in model systems to evaluate the effect of conjugated ligands on microsphere behavior. Microsphere retention in agarose columns was increased by ligands on the microsphere surface specific for receptors on the agarose matrix. In another experiment, conjugating the ligand Ulex europaeus agglutinin 1 to the microsphere surface increased the adhesion of microspheres to Caco-2 monolayers compared to control microspheres. This increase in microsphere adhesion was negated by co-administration of L-fucose, indicating that the increase in adhesion is due to specific interaction of the ligand with carbohydrate receptors on the cell surface. These results demonstrate that the ligands conjugated to the microspheres maintain their receptor binding activity, and are present on the microsphere surface at a density sufficient to target the microspheres to both monolayers and three-dimensional matrices bearing complimentary receptors. These microspheres combine the capability to target specific cell types through surface-conjugated receptors with the ability to release encapsulated drugs over extended periods of time. This combination of properties enhances the utility of biodegradable microspheres for a variety of drug delivery applications.National Institutes of Health, Air Force Office of Scientific Research

url: http://hdl.handle.net/1813/103
date: 2004-05-05
creator: Hsu, Lauren
viewed: 2262
title: A STUDY OF THE FORM FACTORS IN SEMILEPTONIC NEUTRAL D-MESON DECAYS TO PION AND KAON MODES USING THE CLEO-III DETECTOR
abstract: Ritchie Patterson (Committee Chair),
Matthias Neubert,
Jim AlexanderWe measure the ratio of branching fractions, R0 = B(D0 -> pi l nu)/B(D0 -> K l nu), where l is an electron or muon. We also measure the normalized rates for D0 -> pi l nu and D0 -> K l nu as a function of the momentum transfer squared (q^2). The data were collected with the CLEO-III detector while the Cornell Electron Storage Ring (CESR) was running at or just under the Y(4S) resonance. We find R0 = 0.082 +- 0.006 +- 0.005, where the first uncertainty is statistical and the second is systematic. We fit the normalized q^2 distributions with two form factor parameterizations, the simple pole and modified pole functions. For the simple pole fits, we find effective masses, M_poleDK = 1.89 +0.05 -0.05 +0.04 -0.03 GeV and M_poleDpi = 1.86 +0.10 -0.06 +0.07 -0.03 GeV, where the first uncertainty is statistical and the second is systematic. For the modified pole fits, we find alpha_DK = 0.36 +0.11 -0.10 +0.03 -0.07 and alpha_Dpi = 0.37 +0.20 -0.31 +0.16 -0.14, where (1/sqrt(alpha))*M_D*(s) is the effective mass of the second pole and again the first uncertainty is statistical and the second is systematic. Using the measured value of R0, and the modified-pole-optimized form factor shapes, we find the product of the ratio of form factor normalizations at q^2 = 0 and the ratio of CKM matrix elements, |f^pi_+(0)/f^K_+(0)|^2|Vcd/Vcs|^2 = 0.038+0.006 -0.007 +0.005 -0.003 (the first uncertainty is statistical and the second is systematic). Experimental measurements of these heavy-to-light form factors are crucial to constraining the theoretical techniques used to calculate them. Improved understanding of semileptonic form factors can aid precision measurements of the CKM matrix elements, in particular exclusive semileptonic measurements of |Vub|.National Science Foundation, the U.S. Department of Energy, the Research Corporation, and the Texas Advanced Research Program

url: http://hdl.handle.net/1813/104
date: 2004-05-07
creator: Kauffman, David Scott
viewed: 4114
title: Budget Travel in South Asia: Searching for the Real
abstract: Over the past two decades extended budget travel (BT) has become a significant way for large numbers of people from the West to experience the world outside of their national borders. Once considered a fringe activity, BT has seen its cultural and social acceptance rise and it is today attracting more people from more walks of life than ever before. Further attesting to its popularity is the wide assortment of ancillary industries and medias that nurture and support it. This thesis will examine how BT is used as a means to satisfy the desires of people in the West for a ?realness? which is no longer found in their alienated, post-modern, post-industrial home societies, and how BTravelers use the markers of realness found in the BT experience to construct their own identities. I will conclude, however, that BT is itself, due to its very form and the conditions that produce it, a commodified experience that, rather than being a liberation from the alienated life, is itself an alienated form of action that reproduces and extends the same conditions that at its core it aims to transcend.

url: http://hdl.handle.net/1813/105
date: 2004-05-07
creator: Warner, David
viewed: 2312
title: The Role of Cercopagis pengoi in Nearshore Areas of Lake Ontario
abstract: Exotic species introduced to Lake Ontario in the past 100 years have had varied effects on the food web. The exotic cladoceran Cercopagis pengoi is a zooplankton predator, and the effects of its establishment (in 1998) were difficult to predict without research conducted years since its introduction. Little to no work has been conducted at spatial scales necessary to examine the role of C. pengoi on a lakewide basis. This study was conducted to assess the relative importance of C. pengoi as prey and predator by examining its abundance, distribution, and potential impacts based on these variables and its trophic interactions with zooplankton and fish.
Data from a number of field studies were used to develop equations relating acoustic size (target strength) to length and mass, which allowed estimation of abundance using acoustic surveys. Target strength varied significantly with length and mass. Target strength equations were significantly different from previously published equations.
Field collections revealed that C. pengoi was an important prey item for only for juvenile and adult alewives > 66 mm total length. Due to the planktivorous nature of C. pengoi and similar distributions of these organisms, alewives and rainbow smelt also compete with C. pengoi. The relative importance of C. pengoi as prey and competitor depended on fish size and habitat use; habitat use determined the degree of spatial overlap, while fish size and the defensive spine of C. pengoi influenced the degree to which these fish were able to utilize C. pengoi during periods of spatial overlap.
Late summer abundance of bosminids, Diacyclops thomasi, and copepod nauplii was significantly lower in 1998-2000 than 1995-1997, while abundance of Daphnia retrocurva did not vary significantly. Other factors that may have contributed to this decline were excluded by examination of their seasonal patterns. I concluded that predation by C. pengoi caused the observed declines. The relative magnitude of consumption by C. pengoi and alewives indicated that they were important predators and competitors and both were capable of structuring zooplankton community structure through predation.New York Sea Grant
National Science Foundation

url: http://hdl.handle.net/1813/106
date: 2004-05-11
creator: Rudert, Angela
viewed: 3013
title: Inherent Faith and Negotiated Power: Swaminarayan Women in the United States
abstract: In this thesis, I explore the ways in which women negotiate their own forms of power in the Bochasanwasi Akshar Purushottam Swaminarayan Sanstha (BAPS), a branch of Swaminarayan Hinduism. The study draws from research in primary sources, scholarly sources, and from fieldwork in Atlanta, GA where the Swaminarayan community has grown tremendously in recent decades, and the Shri Swaminarayan Mandir (BAPS) has become the southeast region's leading temple.
In Swaminarayan temples, men and women practice strict gender segregation and conduct their own separate and parallel programs in temple life. The saints and the Guru of the BAPS tradition are male only, however, and practice a strict form of celibacy that does not allow them to touch, speak to, or look at women. Therefore, women do not have the same access to religious specialists as do men. Regardless, women are often characterized as more religious than men, inherently faithful, and better devotees. While I find it difficult to substantiate the argument of equality, so too do I find difficulty in the argument of women's marginality. I argue in my thesis that separate gender roles in Swaminarayan religion, even when not equal, do not necessarily marginalize or subjugate women. The question of equality between religious roles of women and men is more complicated than one gender acting as super ordinate and another acting as subordinate. My research looks at the ways women can and do assert power in the Swaminarayan tradition through their own initiatives and from their own spaces.Pluralism Project at Harvard University

url: http://hdl.handle.net/1813/107
date: 2004-05-11
creator: Perrella, Andrew
viewed: 2625
title: Ballistic Electron Transport in Aluminum Oxide
abstract: R.A. Buhrman, D.C. Ralph, P.W. Brouwer Aluminum oxide (alumina) is becoming an increasingly important material in high performance electronics. It is the insulator in magnetic tunnel junctions used for MRAM and may allow for the fabrication of solid state qubits based on Josephson junctions. In this thesis I have used ballistic electron emission microscopy (BEEM) to study the physical and electronic structure of alumina.
BEEM's high spatial resolution (~1 nm) was exploited to study the alumina surface where clusters of chemisorbed oxygen were observed. The overall behavior of these clusters helped piece together the electronic structure of the material, in addition to the oxidation process itself.
While the data from the oxide surface studies can be interpreted under the standard set of assumptions people generally impose on BEEM (i.e. no scattering) the data obtained when the oxide is buried cannot. In the latter case the signal levels are too low to ignore scattering.
Before the spectra of buried oxide films could be interpreted, scattering needed to be understood. Scattering in BEEM is nothing new. Kaiser and Bell (BEEM's inventors) did the experiment nearly a decade ago when they injected holes into a Au base and collected electrons with n-type Si. The essential physics behind the scattering process was properly described in their work. However, fits to data using their theory failed at electron energies above 1.3 eV. By properly accounting for the density of tunneling states, the Kaiser-Bell approach can be modified to correctly describe the data at higher electron energies.
Once simple systems could be reliably fit, scattering BEEM could be used to study alumina. In the case of hole injection, a higher turn on voltage (relative to Au on Si) is observed which is described by an inelastic scattering process. In the case of electron injection, the same scattering is present and is observed because the alumina attenuates the otherwise dominant unscattered signal.

Scattering also effects spin transport. As scattering increases, the polarization of a ballistic electron beam becomes diluted. This is observed as the fading of contrast in magnetic images as alumina forms between two ferromagnetic layers.DARPA, NSF, ONR

url: http://hdl.handle.net/1813/108
date: 2004-05-11
creator: Pierson, Oliver
viewed: 1339
title: SPATIAL, TEMPORAL, AND HYDROLOGICAL VARIATIONS IN PHOSPHORUS RETENTION IN A LARGE CATTAIL WETLAND
abstract: Special Committee Chair: Professor Rebecca L. Schneider, Department of Natural Resources
Committee Members: Dr. M. Todd Walters, Department of Biological and Environmental Engineering, William F. Coon, U.S. Geological SurveyABSTRACT:
Wetlands are now heavily regulated and recognized as key landscape features because of their roles in improving water quality through the removal of dissolved and sediment bound contaminants. However, wetland filtration processes are still the subject of considerable research, and limited evidence suggests that wetland filtration varies considerably as water levels follow natural rise and fall cycles. From April 2002 until April 2003, research was conducted in the Ellison Park Wetland, an 87-hectare cattail-dominated marsh near Rochester, NY, to determine how spatial and temporal variations in phosphorus (P) retention mechanisms, as well as a varying hydrological regime, affect P dynamics. A mass balance approach was used to determine how P retention processes vary seasonally or spatially. Groundwater and surface water hydrology of the study site were carefully monitored, using stage gages and seven nests of piezometers distributed throughout the study site, to determine potential influences it has on the wetland?s biogeochemistry. Replicated samples of the wetland substrate, plant tissues, litter, surface water and groundwater were collected at 18 stations seven times between May 2002 and April 2003 and analyzed for P content. Our findings show distinct differences in P dynamics spatially, in near-stream vs. interior plots, with different sets of processes driving retention in these wetland environments. The near-stream environment accounts for 70% of P retention whereas interior sites account for 79 % of surface area. Near-stream P retention is driven by long-term and short-term deposition of silt and clay-rich sediment associated with over-bank flood events, creating a greater capacity for P retention on a per volume basis. In contrast, the marsh interior has a more organic substrate with a lower total P content and lower aboveground plant growth. The combined effects of cattail phenology and two distinct hydrologic phases during the study period (wet spring and dry summer) on P processes show that a wetland?s ability to filter P is more dynamic over space and time than often assumed. As precipitation patterns become variable due to climate change, improved knowledge about P retention mechanisms in natural wetlands will be useful for water quality improvement.Society of Wetland Scientists, the IGERT in Biogeochemistry and Environmental Biocomplexity, the RTG in Biogeochemistry and Environmental Change, the Cornell University Andrew Mellon Grant Program, Cornell University Department of Natural Resources, and the U.S. Geological Survey

url: http://hdl.handle.net/1813/109
date: 2004-05-11
creator: Steven, Matthew D
viewed: 2455
title: Non-Migratory Bioactive Packaging: Covalent attachment of bioactive peptides to poly(ethylene) food packaging films
abstract: Joseph Hotchkiss
A. Brad Anton
Christopher OberNon-migratory bioactive packaging is a novel form of active packaging. It is packaging

which elicits a desirable biological response from food systems without the active component migrating from the packaging into the food. Possible applications for this include in-package enzymatic processing and non-migratory antimicrobial packaging. Poly(ethylene glycol) (PEG) oligomers were covalently attached by one end to surface-oxidized poly(ethylene) (PE) films using carbodiimide coupling; bioactive peptides were covalently linked to the free terminus of the PEG chains using the same reaction. Reactions were confirmed and monitored through contact angle measurements, dye adsorption assays, x-ray photoelectron spectroscopy and atomic force microscopy.
Bioactivity of the modified films depended on the peptide attached: antibacterial activity was found for films treated with antimicrobial peptide E14LKK; no activity was found for lactase attached to PE films. Antibacterial activity was demonstrated against E.coli for films to which side-chain-protected E14LKK was attached and then deprotected.
Further investigation of the lactase coupling indicated difficulties with amino-carboxy-PEG attachment, despite prior successes with diamino-PEG; amino-carboxy-PEG coupling requires further optimization. Lactase attached directly to PE was inactive, regardless of lactose inclusion in the coupling buffer, however PEGylated lactase is active: the inclusion of a PEG spacer should improve immobilized lactase activity.
The effect of the modifications on PE properties important in packaging was assessed through physical, mechanical and optical testing. Properties primarily dependent on the bulk characteristics of the material were generally unaffected by our film modifications. Properties sensitive to film surface characteristics (permeability, optical properties, friction) were affected by the modifications; the changes in these properties will need to be allowed for when designing processes and packages involving the modified films, but should not affect the utility of the film for the standard applications of PE.

url: http://hdl.handle.net/1813/115
date: 2004-05-24
creator: Lin, Tianai;Kumar, Tulika;Parikh, Rushi;Wei, Thomas;Roth, Jason;Rogers, Michael;Pedersen, Linda;Zhang, Jeffery;Tzenev, Atanas;Pridgen, Colyar;Loh, Wee Lee;Cheng, Samson;Graziano, Gwednolyn;Gilman, John;Lacket, Christopher;Liang, Feng Olivia;Zuccarino, Todd;Sable, Scott;Miniyar, Neal;Bhattacharyay, Rima;Lee, Humphrey;Wei, Lim Tam;Nesterova, Anna
viewed: 4636
title: The Visible Hand, Volume XI, Issue 2
abstract: Editor: Anna Nesterova This is the Spring edition of Cornell University's longest running undergraduate Economics and Business journal. This issue's topics focus on Asian economic development, including research on China, India, and Laos. Also covered are domestic fiscal policies, on-campus issues,and many other subjects in the world of economics and business.

url: http://hdl.handle.net/1813/118
date: 2004-06-09
creator: Driscoll, R.H.;Srzednicki, G.S.;De Baerdemaker, J.;Munack, A.;Hashimoto, Y.;Sigrimis, N.;Karpenstein-Machan, M.;Pimentel, M.;Pimentel, D.;Tran, Tu Tu;Van Lierde, D.;De Cock, L.;Diaz, J.R.;Bosh, A.;Iribarne, L.F.;Becerra, A.;Ayala, R.;Sun, Da-Wen;Oshita, S.;Gemtos, T.A.;Arkema, F.W. Bakker;Liu, Q.
viewed: 4834
title: CIGR E-Journal Volume 1
abstract: Rosana G. Moreira, Editor-in-Chief; Texas A&M UniversityTECHNICAL ARTICLES: (1) Q. Liu & F. W. Bakker Arkema. Capacity Estimation of High-Temperature Grain Dryers - A Simplified Calculation Method.
(2) T.A. Gemtos. Sugar Beet Root Properties in Relation to Harvesting Damage. (3) Da-Wen Sun. Comparison and Selection of EMC/ERH Isotherm Equations for Drying and Storage of Grain and Oil Seeds. (4) S. Oshita. Relaxation Time of Protons in Intracellular Water of Broccoli. (5) R. Ayala, A. Becerra, L.F. Iribarne, A. Bosch,

and J.R. Diaz. GIS Systems as a Decision Support Tool for Agricultural Planning in Arid Zones of Spain. (6) L. De Cock & D. Van Lierde. Monitoring Energy Consumption in Belgian Glasshouse Horticulture. (7) Tu Tu Tran, G.S. Srzednicki and R.H. Driscoll. Effects of Aeration on the Quality of Popcorn...INVITED ARTICLES: (1) D. Pimentel, M. Pimentel & M. Karpenstein-Machan. Energy Use in Agriculture: An Overview. (2) N. Sigrimis, Y. Hashimoto, A. Munack & J. De Baerdemaker. Prospects in Agricultural Engineering in the Information Age - Technological Development for the Producer and the Consumer.

url: http://hdl.handle.net/1813/119
date: 2004-06-09
creator: Singh, Gajendra;Schinstock, Jack L.;Turnquist, Paul K.;Dixon, John E.;Henry, Zachary A.;Strebkov, Dmitry;Clarke, L.J.;Chochowski, Andrzej;Wojcicka-Migasiuk, Dorota;Jaarsma, Catharinus F.;Bieda, W.;Radon, J.;Soysal, Y.;Oztekin, S.;Ruiz-Altisent, M.;Valero, C.;Solie, J.B.;Brusewitz, G.H.;Criner, B.R.;Hauhouot-O'Hara, M.;Vacek, Josef;Esmir, Ahmed A.S.;Blahovec, Jioi;Bohuslavek, Z.;de Juan, J.A.;Ortega, J.F.;Tarjuelo, J.M.;Montero, J.
viewed: 4365
title: CIGR E-Journal Volume 2
abstract: Rosana G. Moreira, Editor-in-Chief; Texas A&M University TECHNICAL ARTICLES: (1) Montero, J., Tarjuelo, J.M. and Ortega, J.F. Heterogeneity Analysis of the Irrigation in Fields with Medium Size Sprinklers. (2) J.F. Ortega, J.M. Tarjuelo, J. Montero, J.A. de Juan. Discharge Efficiency in Sprinkling Irrigation: Analysis of the Evaporation and Drift Losses in Semi-arid Areas. (3) Z. Bohuslavek. Estimation of EUROP- Conformation and Fatness of Beef Carcasses by Bioelectrical Impedance Analysis. (4) Jioi Blahovec, Ahmed A.S.Esmir, Josef Vacek. Objective Method for Determination of Potato Cooking. (5) M. Hauhouot-O'Hara, B.R. Criner, G.H. Brusewitz, J.B. Solie. Selected Physical Characteristics and Aerodynamic Properties of Cheat Seed for Separation From Wheat (6) C. Valero and M. Ruiz-Altisent. Design Guidelines for a Quality Assessment System of Fresh Fruits in Fruit Centers and Hypermarkets. (7) S. Oztekin and Y. Soysal. Comparison of Adsorption and Desorption Isoteric Heats for Some Grains. (8) J. Radon, W. Bieda. Optimisation of a Hybrid Wall for Solar Utilisation in Agriculture. (9) Dr. Ir. Catharinus F. Jaarsma. Sustainable Land Use Planning and Planning of Rural Road Networks. (10) Dorota Wojcicka-Migasiuk & Andrzej Chochowski. Simulation Model for Solar Water Heating for Food Processing...INVITED ARTICLES:
(1) L.J. Clarke. Strategies for Agricultural Mechanization Development: The Roles of the Private Sectore and the Government. (2) Prof. Dmitry Strebkov. Trends in Russian Agriculture and Rural Energy. (3) Zachary A. Henry, John E. Dixon, Paul K. Turnquist, Jack L. Schinstock. Status of Agricultural Engineering Educational Programs in the USA. (4) Gajendra Singh. Agricultural Engineering Education in India.

url: http://hdl.handle.net/1813/120
date: 2004-06-09
creator: Munack, A.;Nova, A.;Pozeliene, A.;Sawamura, A.;Sumorek, A.;Zairi, A.;Raoult-Wack, A-L.;Kakou, B.G;Stout, B.;Nimmuntavin, C.;Shitanda, D.;Bulanon, D.M.;Bresci, E.;Yamaji, E.;Preti, F.;Best, G.;Riskowski, G.;Srzednicki, G.;Slatni, H. A.;El Amami, H.;Horino, H.;Shimizu, H.;Speckmann, H.;Naas, I.;Buenger, J.;De Baerdemaeker, J.;Hahn, J.;Krahl, J.;Teixeira, J. L.;Li, J.;Imou, K.;Maertens, K.;Matsumoto, K.;Cortez, L.;Pereira, L. S.;Wiset, L.;Gaderer, M.;Gebreselassie, M.;Horynski, M.;Ishida, M.;Rao, M.;Reyniers, M.;Bricas, N.;Shimizu, N.;Sumida, N.;Braunbeck, O.;Kaufman, O.;Schroeder, O.;Bruscoli, P.;Lamp, P.;Rodrigues, P. N.;Siwapornak, P.;Driscoll, R.;Eko, R. Medjo;Ziegler, R.;Koide, S.;Lynikiene, S.;Manmoto, S.;Nishimura, S.;Fischer, T.;Friedrich, T.;Hiroma, T.;Kataoka, T.;Machado, T.;Mitsuno, T.;Mizukami, T.;Nagano, T.;Nishizu, T.;Okamoto, T.;Tomson, T.;Umehara, T.;Anbumozhi, V.;Chancellor, W.;Pietrzyk, W.;Schoelkopf, W.;Ikeda, Y.;Kaizu, Y.;Nishiyama, Y.;Ota, Y.;Torikata, Y.
viewed: 5878
title: CIGR E-Journal Volume 3

abstract: Rosana G. Moreira, Editor-in-Chief; Texas A&M UniversityTECHNICAL ARTICLES: (1) P. Bruscoli, E. Bresci and F. Preti. Diagnostic Analysis of an Irrigation System in the Andes Region. Vol. III, February 2001. (2) T. Fischer, M. Gaderer, P. Lamp, W. Schoelkopf, and R. Ziegler. Processes and Economics for Energetic Use of Cotton Plant Residues. Vol. III, February 2001. (3) B. G. Kakou, H. Shimizu and S. Nishimura. Residual Strength of Colluvium and Stability Analysis of Farmland slope. Vol. III, March 2001. (4) P. N. Rodrigues, L. S. Pereira, A. Zairi, H. El Amami, H. A. Slatni, J. L. Teixeira, and T. Machado. Deficit Irrigation of Cereals and Horticultural Crops: Simulation of Strategies to Cope with Droughts. Vol. III, March 2001. (5) H. El Amami, A. Zairi, L. S. Pereira, T. Machado, A. Slatni, and P. Rodrigues. Deficit Irrigation of Cereals and Horticultural Crops: Economic Analysis. Vol. III, March 2001. (6) T. Tomson and A. Nova. Geographically Dispersed Wind Turbines on the West-Estonian Coast. Vol. III, April 2001. (7) L. Wiset, G. Srzednicki, R. Driscoll, C. Nimmuntavin, and P. Siwapornak. Effects of High Temperature Drying on Rice Quality. Vol. III, May 2001. (8) M. Horynski. The Effects of Field Intensity and Pneumatic Pressure on the Dielectric Constant of Rye Kernels. Vol. III, May 2001. (9) S. Lynikiene. Carrot Seed Preparation in a Corona Discharge Field. Vol. III, July 2001. (10) V. Anbumozhi, K. Matsumoto, and E. Yamaji. Sustaining Agriculture through Modernization of Irrigation Tanks: An Opportunity and a Challenge for Tamilnadu, India. Vol. III, August 2001. (11) A. Munack, O. Schroeder, J. Krahl, and J. Buenger. Comparison of Relevant Exhaust Gas Emissions from Biodiesel and Fossil Diesel Fuel. Vol. III, August 2001. (12) K. Maertens, M. Reyniers, and J. De Baerdemaeker. Design of a Dynamic Grain Flow Model for a Combine Harvester. Vol. III, September 2001. (13) D. Shitanda, Y. Nishiyama, and S. Koide. Performance Analysis of Impellor and Rubber Roll Husker Using Different Varieties of Rice. Vol. III, September 2001. (14) T. Nishizu, Y. Ikeda, Y. Torikata, S. Manmoto, T. Umehara, and T. Mizukami. Automatic, Continuous Food Volume Measurement with a Helmholtz Resonator. Vol. III, October 2001. (15) A. Sumorek and W. Pietrzyk. The Influence of Electric Field on the Energy Consumption of Convective Drying Processes. Vol. III. October 2001. (16) T. Nagano, H. Horino, T. Mitsuno, and N. Shimizu. Changes in Surface Runoff Due to Crust Formation and Land Conservation Techniques: The Case of On-Farm Study in Niger, West Africa. Vol. III, October 2001. (17) J. Li and M. Rao. Crop Yield as Affected by Uniformity of Sprinkler Irrigation System. Vol. III, October 2001. (18) K. Imou, M. Ishida, T. Okamoto, Y. Kaizu, A. Sawamura, and N. Sumida. Ultrasonic Doppler Sensor for Measuring Vehicle Speed in Forward and Reverse Motions Including Low Speed Motions. Vol. III, October 2001. (19) D.M. Bulanon, T. Kataoka, Y. Ota, and T. Hiroma. A Machine Vision System for the Apple Harvesting Robot. Vol. III, December 2001. (20) R. Medjo Eko and G. Riskowski. A Procedure for Processing Mixtures of Soil, Cement, and Sugar Cane Bagasse. Vol. III, December 2001. (21) A. Pozeliene. Influence of Electric Field on the Quality of Flaxseed. Vol. III, December 2001. (22) Y. Kaizu, T. Okamoto and K. Imou. System for Automatic Separation of Ex Vitro Micropropagated Sugarcane. Vol. III, December 2001. (23) M. Gebreselassie, O. Kaufman, and J. Hahn. Optimization of Transport Capacity for Fodder-Straw in Syria. Vol. III, December 2001...INVITED ARTICLES: (1) A-L. Raoult-Wack and N. Bricas. Food Sector Development: Multifunctionality and Ethics. Vol. III, January 2001. (2) I. Naas. Precision Animal Production. Vol. III, January 2001. (3) W. Chancellor. Synergistic Cooperation in the Food System. Vol. III, February 2001. (4) L. Cortez, I. N??s and O. Braunbeck. Agricultural Engineering Education Programs in Brazil. Vol. III, April 2001. (5) A. Munack and H. Speckmann. Communication Technology is the Backbone of Precision Agriculture. Vol. III, May 2001. (6) T. Friedrich. Agricultural Sprayer Standards and Prospects for Development of Standards for other Farm Machinery. Vol. III, May 2001. (7) W. Chancellor. Global Energy Flows and their Food System Components. Vol. III. December 2001. (8) B. Stout and G. Best. Effective Energy Use and Climate Change: Needs of Rural Areas in Developing Countries. Vol. III. December 2001.

url: http://hdl.handle.net/1813/121
date: 2004-06-11
creator: Zhang, G.;Wang, L.;Vannucci, D.;Umeda, M.;Tsheko, R.;Taylor, R.;Tarjuelo, J.M.;Taniwaki, K.;Tamimi, A.;Takakura, T.;Takai, H.;Svidt, K.;Suguri, M.;Staggenborg, S.;Slobodzian-Ksenicz, O.;Slack, D.;Shimizu,

H.;Shigeta, K.;Shaw, B.W.;Schrock, M.;Salagado, D.;Reid, J.;Pochi, D.;Pitsilis, I.;Pierce, F.;Pereira, D.;Pellizzi, G.;Pawlak, J.;Parnell, C.B.;Papadakis, G.;Otani, R.;Ortega, J.F.;Opara, L.;Okamoto, T.;Okamoto, E.;Oida, A.;Nekomoto, K.;Natsis, A.;Nagasaka, Y.;Naas, I.;Murayama, M.;Munack, A.;Morsing, S.;Morita, S.;Morimoto, E.;Mori, K.;Momozu, M.;Miyasaka, J.;Leikam, D.;Kuczynski, T.;Krause, K.-H.;Kashti, Y.;Kaizu, Y.;Juan, J.A.;Johnson, J.O.;Isaac, N.;Inoue, E.;Imou, K.;Ikeguchi, A.;Ibuki, T.;Houszka, H.M;Hoshiba, S.;Hirai, Y.;Heege, H.;Hashiguchi, K.;Gemtos, T.A.;Fujimoto, H.;Fiala, M.;Feyereisen, G.;Feldhaus, B.;Douthwaite, B.;De Castro, P.;Dahl, P.J.;Curto, F.;Cuello, J.;Coolman, F.;Clyma, W.;Clarke, L.;Chertkov, V.Y.;Cavalieri, R.;Cavalaris, C.K.;Brikman, R.;Brehme, G.;Bjerg, B.;Bishop, C.;Behrens, F.;Auernhammer, H.;Alchanatis, V.;Akingbehin, O.A.;Ajav, E.A.
viewed: 4708
title: CIGR E-Journal Volume 4
abstract: Rosana G. Moreira, Editor-in-Chief; Texas A&M University Peer Reviewed Technical Articles: (1) G. Brehme and K.-H. Krause. Compartmental Airflow Simulation in Stables with Natural Ventilation. Vol. IV. January 2002. (2) J.F. Ortega, J.M. Tarjuelo, and J.A. Juan. Evaluation of Irrigation Performance in Localized Irrigation Systems of Semiarid Regions(Castilla-La Mancha, Spain). Vol. IV. February 2002. (3) E.A. Ajav and O.A. Akingbehin. A Study of some Fuel Properties of Local Ethanol Blended with Diesel Fuel. Vol. IV. March 2002. (4) B. Bjerg, K. Svidt, S. Morsing, G. Zhang, and J.O. Johnson. Modelling of a Wall Inlet in Numerical Simulation of Airflow in Livestock Buildings. Vol. IV. March 2002. (5) V. Alchanatis, Y. Kashti, and R. Brikman. A Machine Vision System for Evaluation of Planter Seed Spatial Distribution. Vol. IV. April 2002. (6) O. Slobodzian-Ksenicz, and T. Kuczynski. Effect of Litter Type on Ammonia Emission in Turkey Housing. Vol. IV. May 2002. (7) H.M. Houszka. Thermal Conditions within a Piglet Creep Area with Different Cover Constructions and Different Surface of Cover Materials. Vol. IV. May 2002. (8) R. Tsheko. Discrimination of Plant Species Using Co Occurrence Matrix of Leaves. Vol. IV. May 2002. (9) C.K. Cavalaris and T.A. Gemtos. Evaluation of Four Conservation Tillage Methods in the Sugar Beet Crop. Vol. IV. June 2002. (10) L. Wang, C.B. Parnell and B.W. Shaw. A Study of the Cyclone Fractional Efficiency Curves. Vol. IV. June 2002. (11) H. Takai, K. Nekomoto, P.J. Dahl, E. Okamoto, S. Morita, and S. Hoshiba. Ammonia Contents and Desorption from Dusts Collected in Livestock Buildings. Vol. IV. June 2002. (12) L. Wang, C.B. Parnell and B.W. Shaw. Performance Characteristics of Cyclones in Cotton-Gin Dust Removal. Vol. IV. August 2002. (13) A. Ikeguchi. Ultra Sonic Sprayer Controlling Dust in Experimental Poultry Houses. Vol. IV. October 2002. (14) Y. Nagasaka, K. Taniwaki, R. Otani, and K. Shigeta. An Automated Rice Transplanter with RTKGPS and FOG. Vol. IV. October 2002. (15) Y. Hirai, E. Inoue, K. Mori, and K. Hashiguchi. Analysis of Reaction Forces and Posture of a Bunch of Crop Stalks During Reel Operations of a Combine Harvester. Vol. IV. October 2002. (16) A. Oida and M. Momozu. Simulation of Soil Behavior and Reaction by Machine Part by Means of DEM. Vol. IV. October 2002. (17) A. Oida, H. Shimizu, J. Miyasaka, H. Fujimoto and T. Ibuki. Study on the Performance of a Model Electric Off-Road Vehicle. Vol. IV. October 2002. (18)Y. Kaizu, T. Okamoto and K. Imou. Shape Recognition and Growth Measurement of Micropropagated Sugarcane Shoots. Vol. IV. October 2002. (19)D. Pochi and D. Vannucci. Prediction of Pesticide Distribution on the Ground Based on Boom Sprayer Movements. Vol. IV. December 2002. (20)A. Natsis, G. Papadakis, and I. Pitsilis. Experimental Investigation of the Influence of the Foreploughshare and the Disk Coulter on the Tillage Quality and the Tractor Fuel Consumption. Vol. IV. December 2002. (21)N. Isaac, R. Taylor, S. Staggenborg, M. Schrock, and D. Leikam. Using Cone Index Data to Explain Yield Variation Within a Field. Vol. IV. December 2002. (22)V.Y. Chertkov. Characteristic Crack Dimensions of Saturated Drying Soils: Theory and Applications. Vol. IV. December 2002. (23)E. Morimoto, M. Suguri and M. Umeda. Obstacle Avoidance System for Autonomous Transportation Vehicle based on Image Processing. Vol. IV. December 2002. (24) F. Curto, I. Naas, D. Pereira, D. Salagado, M. Murayama and F. Behrens. Predicting Broiler Breeder?s Behavior Using Electronic Identification. Vol. IV. December 2002. (25) H. Heege and B. Feldhaus. Site Specific Control of Seed-Numbers per Unit Area for Grain Drills. Vol. IV. December 2002... Invited Overview Articles: (1) J. Pawlak, G. Pellizzi and M. Fiala. On the Development of Agricultural Mechanization to Ensure a Long-

Term World Food Supply. Club of Bologna. Vol. IV. June 2002 (2) F. Coolman. Developments in Dutch Farm Mechanization: Past and Future. Vol. IV. August 2002. (3) J. Pawlak. Farm Machinery Market in the Second Half of the XX Century. Vol. IV. July 2002. (4) J. Cuello. Foreword to Agricultural Engineering and International Development in the Third Millennium. Vol. IV. September 2002 (5) L. Clarke and C. Bishop. Farm Power/Present and Future Availability in Developing Countries. Vol. IV. October 2002. (6) T. Takakura. Food Production Strategy in East Asia-Engineering Perspective in the Third Millennium. Vol. IV. October 2002 (7) A. Tamimi. Cooperation Through Education: How Southern West Bank, Palestine, Can Be Developed Through Agricultural Engineering. Vol. IV. September 2002. (8) J. Cuello. Making the World a Better Place: What the Agricultural Engineering Professional Organizations Can Do in the New Century to Make Good on Their Age-Old Promise. Vol. IV. October 2002. (9) D. Slack. Engineering in a Shrinking World. Vol. IV. September 2002. (10) G. Feyereisen. Social and Engineering Aspects of an Aquacultural Development Project in the Nakasongola District of Uganda. Vol. IV. September 2002. (11) W. Clyma. Management Strategies for Sustainable Irrigated Agriculture with Organizational Change to Meet Urgent Needs. Vol. IV. September 2002. (12) A. Munack. Agriculture and the Environment: New Challenges for Engineers. Vol. IV. December 2002. (13) P. De Castro. Mechanization and Traceability of Agricultural Products: a Challenge for the Future-- Quality of Production, Reasons and Means for Traceability, Needs of Markets and Institutional and Prescriptive Aspects in the EU Context. Club of Bologna. Vol. IV. September 2002. (14) F. Pierce and R. Cavalieri. Globalization and Traceability of Agricultural Production: The Role of Mechanization. Club of Bologna. Vol. IV. September 2002. (15) I. Naas. Applications of Mechatronics to Animal Production. Club of Bologna. Vol. IV. October 2002. (16) H. Auernhammer. The Role of Mechatronics in Crop Product Traceability. Club of Bologna. Vol. IV. October 2002. (17) B. Douthwaite. How to Enable Innovation. Vol. IV. October 2002. (18) L. Opara. Engineering and Technological Outlook on Traceability of Agricultural Production and Products. Vol. IV. December 2002. (19) Club of Bologna. Conclusions and Recommendations (traceability of agricultural production). Vol. IV. December 2002. (20) J. Reid. Sensors and Data collection. Power Point presentation. Club of Bologna. November 16, 2002. Vol. IV. December 2002.

url: http://hdl.handle.net/1813/122
date: 2004-06-11
creator: Zhu, B.;Zhou, X.;Zhang, L.;Zaske, J.;Yun, J.;Xiao, J.;Tewari, V.;Kobayashi, T.;Son, G.;Singh, G.;Singh, S.;Sims, R.;Sims, B.;Senzanje, A.;Scott, N.;Schueller, J.;Sarig, Y.;Reid, J.;Raghavan, G.S.V.;R. Dong;Peng, G.;Pellizzi, G.;Norris, W.;Macmillan, R.;Li, S.;Lee, I.;Kim, G.;Kang, C.;Jiang, E.;Jeun, J.;Jenkins, B.;Hou, J.;Fung, V.;Dhingra, H.;Clough, D. Gee;Bourarach, E.H.;Bodria, L.;Bazhal, M.I.;Ashburner, J.;Andrade, P.
viewed: 6573
title: CIGR E-Journal Volume 5
abstract: Rosana G. Moreira, Editor-in-Chief; Texas A&M University Peer Reviewed Original Research Articles(29:419 pages): (1) Z. Deng, Y. Sato, and H. Jia. Mapping Land Cover Patterns of Gunma Prefecture, Japan by Using Remote Sensing. Vol. V. January 2003. (2) J.J. Zonderland, H.M. Vermeer, P.F.G. Vereijken, and H.A.M. Spoolder. Measuring a Pig's Preference for Suspended Toys by Using an Automated Recording Technique. Vol. V. February 2003. (3) B. Umar. Comparison of Manual and Manual-cum-Mechanical Energy Uses in Groundnut Production in a Semi-arid Environment. Vol. V. May 2003. (4) A.E. Ghaly, M.S.A. Tango, and M.A. Adams. Enhanced Lactic Acid Production from Cheese Whey with Nutrient Supplement Addition. Vol. V. May 2003. (5) A.E. Ghaly and N.S. Mahmoud. Heat Generated by Mechanical Agitation and Lactose Metabolism during Continuous Propagation of Kluyveromyces fragils in Cheese Whey. Vol. V. May 2003. (6) S. Pedersen, P. Sousa, L. Andersen, and K.H. Jensen. Thermoregulatory Behaviour of Growing-Finishing Pigs in Pens with Access to Outdoor Areas. Vol. V. May 2003. (7) M-J. Cros, F. Garcia, R. Martin-Clouaire, and J-P. Rellier. Modeling Management Operations in Agricultural Production Simulators. Vol. V. May 2003. (8) K. Rosentrater. Performance of an Electrostatic Dust Collection System in Swine Facilities. Vol. V. May 2003. (9) T. Van Pelt. Maize, Soybean, and Alfalfa Biomass Densification. Vol. V. May 2003. (10) T.

Satake, O. Sataka, Y. Ohta, and T. Furuya. Optimal Layout Design for Agricultural Facility Using Simulated Annealing. Vol. V. May 2003. (11) Y. Fukumoto, H. Rom, and P. Dahl. Relationship Between Gas Depth Profiles in Compost Heap and Gas Emission. Vol. V. May 2003. (12) C. Ima and D. Mann. Lightbar Design: The Effect of Light Color, Lightbar Size and Auxiliary Indicators on Tracking and Monitoring Performance. Vol. V. June 2003. (13) B.Setiawan, T. Fukuda, and Y. Nakano. Developing Procedures for Optimization of Tank Model?s Parameters. Vol. V. June 2003. (14) K. Takayama, A. Konishi, and K. Omasa. Diagnosis of Invisible Photosynthetic Injury Caused by a Herbicide (Basta) with Chlorophyll Fluorescence Imaging System. Vol. V. June 2003. (15) F. Kumhala, M. Kroulik, and V. Prosek. Dependence of Conditioner Power Input on Mowing Machine Material Feed Rate. Vol. V. July 2003. (16) S. Soekarno and V. Salokhe. Soil Reactions on the Cage Wheels with Staggered Echelons of Half-width Lugs and Perfect Chevron Lugs in Wet Clay Soil. Vol.V. July 2003. (17) A. Campos, L. Pereira, J. Gonclaves, M. Fabiao, Y. Liu, Y. Li, Z. Mao, and B. Dong. Water Saving in the Yellow River Basin, China. 1. Irrigation Demand Scheduling. Manuscript LW 02 007. Vol. V. July 2003. (18) M. Fabiao, J. Gonclaves, L. Pereira, A. Campos, Y. Liu, Y. Li, Z. Mao, and B. Dong. Water Saving in the Yellow River Basin, China. 2. Assessing the Potential for Improving Basin Irrigation. Vol. V. July 2003. (19) S. Lynikiene and A. Pozeliene. Effect of Electrical Field on Barley Seed Germination Stimulation. Vol. V. August 2003. (20) C. Sorensen. Workability and Machinery Sizing for Combine Harvesting. Vol. V. August 2003. (21) C.Sorensen. A Model of Field Machinery Capability and Logistics:the Case of Manure Application. Vol. V. October 2003. (22) A. Tabatabaeefar, H. Aghagoolzadeh, and H. Mobli. Design and Development of an Auxiliary Chickpea Second Sieving and Grading Machine. Vol. V. December 2003. (23) M. Rodrigues, M. Borges, A. Franca, L. Oliveira, and P. Correa. Evaluation of Physical Properties of Coffee during Roasting. Vol. V. December 2003. (24) G. Zhang, A. Ikeguchi, J. Strom, S. Morsing, H. Takai, P. Ravn, and L. Okushima. Obstacle Effects on Airflow and Containment Dispersion around a Naturally Ventilated Livestock Building. Vol. V. December 2003. (25) Z. Tan, Y. Zhang, and S. Ford. Decay of Rotational Airflow with Flow Conditioner in Larger Diameter Ducts for Dust Concentration Measurement using Isokinetic Sampling. Vol. V. December 2003. (26) S. Hillegas nd A. Demirci. Inactivation of Clostridium sporogenes in Clover Honey by Pulsed UV-light Treatment. Vol. V. December 2003. (27) C. Puchalski, G. Brusewitz, and Z. Slipek. Coefficients of Friction for Apple on Various Surfaces as Affected by Velocity. Vol. V. December 2003. (28) A. Elhassan, A. Goto, and M. Mizutani. Effect of Conjunctive Use of Water for Paddy Field Irrigation on Groundwater Budget in an Alluvial Fan. Vol. V. December 2003. (29) S. Mukhtar, A. Rose, S. Capareda, C. Boriack, R. Lacey, B. Shaw, and C. Parnell. Assessment of Ammonia Adsorption onto Teflon and LDPE Tubing used in Pollutant Stream Conveyance. Vol. V. December 2003.... Invited Overview Articles(24:320 pages): (1) S. Sokhansanj, J. Cushman, and L. Wright. Collection and Delivery of Feedstock Biomass for Fuel and Power Production. Vol. V. February 2003. (2) M.O. Ngadi, M.I. Bazhal, and G.S.V. Raghavan. Engineering Aspects of Pulsed Electroplasmolysis of Vegetable Tissues. Vol. V. February 2003. (3) J. Zaske. Mechanization and Traceability of Agricultural Production: a Challenge for the Future System Integration and Certification. The Market Demand for Clarity and Transparency-Part 1. Club of Bologna. Nov 16, 2002. Vol. V. February 2003. (4) L. Bodria. System Integration and Certification. The Market Demand for Clarity and Transparency-Part 2. Club of Bologna. Nov. 16, 2002. Vol. V. February 2003. (5) A. Senzanje. Problems Faced and Advances Made by Agricultural Engineers in Southern and Eastern Africa. Vol. V. March 2003. (6) R. Macmillan with a book review by D. Gee Clough. The Mechanics of Tractor-Implement Performance. Vol. V. May 2003. (7) B. Sims. Draft Animal Power for Soil and Water Conservation in the Bolivian Valleys. Vol. V. June 2003. (8) P. Andrade and B. Jenkins. Identification Of Patterns of Farm Equipment Utilization in Two Agricultural Regions of Central and Northern Mexico. Vol. V. June 2003. (9) N. Scott. Consortium of U.S. Universities and Institutions in Cooperation with China for Agriculture. Vol. V. July 2003. (10) H. Dhingra, V. Tewari, and S. Singh. Discomfort, Pressure Distribution and Safety in Operator's Seat-A Critical Review. Vol. V. July 2003. (11) R. Sims. Climate Change Solutions from Biomass, Bioenergy and Biomaterials. Vol. V. September 2003. (12) G. Son, E.H. Bourarach, and J. Ashburner. The Issue of Crops Establishment in Burkina Faso Western Area. Vol. V. September 2003. (13)

X. Zhou, R. Dong, S. Li, G. Peng, L. Zhang, J. Hou, J. Xiao and B. Zhu. Agricultural Engineering in China. Vol. V. September 2003. (14) G. Singh. Population and Food Production: Prospects and Challenges for Asia. Vol. V. December 2003. (15) F. Lu. Precision Agriculture Development in Taiwan. Vol. V. December 2003. (16) E. Jiang. Agricultural Production and Research in Heilongjiang Province, China. Vol. V. December 2003. (17) I. Lee, C. Kang, J. Yun, J. Jeun, and G. Kim. A Study of Aerodynamics in Agriculture. Vol. V. December 2003. (18) V. Fung and B. Jenkins. Biomass Power Development for the Philippines. Vol. V. December 2003. (19) J. Reid, J. Schueller, and W. Norris. Reducing the Manufacturing and Management Costs of Tractors and Agricultural Equipment. Club of Bologna. Vol. V. December 2003. (20) J. Reid, J. Schueller, and W. Norris. Reducing the Manufacturing and Management Costs of Tractors and Agricultural Equipment. Power Point Slides. Club of Bologna. Vol. V. December 2003. (21) T. Kobayashi. Reducing the Manufacturing and Management Costs of Tractors and Agricultural Equipment. Club of Bologna. Vol. V. December 2003. (22) T. Kobayashi. Reducing the Manufacturing and Management Costs of Tractors and Agricultural Equipment. Power Point Slides. Club of Bologna. Vol. V. December 2003. (23) Y. Sarig. Traceability of Food Products. Club of Bologna. Vol. V. December 2003. (24) G. Pellizzi. Recommendations and Conclusions--2003. Club of Bologna. Vol. V. December 2003.

url: http://hdl.handle.net/1813/123
date: 2004-06-16
creator: Rizzo, Michael
viewed: 3945
title: A (Less Than) Zero Sum Game? State Funding for Public Education: How Public Higher Education Institutions Have Lost
abstract: This dissertation studies the long-term decline in state preferences for education spending in the United States. It constructs an expansive state-level panel data set spanning the fiscal years 1976-77 through 2000-2001 to examine how three budget share measures have changed within states over time and across states at a point in time. The share of state discretionary expenditures allocated to public education has fallen by four percentage points since 1977, while the share of public education expenditures allocated to public higher education has fallen by six points. In addition, the share of public higher education dollars appropriated to institutions (as opposed to directly to students) has fallen by four percentage points. Together the declines translate into real institutional appropriation losses of $2,800 per student in an ?average? state ? significantly more than the $1,700 increase in real average public four-year instate tuition rates since 1977.
Among the main findings are that competing budget items do not appear to ?crowd out? education?s budget share. Court mandated K12 funding equalization has resulted in substantial increases in education spending within states, with over a quarter of the increase coming at the expense of public higher education. Attempts by public institutions to increase tuition or raise private funds are seen to trigger a cycle of future budget share cuts, calling into question what institutions can do as they rapidly spiral toward the private ?high tuition? equilibrium. The sensitivity of higher education budget shares to observable state factors has increased over time and dynamic panel estimates indicate that states exercise more discretion over the determination of the higher education ? K12 split than over other budgetary decisions.
Three additional findings are noteworthy. First, cross-cohort ethnic heterogeneity increases have led to funding shifts away from higher education. Second, the surging popularity of targeted, merit student-aid programs appears to have been in an effort to redistribute income to economically well-off families. Third, as more households in a state become eligible to receive federal Pell grants, states move aid away from institutions and toward students ? sanctioning tuition increases to potentially capture increased student eligibility for federal grant aid.

url: http://hdl.handle.net/1813/124
date: 2004-06-17

creator: schneller, quinn;rounds, becky;pevsner, sam;greenberg, jason;gillen, kelly
viewed: 3750
title: Hearts Ablaze: Radio Frequency Ablation as Treatment for Cardiac Arrythmia
abstract: This project analyzes several of the parameters involved in the use of radiofrequency ablation (RFA) in the treatment of cardiac arrhythmia. Arrhythmia is an irregular beating of the heart that can be caused by improperly timed contractions within the heart, which can, in certain circumstances, be corrected by ablating tissue. One out of every five hundred people is born with an arrhythmia and others acquire the condition through heart disease. For heart attack victims, it is the most common cause of sudden death. RFA is a common way to treat serious arrhythmia cases by cutting the short circuit through the destruction of certain tissues. We used finite element analysis along with prototyping software to determine the duration of treatment, with special attention to the damage caused to surrounding tissue. We found that the optimal parameters for most effective treatment were to administer 30V for 120 seconds ? which happens to be the standard method of operation. This destroys the necessary part of the AV node while maintaining the surrounding tissue at relatively normal temperatures.

url: http://hdl.handle.net/1813/125
date: 2004-06-17
creator: Yang, Eric;Tu, Powen;Lee, Daniel;Keeley, Dan;Holihan, Rich
viewed: 2987
title: How Warm is an Igloo?
abstract: Homeostasis maintains the human body temperature within a few degrees of 37oC. However, in severe environments, such as a harsh winter blizzard, the body will not be able to maintain a 37oC temperature without the aid of clothes, shelter, and sources of heat. We find the Igloo, a shelter made of ice and snow, a very interesting means of maintaining body temperature. In this project, we have created a mesh of the Igloo system in GAMBIT and ran simulations in FIDAP to examine temperature variation and air flow inside of the igloo, when the human body is the only source of heat. In the steady state temperature profile obtained, areas of highest temperature were located directly around and above the human, and close to the top of the igloo, the temperature was 289K. The areas of lowest temperature were around 266 K, located at the bottom of the igloo farthest from the human. Natural convection caused the velocity of the air in the igloo to range from 0 to 9mm/s. The FIDAP analysis did not take into account radiative heat transfer, so a separate analysis was done, which revealed that there is considerable heat transfer through radiation in an igloo.

url: http://hdl.handle.net/1813/126
date: 2004-06-17
creator: Wynne, Joseph;Netravali, Nathan;Doerr, Georgr;Clark, Iain;Androlowicz, Julie
viewed: 3384
title: Hyperthermic Ablation of Hepatic Tumors by Inductive Heating of Ferromagnetic Alloy Implants
abstract: This study is an investigation into the ability of ferromagnetic thermal therapy to destroy cancerous hepatic tissue. Ferromagnetic rods are implanted in cancerous tissue and heated by induction. Increased temperatures result in tumor destruction. Because alloy implants are minimally invasive, used for multiple treatments and are temperature self-regulating, they represent a superior cancer treatment compared to many alternatives. The focus of modeling ferromagnetic thermal therapy will be to maximize tumor obliteration by considering heating temperature and the placement of alloy rods. Data on the efficacy of different Curie points and probe arrangements as well as sensitivity to variations in material properties are presented. Recommendations are made for the implementation of this treatment based on the modeled results.

url: http://hdl.handle.net/1813/127
date: 2004-06-17

creator: Jennifer, Lee;Jessica, Kadlec;Yen, Cu;Celia, Chan
viewed: 4456
title: Lord of the Mood Rings
abstract: Our main objective is to study the mechanisms by which heat transfer taking place in the human finger will affect the color change in the mood ring. This project uses GAMBIT and FIDAP to model the heat transfer from the finger to the ring. Finding the possible range of heat generations, one can estimate the temperature range of the surface and thus the best type of LC to be used in a ring. By determining the temperature in the ring at steady state the blood flow rate can be quantified, which will provide the required heat generation to change the mood ring to any desired color. We obtained several Q?s ranging from 6800 to 7200 W/m^3 appropriate to blood flow rate, and ambient conditions with no forced convection for the model. Further sensitivity analysis was done for selected data input, such as conductivity and source term, to assess their impact on the results. It was concluded that blood flow rate corresponding to the heat generation values used ranged from 0.245 to 0.265 cm^3/min. From the results it is recommended that the color change in the LCD crystal should be most sensitive over the range of 32 to 35 ?C.

url: http://hdl.handle.net/1813/128
date: 2004-06-17
creator: Nocerino, Christina;Rubin, Juli;Kimmel, Jeremy;Dines, Megan;Danny, Catropa
viewed: 3909
title: An Alternate Treatment for End Stage Coronary Artery Disease: Transmyocardial Laser Revascularization (TMR)
abstract: Coronary artery disease involves the buildup of plaque (from cholesterol) on the inside of the arteries, which limits the flow of blood through the vessel. Occlusion of these vessels leads to angina and ultimately to heart attacks. Several common treatments exist to reopen the arteries including angioplasty (with or without a stent), atherectomy, and laser ablation. However, surgical procedures are sometimes necessary and the available options are bypass surgery and transmyocardial laser revascularization, TMR. TMR is a procedure in which ten to forty 1mm channels are created in ischemic heart tissues, where the number of channels made varies from patient to patient based on their individual casesi. This procedure allows for oxygenated blood to flow into the heart and will also result in revascularization the deoxygenated heart tissuesi. This procedure was modeled using Gambit to create the mesh and FIDAP to model the diffusivity of oxygenated blood into deoxygenated heart tissue. The governing equations used to model the flow of oxygenated blood through the channel and diffusion of the oxygen into the deoxygenated tissue layer were the species and momentum equations. No reaction term was used in the species equation because it was assumed there was no elimination of oxygen by the tissue. A fully developed parabolic velocity profile was assumed in conjunction with the momentum equation. The initial conditions included an oxygen concentration of 0.2 ml 02/ml blood at the intake and 0.1 ml 02/ml blood in the deoxygenated muscle. The boundary conditions consisted of a constant zero flux at the top, left wall, right wall, and axis. The exit of the channel is free as is the blood/muscle interface because FIDAP will solve for the 02 concentration based on the other parameters that were specified. Based on this model, it is evident that oxygenated blood in the newly created channels does diffuse into the deoxygenated heart tissue. Although there is diffusion throughout the entire sample, the diffusion nearest the inlet is greatest and decreases along the length of the channel and radially outward from the channel as expected. In addition, the desired oxygen concentration, 80% saturationvii, was achieved at the channel-tissue boundary but not within the tissue layer. These results could be attributed to some of the assumptions that we were forced to make in modeling the procedure due to the limitations of the software in handling a two-phase model. However, with the optimal diameter found, 1.4 mm, and a closer channel spacing, a more optimal diffusion profile may be achieved.

url: http://hdl.handle.net/1813/129

date: 2004-06-17
creator: Davis, Patty;Bermudez, Claudia;gaborski, pam;vinegar, abby
viewed: 3243
title: Put Your Best Teeth Forward: A Mass Transfer Study of Crest Whitestrips
abstract: Crest Whitestrips are thin, liquid films adhered to a plastic exterior that can be applied directly to the tooth, enabling mass transfer of its active ingredient, hydrogen peroxide, to penetrate the tooth outer layer. The tooth outer layer consists of enamel and dentin. The goal of this study was to model the concentration of hydrogen peroxide as it moves through the gel tooth outer layer for a period of 30 minutes. GAMBIT was used to create a two-dimensional mesh modeling the three layers through which the hydrogen peroxide diffuses through: the gel, enamel and dentin. FIDAP was then used to model the process in which hydrogen peroxide moved through these three layers. A sensitivity analysis was performed varying the diffusion coefficients and reaction rate of hydrogen peroxide being used up. It was found that accurate values for all of these properties must be obtained in order to determine an accurate solution.

url: http://hdl.handle.net/1813/130
date: 2004-06-17
creator: Tsai, Chrissy;Wang, Jeff;Chow, Sharon;Jong Kim, Tak;Webster, Brad
viewed: 4204
title: In Vitro Scaffold Construction for a Bio-artificial Liver
abstract: The main focus of this investigation is to design a scaffold that will accommodate a growing Bio-Artificial Liver (BAL) with oxygen. The two design objectives are to find the maximum length and the distance between the artificial capillaries of the scaffold to provide adequate oxygen supply above 1.98 x 10-19 g/um3 to prevent hypoxia to the growing liver tissues. By utilizing industrial modeling software, FIDAP and GAMBIT, a model of a single capillary with liver tissue attached directly was constructed to simulate the oxygen delivery by means of diffusion and convection from the capillary wall to the tissue and the uptake by metabolism. From the results obtained, it was concluded that diffusion, not convection of the oxygen flow within the capillary was the dominant process of oxygen transport throughout the tissue. The maximum distance traveled into the tissue with capillary length of 60 ?m was 147 ?m from the capillary at the inlet side of the tissue while diffusion at the outlet tissue was at a modest 108 ?m. These values are unacceptable for the feasible construction of oxygen transport system solely based on diffusion. Thus, this investigation concludes that novel methods of greater complexity are needed to construct a more efficient and economically applicable oxygen delivery system for the mass production of bio-organs.

url: http://hdl.handle.net/1813/131
date: 2004-06-17
creator: Panda, Puneet;Siryk, Christina;Lokchander, Bina;Ruggles, Kelly;Ferullo, Julia
viewed: 5674
title: The Risks of LASIK Corrective Eye Surgery: A Mass Transfer Approach to a Universal Concern
abstract: The laser vision correction procedure, LASIK, requires a thin flap of the cornea to be created by a microkeratome knife. The focus of this project was to study and quantify the moisture loss from the tiny corneal flap using the concepts of mass transfer. Significant (10 fold) moisture concentration differences between the bottom and top surface of the corneal flap were observed, in conjunction with a strong dependence on the diffusivity of the flap as well as the length of the procedure time. Outer edges of the flap suffered the most water loss. Amount of moisture loss (85% in two minutes) in addition to the location(s) of "dry spots" were hypothesized to influence one of the few recurrent complications of LASIK, flap misalignment.

url: http://hdl.handle.net/1813/132
date: 2004-06-22

creator: Ardia, Daniel
viewed: 2791
title: INDIVIDUAL AND GEOGRAPHIC VARIATION IN LIFE HISTORY TRADEOFFS IN TREE SWALLOWS AND EUROPEAN STARLINGS
abstract: This work investigated individual and geographic variation in life history tradeoffs in tree swallows (Tachycineta bicolor) and European starlings (Sturnus vulgaris) by examining how breeding females make tradeoffs between current and future reproduction. In tree swallows, timing of breeding is a strong predictor of reproductive success, with early laying birds tending to have higher fitness than do later laying birds. Experimental manipulation of offspring numbers in Ithaca, NY, revealed that later-laying females raising enlarged broods showed significantly decreased cell-mediated immune responses to phytohaemagglutinin (PHA) and humoral responses to sheep red blood cells (SRBC) relative to higher-quality females. Nestlings in enlarged broods grew at slightly slower rates, but otherwise nestlings did not differ in offspring quality among groups, suggesting tree swallows are willing to trade immune self-maintenance for offspring quality.
The short-term stress of raising enlarged broods had long-term consequences. Females raising enlarged broods in year 1 mounted weaker secondary antibody responses to SRBC than did control females. Most importantly, females in year 2 that showed stronger secondary responses were more likely to return to breed for a third year.
A brood manipulation experiment was conducted at the extremes of the tree swallow range: Alaska and Tennessee. In Alaska, breeding females raising enlarged broods increased feeding effort, decreased immune responses and raised offspring in similar quality to unmanipulated broods. However, in Tennessee, females raising enlarged broods did not increase feeding effort and, consequently, did not show decreased immune function and raised lower quality offspring. Tennessee females returned to breed at higher rates than did Alaska females and maintained higher cell-mediated responses than did Alaska females, suggesting different resource allocation patterns.
To investigate offspring quality in more detail, a study was conducted to examine factors affecting nestling immune response in European starlings breeding in New Zealand. A split-nest cross-fostering brood manipulation revealed that nestling immune response was influenced by female genetic quality (in part through spleen size), maternal effects (in part through temperature conditions), and parental resource allocation (through residual body mass).
Overall, this research adds to our understanding of how individuals differ in the tradeoffs associated with reproduction and how these responses can lead to geographic differences in life histories.

url: http://hdl.handle.net/1813/133
date: 2004-06-28
creator: Brown, Douglas Ronald
viewed: 1251
title: A Spatiotemporal Model of Forest Cover Dynamics and Household Land Use Decisions by Subsistence Farmers in Southern Cameroon
abstract: Christopher B. Barrett, Richard N. Boisvert, James P. LassoieShifting cultivation is one of many phenomena involving the interaction of humans with their natural environment, for which the spatial and temporal dimensions are essential to understanding the system. As a spatiotemporal phenomenon, shifting cultivation uses forest resources to provide the means for human sustenance, both from the temporary use of patches of forest for agricultural production and from the harvest of non-timber forest products from that same mosaic of forest and agricultural land.
There are many factors that affect household decisions to clear forested land for cultivation as well as the permanence of land clearing (deforestation or temporary clearing). Even though subsistence households act independently, their individual decisions have a significant collective impact. Key to addressing the sustainable use of forest resources is a correct understanding of household decision-making and spatiotemporal dynamics.

The principal objective of this research is to investigate the spatial and temporal dynamics of forest use by subsistence agricultural households by developing a mathematical model that is able to mimic the spatial patterns (mosaic) of land use typical of subsistence agriculture in southern Cameroon.
More specifically, I develop a conceptual framework for the dynamic choice of spatial location for agricultural production. I investigate household preferences for particular characteristics of forest and fallow land for cultivation and predict them based on household socioeconomic characteristics. The resulting parameter estimates drive a structural simulation model that simultaneously models decisions in space and over time by a heterogeneous set of households representative of the study communities. The model is specified so that it can be adapted to different locations and their specific social and economic contexts. While the ultimate goal is to link the model developed herein to a larger model of livelihood choice at the household level, at its present level of development it provides significant insights into the spatiotemporal dynamics of forest use and shifting agricultural production. It is able to differentiate between the standard Boserup hypothesis of population-induced intensification and model other factors that have a significant impact at the village and household scale. Personal preferences over particular forest or fallow characteristics impact land use intensity. The model demonstrates the importance of path-dependency as a factor in the evolution of the forest-fallow-agriculture mosaic. Finally, I demonstrate its use for comparative dynamic analysis of the impact of exogenous economic shocks and alternate policy scenarios on households and the agriculture-fallow-forest mosaic.
Social Sciences and Humanities Research Council of Canada, Cornell University, European Union Tropical Forestry Budget Line support to the Alternative to Slash and Burn program (ASB) in Cameroon, International Institute of Tropical Agriculture Humid Forest Ecoregional Centre (IITA-HFEC) in Cameroon

url: http://hdl.handle.net/1813/134
date: 2004-07-06
creator: Ogawa, Akihiro
viewed: 2006
title: THE FAILURE OF CIVIL SOCIETY?: AN ETHNOGRAPHY OF NPOS AND THE STATE IN CONTEMPORARY JAPAN
abstract: This dissertation is an ethnographic study of the emergence of nonprofit organizations (NPOs), which have been proliferating in Japan since the passage of the Law to Promote Specified Nonprofit Activities (so-called NPO Law) in 1998. My research analyzes the dynamic micro-politics of everyday interactions between the state and ordinary people in the creation and ongoing activities of an NPO. It especially focuses on how different levels in the Japanese government shape these civil-society organizations into a structure that supports the state?s goals, and how people at the grassroots level respond to the state?s actions. Furthermore, this dissertation examines the meaning of civil society in an anthropological context. My approach explores the mutually constitutive roles of state and society, avoiding any easy essentialism or stereotyping of Japan?s social and political development, but it does aim at destabilizing some of the key assumptions regarding civil society.
Based on twenty months of ethnographic fieldwork, from September 2001 through April 2003, in Tokyo, I document the transition that Japanese society at a grassroots level has undergone since this epoch-making law allowed thousands of civic groups to be acknowledged as proactive participants in Japanese social and political life. My fieldwork involved intensive participant observation as an unpaid staff-researcher at an NPO promoting continuing education in the local community; this field research was supplemented by extensive interviews with NPO participants, Japanese NPO experts in academia, and government officials, attendance at workshops for NPO practitioners across the country, as well as discourse analysis of mass media coverage about NPOs. What I did not see was evidence of a transition, however. The state continues to be strong, and NPOs ? a product of the state?s deliberate institutionalization of civil society ? are now even synonymous with the state. The state is an unusually strong actor, retarding development of a healthy, dynamic civil society. The state is using underhanded tactics for institutionalizing civil society to meet its goals. The case

calls into question the relationship between state and society in contemporary Japanese life, and raises the issue of whether civil society can be created through the actions of the state.

url: http://hdl.handle.net/1813/135
date: 2004-07-06
creator: Sapra, Amar
viewed: 3232
title: On the Behavior of Price in a Supply Chain Market for Capacity
abstract: We are interested in the concept of dynamic pricing of production capacity in a supply chain and in particular, understanding how the supply chain structure might affect the volatility of capacity prices. We find that supply chains with high capacity costs will experience high price volatility.
We consider a continuous time market for a single homogeneous commodity. The market consists of two kinds of agents: sellers, who own capacity and incur short-term and long-term costs of updating capacity and earn their revenue through the sale of capacity to the second kind of agents, buyers, who hold inventory and satisfy the demand of end-consumers. The end-consumers and their interactions with buyers are an exogenous component of this model. We consider three different models that differ in the modelling of the end-consumer demand. In the first model, end-consumer demand is deterministic. We obtain closed form expressions for market capacity, production and equilibrium price.
We use the solution to the first model to analyze the second model in which end-consumer demand is the sum of a deterministic and a Brownian Motion component. Again, we obtain closed-form expressions for equilibrium price, production and capacity. We use the closed form solution of the equilibrium trajectories to obtain their variance and, subsequently, to analyze the impact of cost parameters on their variance. We find that the variance of the price increases as the short-term and long-term costs of changing capacity increase relative to the holding cost. We obtain similar results using a variation of the above model in which capacity of each seller is exogenously fixed.
In the third model, we incorporate the evolution of forecasts in the end-consumer demand model but fix the capacity of each seller. We find that the early learning of end-consumer demand results in early learning in the market price forecast process. We also find that the market cost parameters affect the rate of learning of the price forecast.

url: http://hdl.handle.net/1813/136
date: 2004-07-12
creator: Wobbrock, Nicholas;Taylor, Kristin;Ducharme, Richard;Lafrance, Tim;Sharma, Manish
viewed: 2836
title: Radiofrequency Ablation to kill Kidney Tumors
abstract: Radiofrequency ablation is a technique to destroy tissue cells by heating them above 460C. This method is specifically used in treating tumors smaller than 5 cm in diameter by placing the heated probe within the dysfunctional tissue mass. Depending on the size and shape of the tumor, the ideal time of treatment, voltage, and shape of probe required to eliminate the cells is decided. This study tested a spherical tumor with a 2 cm diameter to determine the best probe shape, voltage, and time of treatment to destroy cancerous cells while keeping surrounding tissue unaffected. Our results indicated that a lower voltage (0.27 volts) and a longer period of time (700 seconds) yielded the best results when using a T-shaped probe. These results account for the diffusion of the heat within the tumor cells while minimizing the damage to the surrounding tissue. Sensitivity analysis indicated that specific heat and tissue density had very small impact on the temperature profile.

url: http://hdl.handle.net/1813/137
date: 2004-07-12

creator: McWay, Michael;Nogal, Bartosz;Jain, Nieraj;Hogan, Chris;Cottrell, Jocelyn
viewed: 4441
title: Modeling Heat Flows in a Hibernating Black Bear
abstract: The American Black Bear (Ursus americanus) has the ability to sustain a high core temperature throughout the duration of its hibernation cycle, even as outside temperatures fall to -20?C. This ability is largely due the conversion of chemical energy into heat in specialized tissue known as brown fat. We demonstrate temperature variation in a hibernating black bear on a macroscopic scale, without attempting to demonstrate local temperature variation. In this first glimpse of the physical processes underlying thermoregulation in a hibernating black bear, we have incorporated heat generation within a layer of brown fat. Our model indicates that brown fat tissue is capable of providing the energy need to maintain a high temperature. However, our model also points to the importance of the thick fur layer, as well as that of the fat layer, in providing basic insulation. At steady state, a temperature drop of over 40?C occurs in these two layers, keeping the body core at a temperature high above that of the surroundings. Without the insulation provided by these essential layers, along with thermogenesis in brown fat, it is unlikely that the bear would survive a 100-day hibernation cycle.

url: http://hdl.handle.net/1813/138
date: 2004-07-12
creator: Yeung, Ophelia;Wong, Amy;Sakai, Yuichi;Ku, Cora
viewed: 4404
title: Temperature Profile Of the Brain During Suspended Animation
abstract: In most cases of serious truncal injuries, cardiac arrest occurs within minutes due the severe blood loss. Although many of these injuries are potentially repairable, death is often resulted from fatal brain damage due to insufficient supply of blood. Suspended animation (SA) is a way to preserve the whole organism by lowering brain temperature during prolonged cardiac arrest (often over one hour). A hypothermic flush of cold saline solution is administered through blood vessels to the brain. By lowering the rate of cerebral metabolic activity, damage to the brain is reduced and the brain can be preserved for later cerebral resuscitation. Current studies have focused on animals but no experiment has been implemented on humans yet. In our project, we use GAMBIT and FIDAP to model the temperature profile of the brain during suspended animation. A suitable model of saline flow through blood vessels in the brain is developed to determine how temperature in the outer brain region changes at any given time. From our model, the temperature in the outer brain quickly drops to 8?C after flushing a saline solution of 4?C. While saline is very effective in reducing outer brain temperature, the decrease in brain temperature can be adjusted by using saline solutions of different temperatures.

url: http://hdl.handle.net/1813/139
date: 2004-07-12
creator: Shauhgnesy, Michael;Watkins, Tara;Verma, Kush;Salter, Ben;Malvica, Erica
viewed: 3559
title: Cryopreservation of the Kidney: A Feasibility Study Based on Cooling Rates
abstract: This project models the cryopreservation of a kidney submerged in liquid nitrogen. Attempts to cryopreserve whole organs have been unsuccessful in the past due to the formation of ice crystals in the intracellular fluid, which cause damage to the cells. Damage can be avoided if cells are vitrified, which causes the intracellular fluid to form a glassy solid rather than ice crystals. The vitrification process is hard to achieve because it generally requires very high cooling rates, but it is aided by the addition of cryoprotectants. This study used Gambit TM and FidapTM software to model cooling rates using different concentrations of glycerol as a cryoprotectant. The concentrations of glycerol were varied to maximize vitrification, and thus cell survival. The results of this study show that the addition of cryoprotectant does alter the cooling

rate. Cells closest to the surface of the kidney would likely have been vitrified while cells closer to the center had a slower cooling rate and would most likely have formed ice crystals. Cell survival is predicted to be highest for the 2M concentration of glycerol; however, higher concentrations should be avoided to prevent cell toxicity.

url: http://hdl.handle.net/1813/140
date: 2004-07-12
creator: Yeang, Calvin;Kim, Hesed;Chu, Melvin;Chiu, Nicole;Buchwald, Steven
viewed: 4101
title: Cryopreservation of Umbilical Cord Tissue for Stem Cell Harvesting
abstract: Stem cell transplantation has become an important process used to treat patients with bone marrow diseases. When implanted into patients, stem cells from the umbilical cord have been found to successfully proliferate as new neurons and glia, thereby improving the patients? health. Neurons and glia are imperative for the health and normal function of our nervous system. Neurons are electrically active cells that can produce action potentials to transmit signals based on electrochemical impulses. Glia, which comprise a large part of our nervous systems (90% of the brain alone), were once dismissed as mere padding in the nervous system. However, it is now known that they are actually an integral component of the system, serving to facilitate and ensure the proper transmission of signals between neurons. Damage to or loss of neural cells, whether due to physical injury, removal (as in the case of cancer) or diseases such as Motor Neuron Disease (MND) and Parkinson?s disease is severely detrimental to one?s health. Using current tissue engineering technology, stem cells harvested from the matrix of the umbilical cord (known as Wharton?s Jelly), may be differentiated into neurons or glia, effectively replacing those that were lost or damaged. To ensure biocompatibility, umbilical cord matrix cells from direct relatives are used. Therefore, cryopreservation of these cells is imperative to the stem cell treatment to be used in the future. Our goal is to use FIDAP and GAMBIT software solutions and mesh to compare the effectiveness of glycerol, propylene glycol, and DMSO, three commonly used cryopreservatives, in order to determine the cryopreservation agent that will maximize viability of umbilical cord stem cells.

url: http://hdl.handle.net/1813/141
date: 2004-07-12
creator: Tsai, Christine;Munaretto, Joseph;Lee, Soyoon;Ho, Terence;Fung, Gloria
viewed: 5728
title: Transdermal Scopolamine Drug Delivery Systems for Motion Sickness
abstract: Transdermal drug delivery systems are involved in the continuous administration of drug molecules from the surface of the skin into the circulatory system. Such systems have proved advantageous for delivery of certain drugs, such as scopolamine, nicotine, nitroglycerine, and estradiol. Compared with oral administration, transdermal drug delivery offers better uniformity of drug concentrations in plasma throughout their duration of use. Scopolamine is the active ingredient in motion sickness medication that targets the nerve fibers in the inner ear. The scopolamine patch is effective for about three days, longer than if administered orally which is effective for only several hours. One of the main restraints of this transdermal system is its absorption through the skin, especially through the stratum corneum, its outermost part. This study examines the rate of diffusion of transdermal scopolamine across the skin and into the systemic circulation. Our objective is to optimize the drug delivery by way of a scopolamine patch by minimizing absorption rates, while maintaining its advantage of a long-term effect. A comparative study of the effects in the presence of penetration enhancers were undertaken to show how steady state is approached at different rates. The model we used does offer certain limitations, as diffusivity values specific to human skin and scopolamine are not readily available.

url: http://hdl.handle.net/1813/142
date: 2004-07-12
creator: Yau, Yuk Yee (Amy);Tran, Baotram;Tong, Anita;Lee, Jennifer;Fung, Evonne Yuewai
viewed: 2284
title: A Study of the Role of Therapeutic Contact Lenses in Drug Delivery
abstract: Glaucoma is an optical condition caused by pressure build up in the eye and is the leading cause of blindness. Current methods to treat glaucoma include medicated eye drops and oral medication, which are both inefficient methods of administration. Most of the medication in eye drops does not reach the target tissue. In addition, when taken orally, much of the drug circulates in the bloodstream instead of reaching the eye. This is a potential problem since drugs used to treat glaucoma, such as timolol maleate, are also prescribed to elevate hypertension. To avoid possible side effects, researchers have developed a novel method of drug delivery that involves enclosing the drug in the contact lens to be worn directly over the eye. The drug-encapsulated contact lens can deliver the drug to the target tissue more effectively. This paper focuses on the drug delivery of the therapeutic contact lens in the treatment of glaucoma using a computer-simulated model created by FIDAP, a computational fluid dynamic software. The problem is modeled as mass transfer of timolol maleate over four layers (lens, tear, cornea, and aqueous humor) of an axis-symmetric cylindrical slab. Results show that with an initial concentration of 7 mg/g contact lens in the contact lens, the minimum effective concentration of 1.8 ?g/mL is achieved in the aqueous humor layer after 45 minutes. The contact lens continues to deliver the drug into the eye at above this concentration for another 75 minutes before dropping below the minimum effective concentration at 1.5 hours. Sensitivity analysis shows that cornea diffusivity is the most important parameter in the solution.

url: http://hdl.handle.net/1813/143
date: 2004-07-13
creator: Sun, Mindy;Sterman, Sarah;Steck, Alaina;Pham, Hubert;Chin, Jonathan
viewed: 3440
title: Assessing the Effects of Icing the Body for 20 Minutes
abstract: Icing is one of the most inexpensive and convenient treatments available to reduce inflammation in sore and injured muscles. A commonly purported icing regimen follows a ?20 minutes on, 20 minutes off? cycle, so we investigated how much skeletal muscle cools during the 20-minute icing period. To model the temperature distribution, we used an axisymmetric geometry consisting of five layers: the ice, a plastic bag, skin, subcutaneous fat, and muscle. Our initial results showed cooling of the most superficial muscle tissue by approximately 15oC. We found that changes in properties such as density, specific heat, and conductivity did not affect temperature contours at the 20-minute time point; however, heating via perfusion, which was initially neglected, had a substantial effect on the final results. When blood flow was introduced into the model, the temperature of superficial muscle decreased only 3.5oC. We thus conclude that although icing is an effective means of cooling superficial layers of muscle, it is not particularly efficacious at increasing depths.

url: http://hdl.handle.net/1813/144
date: 2004-07-13
creator: Shih, Tsung Li;Picuri, John;Lee, Steven;Cheung, Edwin;Chen, Alan
viewed: 3810
title: Heat Transfer in Laser Tumor Excision
abstract: Cancer is an ongoing disease that is present in a majority of the population. Laser surgery provides minimally invasive techniques to excise tumors in humans. This method allows quicker recoveries and fewer complications. This study analyzes the effectiveness of excision of tumor tissue using a CO2 laser. By using computer aided design and finite element analysis, we model a cylindrical tumor tissue with 0.3cm in diameter and height. A flux of 282mmW from the laser and a convection coefficient of KmmW???26105

were applied when designing this model. Our results produced temperature contour plots at several time intervals, all showing precise laser excision with minimal inadvertent tissue damage (less than 0.006 mm in depth after excising approximately 0.15 mm of tissue in depth). Sensitivity analysis indicate that changes in material properties such as conductivity, convection, specific heat, density, and laser power have minimal affects on the temperature profile.

url: http://hdl.handle.net/1813/145
date: 2004-07-13
creator: Rand, Gabriel;Manos, Jamie;Kwon, Sang Yeon;Koetje, Bethany;Buchlis, George
viewed: 3591
title: Protecting Orange Saplings from Irreparable Frost Damage
abstract: Nocturnal frost and freeze damage can have a major impact on the survival and fruit production of young citrus trees. When temperatures fall below -4oC irreparable damage occurs. Because of this damage, many methods, including insulating sapling trunks and building soil banks have been used to help reduce the rate at which these trees lose heat in sub-zero conditions. This study focused on the effect a combined insulation-and-metal-stake method has on preventing frost and freeze damage of Washington Navel Orange saplings by looking at increase in trunk temperature using this system and comparing it to trunk temperatures in both an insulation only system and a bare tree system. It was found that the rod had little effect on trunk warmth but trunk insulation helped significantly ? the thicker and denser the insulation, the better.

url: http://hdl.handle.net/1813/146
date: 2004-07-13
creator: Minchoff, CJ;Di Iorio, Daniela;Clouser, Brian;Auerbach, Jon;Kwiatkowski, Peter
viewed: 5319
title: Ortho Evra: How Effective is the Patch in Women of Varying Weight
abstract: This study researched the birth control patch, Ortho Evra and the diffusivity of the hormones, ethinyl estradiol and norelogestromin, into the body through the epidermis. We modeled that all of the species that diffused through the epidermis was completely absorbed into the body. We found that our model validated the amounts given by Ortho Evra for drug release. However, many of the constraints and boundary conditions were taken from the Ortho Evra research information. Our study also analyzed the effectiveness of the hormone in women of varying weight, from 120 pounds to 198 pounds. Results indicated that the patch becomes less and less effective with increasing adipose tissue. This increase in adipose tissue results in a decreasing diffusivity value for the epidermis. Our study also researched the effects of incorrect usage of the Ortho Evra patch. We modeled the scenario of the patch falling off after a given time and the continued effectiveness of the drug. Our values imply that if the patch falls off the woman is not protected. The woman must restart the cycle in-order to reach steady state, which provides the needed amount of drug to be effective.

url: http://hdl.handle.net/1813/147
date: 2004-07-13
creator: Ramirez, Marina;Mullaney, Kerry;Cabrera, Edgar Allen
viewed: 2763
title: A Cryosurgical Approach to Lung Cancer
abstract: Lung cancer is the second leading cause of death in the United Statesi, presenting the need for more refined treatment options than traditional invasive surgery and chemo- and radiation therapy. This study investigates the use of less-invasive cryosurgery to effectively freeze and kill a cancerous lung tumor, 3mm in diameter, while minimizing peripheral tissue damage. A single, liquid-nitrogen filled probe is inserted into a lung tumor and maintained at a constant temperature of -190?C. The freezing front is monitored to

ensure cancerous cell death and prevent excessive damage to the surrounding healthy tissue. Based on data obtained by analyzing probe temperature, contact time and model sensitivity to variations in biomaterial properties, recommendations are made for surgical implementation: an initial contact time of 6 minutes followed by successively shorter application times. Additionally, further study designs are discussed to improve the quality of this treatment method and to ensure target outcomes with respect to tumor cell death and protection of healthy lung tissue.

url: http://hdl.handle.net/1813/148
date: 2004-07-13
creator: Aarismaa, Linda;Mathrani, Vikram;Benlifer, Adam;Su, Wan-Lin;Schweitzer, Andrew
viewed: 4150
title: Diffusion and Binding of Radio-Labeled Antibodies in a Tumor
abstract: With the decreasing cost of monoclonal antibody production, radioimmunotherapy (RIT) has rapidly emerged as one of the more promising methods of treating cancer cells. RIT makes use of radio-labeled monoclonal antibodies to detect and deliver controlled doses of radiation to malignant cells. The primary advantage of this method is that damage to normal, healthy tissue is minimized. We investigated the use of radio-labeled antibodies as a method of tumor destruction. Our primary interests were the rate of antibody diffusion into the tumor, the antibody binding kinetics, and the overall effectiveness of radioimmunotherapy given the rate of radioactive decay. By modeling the concentration of bound antibody with respect to time, we were able to optimize tumor destruction while minimizing the damage to the surrounding tissue. Our results show that a computer simulation using FIDAP is a time-saving, cost-effective method of obtaining quantitative results about the binding kinetics of antibody to tumor. In addition, we determined that while the binding specificity plays an important role in ensuring proper binding to the tumor, the rate of antibody to antigen complex formation does not affect the treatment and that this process is limited by diffusion. Given this fact, we recommend that low molecular weight antibodies be used because they will typically have higher diffusivities. In an example case of metastatic melanoma, we found that 4.33 mg of 188Re-6D2 complex would destroy the tumor in our model.

url: http://hdl.handle.net/1813/149
date: 2004-07-14
creator: Graham, Daniel Jacob
viewed: 1892
title: Efficient Retinal Ganglion Cell Coding and the Statistics of Natural Scenes
abstract: The structure of the early stages of the visual system is thought to be well-matched to the particular statistics that characterize the visual environment. Retinal ganglion cells in vertebrates and analogous retinal units in invertebrates show center-surround receptive field organization. Given that center-surround organization is observed across species (in multiple modalities as well), we seek a general explanation of the purpose of this unit, specifically in terms of spatial visual coding. Ganglion cell coding has been assumed to be well-matched to only the most rudimentary statistical regularities of natural scenes, namely the pairwise correlational structure of images. It has been proposed that ganglion cell receptive fields, when convolved with natural images, are theorized to produce a flat or whitened power spectrum for a range of frequencies. If the visual system were performing a spatial decorrealtion of ganglion cell outputs (presumably through lateral inhibition), it would give this type of whitened response (Atick and Redlich, 1992). But ganglion cell outputs are found to be highly correlated and furthermore, decorrealtion is insufficient to predict center-surround receptive fields. In this thesis, we present a coding strategy that employs phase-randomized receptive fields that produce the same degree of whitening as those modeled after real ganglion cells, with center-surround organization. The phase-randomized receptive fields do not resemble real ganglion cell receptive fields suggesting that there are other goals to ganglion cell processing. Results indicate that the sparseness of the

responses could be another goal of retinal coding since the center-surround receptive fields give a more sparse response than do the phase-randomized ones. The flat (whitened) response power spectra could be related to what has been called response equalization (Field and Brady, 1997), which refers to the notion that cells sensitive to different frequencies should have uniform response magnitudes. Using a vector-length sensitivity measure, we find that data recorded from single ganglion cells across the macaque retina (Croner and Kaplan, 1995) show a degree of response equalization (at least for parvocellular ganglion cells). Nonlinearities in the retina may also be related to efficient coding goals.

url: http://hdl.handle.net/1813/150
date: 2004-07-14
creator: Dunne, Lucy
viewed: 2519
title: The Design of Wearable Technology: Addressing the Human-Device Interface Through Functional Apparel Design
abstract: Wearable technology, as a new application environment for electronic and computing devices of all kinds, presents many new challenges to designers. The fields of human-computer interaction and functional wearability must each address new problems in the design of wearable technology. Wearable technology also introduces new social concerns, as it can mediate the ways in which an individual is perceived by others, interacts with others, and manages his/her own physical space.
Because the field of wearable technology is very new, the design of wearable technology is still relatively unexplored. The dominant design culture in current wearable technology research, that of electrical engineering and computer science, is unused to addressing variables related to the human body, mind, and social interaction. Good design choices for wearable technology depend on understanding and acknowledging the wide array of interdisciplinary variables that affect user interaction with a wearable device. The functional apparel design culture brings an interdisciplinary approach to wearable technology design, and its structured design process offers designers a means of organizing and addressing issues, and identifying new variables to be considered in future work. This thesis seeks to use the functional apparel design process to approach the new variables involved in the interface between the body-mounted device and the human user in three areas: an input device (a bio-monitoring bra), an output device (a shoulder pad vibrotactile display), and the aesthetic and psychological issues of visual representation of technology (a set of massage shirts). These projects address physical, cognitive, and social user needs in wearable technology.
The development of the shoulder pad vibrotactile display sought to create an intuitive, visually subtle, physically comfortable tactile display device within a standard garment insert, using the volume of the shoulder pad as an integration space. The evaluation process found the use of a pre-existing garment space such as the shoulder pad to be successful for the integration of electronics, and the device to be perceptible at a low level of resolution.
The bio-monitoring bra study evaluated several variables involved in the use of garment-integrated contact (not adhesive) electrodes for bio-monitoring, an input modality that creates a low cognitive load for the user. Garment-integrated electrodes were designed to replace the medical standard adhesive electrodes, to increase the physical and social comfort of the user. Contact electrodes were tested in both an EMG (muscle activity) configuration and in an ECG (heartbeat) configuration. The ECG configuration recorded a useable signal during periods of low activity level, but the EMG configuration was not able to capture useful muscle activity data.
A set of massage shirts was developed to investigate the varying social needs of users regarding the visual display of garment functionality. Two focus groups were conducted, and an application was chosen (shoulder and back massage) that was attractive and useful to subjects with a wide variety of personality types and aesthetic tastes. Three prototypes were constructed, with the same vibrating shoulder and back massage, but with the embedded technology concealed or displayed to varying degrees. These prototypes were evaluated,

to determine the relationship between subject self-perceived personality and desire to conceal or display technology. Results showed the application to be attractive to most users, and aesthetic needs to be quite varied, even within an individual.
The functional apparel design process, as well as the knowledge and intuition about the body interface gained from the study of functional apparel design can help to broaden the scope of interdisciplinary variables considered in the design of wearable technology, and thereby produce a more successful design.The College of Human Ecology, Cornell University
The International Textiles and Apparel Association
The Department of Textiles and Apparel, Cornell University

url: http://hdl.handle.net/1813/151
date: 2004-07-15
creator: Beckwitt, Kale
viewed: 2179
title: STATIONARY AND NON-STATIONARY CASCADED INTERACTIONS IN QUADRATIC NONLINEAR OPTICAL MEDIA: THEORY AND APPLICATIONS
abstract: Committee members: Frank W. Wise, Albert Sievers, and Tomas Arias This thesis presents experimental and theoretical investigations of processes involving the propagation of short optical pulses in second order nonlinear materials. Since pulse propagation in these materials involves the nonlinear coupling of fields at different frequencies, the dynamics are rich, supporting a wide variety of nonlinear processes.
In the limit that an effective Kerr nonlinearity is produced, we demonstrate compensation for cubic nonlinearities in space and time with negative Kerr-like quadratic phase shifts. Self-focusing and self-phase modulation from Kerr nonlinearities typically limit the energy and beam quality from high power lasers, and their compensation allows for significant improvements in both parameters.
We next present theoretical results on the formation of optical solitons in quadratic media --- fields of light that propagate stably (or ``breath'' periodically) due to a robust balance between linear broadening and nonlinear confinement. We are interested in multidimensional solitons in space and time, with the eventual goal of producing ``light-bullets:'' fields confined in all transverse dimensions. Spatiotemporal solitons provide a natural system in which to observe new effects related to soliton propagation and interactions, with direct applications to optical signal transfer and processing. Recent experiments by our group demonstrate quadratic solitons in time and one spatial dimension, but are not extendible to three-dimensions due to the material systems used. We theoretically demonstrate a quadratic system in which light-bullets are possible and point a way to their observation. This is the only currently recognized optical system where stable light-bullets are predicted.
Finally, we present a new type of cascaded interactions: nonlinear \emph{frequency} shifting in the limit in which temporal walkoff between the nonlinearly coupled fields significantly affects their propagation dynamics. Previous applications of cascaded nonlinearities saw temporal walkoff as detrimental and found ways to mitigate its effects. We develop a theoretical model for cascaded interactions with significant walkoff and show that non-instantaneous nonlinear responses are possible, producing controllable nonlinear frequency shifts with strong analogs to Raman-scattering in cubic materials. These frequency shifts are analyzed theoretically and experimentally and their applications from low energy frequency shifting for optical communications to compression of high energy pulses are discussed and demonstrated.National Science Foundation, National Institutes of Health, Binational (U.S.-Israel) Science Foundation

url: http://hdl.handle.net/1813/152
date: 2004-07-15
creator: Thom-Santelli, Jennifer
viewed: 3041

title: Effects of a Multitouch Keyboard on Wrist Posture, Typing Performance and Comfort
abstract: Alan Hedge, Geri Gay
The design of computer keyboards is rapidly evolving as portable computing becomes increasingly ubiquitous due to wireless networking and the increased popularity of personal digital assistants and notebook computers. However, there is a balance between mobility and productivity, in terms of text-entry accuracy and speed, which needs to be maintained as computer keyboards become smaller and slimmer through the introduction of ultra low-profile designs. In addition, the ergonomic benefits, in terms of the reduction of awkward wrist postures and user comfort, of ultra-low profile designs are unclear.
This study tests a new prototype ultra-low profile MultiTouch keyless keyboard (MTK) that uses a MultiTouch surface to create an extremely thin typing environment that requires no force to register a keystroke and allows mousing and gestural input on the same surface. In this study, the MTK was tested against a conventional keyboard (CK) for typing speed, accuracy, wrist postures and user comfort. It was hypothesized that the lack of key travel would increase speed and accuracy, while the ultra-thin design would reduce the amount of wrist extension, which could decrease the risk of a wrist injury or other hand and wrist musculoskeletal disorder. Finally, it was hypothesized that there would be a significant short-term learning effect on typing speed and accuracy for the MTK.
A laboratory experiment was conducted with 6 males and 6 females typing using two QWERTY keyboard designs: a CK and a MTK. Subjects visited the lab for 1.5 hours for 2 non-consecutive days in the same week, for a total of 3 hours. Each visit consisted of eight randomly assigned 7.5-minute typing tasks of text passages of similar difficulty and identical length.
Quantitative measures of typing speed and accuracy were collected using Typing Quick and Easy 13.0 and qualitative measures of user preference and comfort were gathered by self-report questionnaires. A wrist glove electrogoniometer system was used to record right-hand wrist positioning data, which was analyzed to assess the risk of injury. The two keyboards were evaluated in a repeated measures within-subjects factorial design.
Subjects, typed slower ($F_{1,11} = 41.86$, $p=0.000$) and less accurately ($F_{1,11} = 23.55$, $p=0.001$) on the MTK during the typing tasks. Subjects preferred the CK and reported a higher level of ease ($F_{1,11} = 49.732$, $p=0.00$) and enjoyment ($F_{1,11} = 51.129$, $p=0.00$) during its use.
Mean wrist extension was lower for the MTK ($F_{1,11}= 10.205$, $p=0.000$) while radial and ulnar deviation did not differ significantly between the two keyboards. The MTK had a lower percentage of highest-risk wrist extension ($F_{1,11}= 6.437$, $p=0.028$), and conversely, a higher percentage of neutral wrist posture ($F_{1,11}= 12.947$, $p=0.004$).
A significant positive linear trend was observed across the within-subjects scores for speed ($F_{1,11}= 9.308$, $p=0.011$) and accuracy ($F_{1,11}= 11.903$, $p=0.005$) across tasks in the MTK condition.
Limitations to this study include practice effects, due to the naive subjects' lack of training on the MTK and the limited duration of exposure to this novel keyboard. Fatigue effects may have also been a factor, even though the experimental conditions were spread out over two non-consecutive days in the same week.
Future research directions include additional testing of the unique mousing and gestural capabilities of the MTK. Other research suggests that practice and extended exposure to the MTK may raise performance to comparable levels associated with CK devices.College of Human Ecology, Cornell University

url: http://hdl.handle.net/1813/153
date: 2004-07-16
creator: Ng, Yu-Chung
viewed: 3308
title: Improving Machine Learning Approaches to Noun Phrase Coreference Resolution
abstract: Human speakers generally have no difficulty in determining which noun phrases in a text or dialogue refer to the same real-world entity. This task of identifying co-referring noun phrases --- noun

phrase coreference resolution --- can present a serious challenge to a natural language processing system, however. Indeed, it is one of the critical problems that currently limits the performance of many practical natural language processing tasks.
State-of-the-art coreference resolution systems operate by relying on a set of hand-crafted heuristics that requires a lot of time and linguistic expertise to develop. Recently, machine learning techniques have been used to circumvent both of these problems by automating the acquisition of coreference resolution heuristics, yielding coreference systems that offer performance comparable to their heuristic-based counterparts. In this dissertation, we present a machine learning-based solution to noun phrase coreference that extends eariler work in the area and outperforms the best existing learning-based coreference engine on a suite of standard coreference data sets. Performance gains accrue from more effective use of the available training data via a set of linguistic and extra-linguistic extensions to the standard machine learning framework for coreference resolution.

url: http://hdl.handle.net/1813/154
date: 2004-07-16
creator: Greenberg, Noam
viewed: 2581
title: The role of true finiteness in the admissible recursively enumerable degrees
abstract: When attempting to generalize recursion theory to admissible ordinals, it may seem as if all classical priority constructions can be lifted to any admissible ordinal satisfying a sufficiently strong fragment of the replacement scheme. We show, however, that this is not always the case. In fact, there are some constructions which make an essential use of the notion of finiteness which cannot be replaced by the generalized notion of alpha-finiteness. As examples we discuss both codings of models of arithmetic into the recursively enumerable degrees, and non-distributive lattice embeddings into these degrees. We show that if an admissible ordinal alpha is effectively close to omega (where this closeness can be measured by size or by cofinality) then such constructions may be performed in the alpha-r.e. degrees, but otherwise they fail. The results of these constructions can be expressed in the first-order language of partially ordered sets, and so these results also show that there are natural elementary differences between the structures of alpha-r.e. degrees for various classes of admissible ordinals alpha. Together with coding work which shows that for some alpha, the theory of the alpha-r.e. degrees is complicated, we get that for every admissible ordinal alpha, the alpha-r.e. degrees and the classical r.e. degrees are not elementarily equivalent.

url: http://hdl.handle.net/1813/155
date: 2004-07-23
creator: McDonald, Eric John
viewed: 2456
title: Synthesis of Translinear Analog Signal Processing Systems
abstract: Even in the predominantly digital world of today, analog circuits maintain a significant and necessary role in the way electronic signals are generated and processed. A straightforward method for synthesizing analog circuits would greatly improve the way that analog circuits are currently designed. In this dissertation, I build upon a synthesis methodology for translinear circuits originally introduced by Bradley Minch that uses multiple-input translinear elements (MITEs) as its fundamental building block. Introducing a graphical representation for the way that MITEs are connected, the designer can get a feel for how the equations relate to the physical circuit structure and allows for a visual method for reducing the number of transistors in the final circuit. Having refined some of the synthesis steps, I illustrate the methodology with many examples of static and dynamic MITE networks. For static MITE networks, I present a squaring reciprocal circuit and two versions of a vector magnitude circuit. A first-order log-domain filter and an RMS-to-DC converter are synthesized showing two first-order systems, both linear and non-linear. Higher order systems are illustrated

with the synthesis of a second-order log-domain filter and a quadrature oscillator. The resulting circuits from several of these examples are combined to form a phase-locked loop (PLL). I present simulated and experimental results from many of these examples. Additionally, I present information related to the process of programming the floating-gate charge for the MITEs through the use of Fowler-Nordheim tunneling and hot-electron injection. I also include code for a Perl program that determines the optimum connections to minimize the total number of MITEs for a given circuit.NSF Career award CCR-9984625

url: http://hdl.handle.net/1813/156
date: 2004-07-26
creator: Rice, Elizabeth
viewed: 2377
title: Conservation and Change: A Comparison of In-situ and Ex-situ Conservation of Jala Maize Germplasm in Mexico
abstract: Conservation of agricultural genetic diversity is necessary as a source of variation for breeding and selection efforts. Traditionally, conservation efforts focus on the maintenance of diversity both in genebanks (ex-situ) and on farm (in-situ). This study takes an interdisciplinary approach to understanding in-situ and ex-situ conservation of Jala, a gigantic Mexican variety of maize (Zea mays).
To understand the social and policy context of Jala farmers? conservation decisions, a formal, random survey of 79 households was undertaken. In the past, 77% of farmers grew Jala. Today, 19% of farmers plant Jala on only 5% of the cultivated maize area. Jala growers are ?generalists,? older farmers, seed keepers with larger landholdings, diversified in many income-producing activities, with small Jala plots for household consumption and local sale; or ?specialists,? younger farmers, less likely to save seed, with smaller landholdings, heavily (75% of area) committed to Jala. To date, Jala has been effectively conserved in farmers? fields; conservation will likely continue as long as farmers have an economic incentive to do so.
To understand the genetic effects of in-situ and ex-situ conservation, a diversity study was performed using 22 microsatellite (SSR) markers. Populations studied included Jala from farmers? fields, genebank Jala, other maize races, and teosinte (Zea spp.). Farmers? Jala populations were highly diverse but not highly differentiated (Fst <0.05), indicating the unit of conservation is likely the valley, not an individual farmer. Older Jala genebank populations were less diverse and more differentiated from recent Jala, perhaps due to genebank collection and regeneration methods. Jala?s allelic profiles remained stable from 1944 to 1999. Therefore, Jala appears to have been well-conserved both in-situ and ex-situ.
By resampling the above data (1000 bootstraps), optimal sample size was evaluated. The number of individuals for accurate measurement of allele number (An), gene diversity (He) and population differentiation (Fst) were small. Unexpectedly, population category?whether Jala from the genebank or teosinte?had little effect on optimal sample size.
Studying populations derived from advanced generations of the hybrid variety Dekalb 880 showed gene flow in the valley. These populations represent a reservoir of conserved traditional Jala genetic material.

url: http://hdl.handle.net/1813/157
date: 2004-07-26
creator: Kulkofsky, Sarah Christine
viewed: 3190
title: When it comes to faces bad information may not be so bad: The effects of post-event information on line-up identification
abstract: Master's thesis in the field of Human DevelopmentThis study sought to replicate and extend what little is known about the effect of misleading post-event information (aka the misinformation effect) with regards to facial identification. One-hundred eleven undergraduate students viewed a video of a staged crime and were then given newspaper articles containing misleading, non-misleading, or no information about

the appearance of the perpetrator. Participants were then tested with either a target-absent line-up, where all individuals matched the misleading description of the perpetrator, or a target-present line-up, where all individuals matched the non-misleading description. Two main findings were obtained. First, misinformation did not impair line-up performance. However, participants receiving any (even misleading) facial information outperformed those participants receiving no information. These results suggest that in some cases, verbal misinformation may facilitate memory. Furthermore, they suggest that while perceptual misinformation may not easily impair visual memory, contextual information can.Funded through a grant from the The College of Human Ecology Graduate Student Research Awards Fund.

url: http://hdl.handle.net/1813/158
date: 2004-07-26
creator: Pasupathy, Abhay N.
viewed: 2934
title: Electron Transport in Molecular Transistors
abstract: In this thesis I will describe the conductance properties of certain organic molecules.
I will first show that two metal electrodes can be fabricated with a nm-scale gap between them by causing electomigration-induced failure in a nanoscale wire. These two electrodes are separated by a few nanometers from a metallic gate electrode. Organic molecules can be incorporated into the gap between the electrodes creating a transistor geometry.
Transport measurements on metal-organic complexes at low temperatures show Coulomb blockade and Kondo-assisted tunneling. Using the specially designed molecule C$_{140}$, I have studied the coupling between the vibrational modes of the molecule and electron flow through transistors made from it.
I have also been able to make magnetic electrodes to pass spin-polarized current through molecules. Using this, I have studied the coexistence of the Kondo effect and ferromagnetism in the electrodes.
I have also modified the technique to have a mechanically adjustable distance between the two electrodes, which is useful for studying the influence of the contact on the conductance of a device.

url: http://hdl.handle.net/1813/160
date: 2004-07-27
creator: Onion, Alene
viewed: 2103
title: Herbivore resistance in inavasive and native Myriophyllum spicatum and Myriophyllum heterophyllum
abstract: Committee members: Nelson Hairston Jr., Paul Feeny, Elisabeth GrossInvasive plant species are increasing worldwide and often have significant impacts on local ecosystems. Many attempts have been made to use augmented herbivore populations as a biological control of nuisance populations, however, the success of these efforts has been variable. One character which can affect the success of these biological controls is the expression of plant herbivore resistance. In this study I examined inducible and constitutive herbivore resistance in native and invasive samples of the aquatic angiosperms, Myriophyllum spicatum and Myriophyllum heterophyllum.
M. spicatum is native in Europe, Asia and north Africa and invasive in much of North America. When fed on by the ecologically significant herbivore, Acentria ephemerella, M. spicatum plant tips changed from green to red with a simultaneous structural change from closed upward pointing leaves to open drooping leaves. A similar response was observed in this study when native and invasive M. spicatum plant tips were exposed to jasmonic acid, a plant hormone known to stimulate the expression of plant defensive genes. A. ephemerella fed plant tips exposed to jasmonic acid had reduced growth compared to individuals fed unexposed plant tips indicating the induction of herbivore resistance. Not all of the herbivore resistant traits we examined, however, were induced by jasmonic acid. Total phenolics and tellimagrandin II concentrations were not affected by

jasmonic acid and changes in nitrogen concentrations were inconsistent. Tissue reddening, in part caused by decreased chlorophyll and increased anthocyanin concentrations, was consistently induced and may affect the visibility of herbivores in the field. However, this trait can not explain the reduced herbivore growth so it is likely that other herbivore-resistant traits, not examined in this study, were induced in M. spicatum.
M. heterophyllum is native to North America (except New England) and has invaded many New England and European lake ecosystems. When exposed to jasmonic acid in this study, concentrations of total phenolics, and an unknown phenolic compound were increased and nitrogen concentrations were decreased. These induced plant tips reduced the growth of feeding A. ephemerella. This response, however, was only observed in German (invasive) M. heterophyllum and not in samples from Maine (invasive) or New York (native). The constitutive expression of traits presumed to confer herbivore resistance was also significantly different among invasive and native populations. Maine had significantly higher concentrations of total phenolics and the unknown phenolic was only present in German M. heterophyllum. These differences in constitutive and inducible herbivore resistance among native and invasive M. heterophyllum populations may be a result of rapid evolution of invasive populations or their hybridization with native Myriophyllum species.
The constitutive and inducible herbivore resistance of M. spicatum and M. heterophyllum shown in this study would have a negative impact on biological control species which has not previously been considered by lake managers. Furthermore, differences in the expression of herbivore resistance among invasive and native populations of M. heterophyllum may partially explain the variable success of this invasive species.
Deutsche Akademische Austauschdienst, German Science Foundation

url: http://hdl.handle.net/1813/161
date: 2004-07-28
creator: Goorha, Saurabh
viewed: 3103
title: An experimental study analysing effect of communication medium and motivation on deception detection in interpersonal dyadic interactions
abstract: Jeffrey T. Hancock, Joe Walther, Michael ShapiroThis thesis reports an experimental study that examines the role of communication medium and liar motivation on deception detection. Participants were randomly assigned to one of two dyadic communication conditions, text-based instant messaging or face-to-face, and to one of two motivation conditions, high or low. Participants engaged in a discussion of four topics, in which one participant was deceptive during two topics and truthful during the other two. No main effect of communication medium or motivation level was observed. However, an interaction effect suggests that highly motivated liars interacting in an instant-messaging medium were the most successful in deceiving their partners. The implications of these results are discussed both in terms of the elimination of nonverbal cues and the potential advantages offered by text-based communication settings to the motivated liar.

url: http://hdl.handle.net/1813/162
date: 2004-07-28
creator: Belsito, Anthony
viewed: 3986
title: Open Pollinated Corn Variety Trials and a Discussion of the Practical Implications for Open Pollinated Corn in Small Scale Whiskey Production
abstract: The goal of this study was to assess the feasibility of producing open pollinated (O.P) corn varieties as a grain source for the production of specialty whiskies. Low profit margins on corn grain as a commodity make it difficult for small to medium size farmers to grow corn competitively. Such farmers could benefit from a cash crop that could offer a higher profit margin. There is current popular interest in heirloom (old-time) grains, including O.P varieties. This may provide an opportunity for a distiller to develop a market for a specialty whisky using O.P. varieties. An advantage for O.P corn as a specialty crop for corn growers is the

similarities in equipment, cultural practices, and inputs. No major conversion is needed.
Field studies were initiated to determine the production potential and reliability of O.P. varieties in New York environments, and to identify the best varieties. Comparative yield trials were conducted over two growing seasons in various locations. Varieties were selected on the basis of anticipated adaptation to New York growing conditions, potential for grain production and commercial availability of seed.
In 2001, seventeen open pollinated varieties along with a modern hybrid check were tested at Aurora, (central) and Kingston, (eastern), NY. In 2002, twenty varieties were planted at Aurora. Those considered earlier varieties were also planted at Bliss, (western). Also, in 2002, later varieties were planted at Kingston, and Pittsford, (western).
All trials were set up in randomized complete block designs. Treatments consisted of two adjacent rows of each variety with approximately 36-40 seeds planted within each block. Each trial consisted of three blocks. The plots were thinned to a density of 18,000 plants/acre.
Several major obstacles were observed First, yields of O.P. varieties were lower and more variable than yields of hybrids. The mean corn yield in bushels for New York State is 100.7 bu/acre (www.nass.usda.gov) averaged over the three years. (1999-2001). Many of the varieties in these trials occasionally performed at or above this level, but none consistently, except the hybrid checks. Stalks were also weak, blowing down in winds, and making harvest difficult. Perhaps most significantly, the data showed wide variation in variety performance between years and locations, even among the same varieties.
Premium alcoholic beverage producers could tolerate high O.P. grain costs if they could develop a market for a high value specialty whiskey featuring an O.P. corn source. However they would need reliable grain supplies. In these studies O.P. corn production was erratic, and not dependable from year to year, or site to site. This lack of dependability would present an unacceptable business risk.
One possible solution might be to develop a product based mostly on readily available, inexpensive hybrid corn grain, mixed with a small amount of open pollinated grain.
If a business plan could be developed that protects against fluctuations of availability, the concept of using O.P. corn to differentiate a small batch premium alcoholic beverage might have potential for success. This could provide employment in the processing, distilling and bottling processes. And O.P corn might provide a profitable niche crop for a limited number of corn growers.

url: http://hdl.handle.net/1813/163
date: 2004-07-29
creator: Day-O'Connell, Sarah
viewed: 2711
title: Anatomy, Industry, and the English Canzonet (1770-1820): Placing Women in the Private Sphere
abstract: Committee: Neal Zaslaw, Chair; Judith Peraino; Annette Richards; James WebsterIn late 18th-century England, scientists and artists alike sought doctrines that would elaborate a set of "fundamental" feminine attributes justifying women's restriction to the private sphere. Through musical analysis and readings of contemporary literary and popular-print culture, this dissertation shows how the English canzonet (a genre of domestic song known today primarily through Haydn's two sets, but which was then widespread and popular) reflected medical and industrial discourses about gender, and through these "public sphere" discourses, helped to fix women within the private sphere.
Part One describes the social circles in which cross-fertilization of musical and scientific-industrial ideas took place. There, canzonets were understood not only to hold domesticating properties, but to communicate "authentic" sentiments, making them ideal vehicles for the expression of the "truth" about women.
Part Two examines intersections between canzonets and the newly-mobilizing discipline of anatomy, describing a fascination with "beautiful death" and "uncertain death" as common interests between the two cultural realms. These conceptions of death combined to assert an ostensibly elevated status for women but concomitantly defined them in terms of committed love that survived even the end of life. In this context,

sighs, both textual and musical, drew attention to women's bodies, opposing them to reason and tying them to domesticity.
Part Three considers canzonets in light of tensions between industrial and pre-industrial conceptions of time. The linkage in song between women and time, when time itself was taking on features of commodification, resulted in an endlessly reiterated performance of women's reification as an object of consumption, an apt maneuver for the "marriage market" setting of the drawing room. In sung nostalgia for "old" time, meanwhile, women were apparently empowered to resist the incessant forward motion of mercantile time and the perpetual demand for originality characteristic of the industrial age. And yet, the fact that this notion of time was nostalgic and old-fashioned signaled women's disenfranchisement from a progress-centered, public-sphere orientation.
Part Four chronicles and explores the significance of the genre's migration to the realms of masculine, virtuoso display and devout church music. The Appendix provides a checklist of canzonets held in the British Library.
Mario Einaudi Center For International Studies
Lewis Walpole Library Fellowship

url: http://hdl.handle.net/1813/164
date: 2004-07-29
creator: Werner, Gregory Richard
viewed: 3072
title: Probing and Modeling Voltage Breakdown in Vacuum
abstract: Hasan Padamsee, David Rubin, David Hammer Voltage breakdown limits many technologies that rely on strong electric fields. Although many kinds of voltage breakdown have been well-explained, voltage breakdown in vacuum--the sudden transition from vacuum insulation to vacuum arc--remains relatively poorly understood. Despite the importance of vacuum insulation, technology has hardly improved breakdown voltages in the last ninety years. This work describes experiments in vacuum breakdown, as well as computer simulations of the initial stages of breakdown.
A better understanding of voltage breakdown could particularly benefit particle accelerators used for high energy physics experiments and radiation sources, which require the highest attainable electric fields in the microwave resonators that accelerate particles. Despite some differences, voltage breakdown in microwave resonators shares some features with breakdown in DC vacuum gaps (diodes). In both cases, the localized desorption of gas around an electron emission-source (e.g., field emission) could lead to breakdown. Analytical calculation shows that breakdown occurs when the product of the gas density and emission current exceed a critical value.
Voltage breakdown in vacuum results from the interaction of the electric field and the electrodes. Using a scanning electron microscope, with energy dispersive x-ray spectroscopy (EDX) and Auger electron spectroscopy (AES) to identify surface constituents, we found that breakdown occurs often at the site of foreign particles on the cathode, usually leaving only a very small trace of the original material. At the breakdown site we frequently found small craters, surrounded by a large starburst-shaped pattern; surface analysis suggests that during breakdown, ions bombard the surface within the starburst region and sputter away surface contaminants and oxides. In general, particulate contamination on the cathode determines the breakdown voltage, independent of the cathode material or the thickness of the insulating surface oxide; however, the oxide thickness does change the nature of the starburst and the damage done to the surface during breakdown.National Science Foundation

url: http://hdl.handle.net/1813/165
date: 2004-07-29
creator: Lembo, Arthur J. Jr.
viewed: 17435

title: How Do I Do This in ArcGIS/Manifold?: Illustrating Classic GIS Tasks
abstract: A print on demand of these books and articles can be obtained from Cornell Business Services (CBS) Digital Services by sending e-mail to digital@cornell.edu or calling 607.255.2524. In the body of the message include the identifier.uri for the book or article, and ask to be contacted regarding payment.In 1988, the United States Geological Survey (USGS) created a classic document titled "The Process for Selecting Geographic Information Systems" (Guptil, et. al., 1988). The document provided an overview of the process for selecting geographic information systems, in addition to a checklist of functions that a GIS should include. The functions were broken into five separate categories: user interface, database management, database creation, data manipulation and analysis, and data display and presentation. The document became required reading for those involved in the selection of GIS, and was often used as a supplementary checklist in competitive benchmarks of GIS software. Although the document is over 15 years old, many of the functions listed are still relevant today, and represent some of the most commonly used features within GIS. In fact, the document was so forward thinking that most GIS software products are still unable to perform all the tasks listed.
Therefore, this document attempts to illustrate the GIS processes listed in the USGS document using two popular GIS software systems: ArcGIS 8.3 and Manifold 6.0. While the document does illustrate the steps required to complete the classic GIS tasks in a side-by-side format, it is not meant to be a comparison or an endorsement of either product (they just happen to be the two most popular products in our lab). Rather, it is meant to serve as a cheat-sheet for GIS professionals needing some direction in performing classic GIS functions. Many individuals are beginning to experiment with Manifold GIS, and the large user base of ArcView 3.x user continues to migrate to ArcGIS.

url: http://hdl.handle.net/1813/166
date: 2004-07-30
creator: Rodriguez, Marie Christine
viewed: 3059
title: Effects of Differential Arithmetic Practice on Children's Solutions of Mathematical Word Problems
abstract: Word problems are difficult. Although children eventually master computational skills, problem solving skills remain poor through adulthood. Two different types of manipulations were attempted to affect rates of successful word problem solution. First we made changes to the word problems themselves to make them more comprehensible for students, and therefore easier to solve. Second, students were given one of two types of arithmetic practice and were compared with a third group of students who received no additional practice to determine whether such practice could assist students with solving arithmetic word problems.
First- and second-grade students were tested on three different types of single-step arithmetic word problems: a set of Compare problems, a set of six typically worded Change problems and a set of six Change problems whose wording was clarified with simple temporal, semantic and referential clarifications. These changes were intended to make the action in the problem easier to follow so students could model the problems more successfully. The percentage of students answering correctly on different problems was compared.
Students were then randomly assigned to one of two different arithmetic worksheet conditions or to a third no practice condition. Worksheets consisted of either standard arithmetic practice or computational practice requiring students to solve for something other than the result. After completing all of the worksheets, students were tested on a set of word problems arithmetically identical to those presented five months earlier.
Results of clarification were mixed. Students had somewhat more difficulty with solve-for-result problems which are traditionally the type of word problems at which students perform best. Students were more successful at solving clarified solve-for-start-set problems. There was also a curious trend for students to be more successful at subtraction problems than addition problems of the same type. This was more pronounced with clarified problems.
Second-grade students showed no effect of worksheet condition. First-grade students who were assigned to the non-canonical worksheet condition demonstrated a marked improvement on typically worded change

problems. Reasons why the arithmetic practice did not also have an effect on clarified problems need to be explored further. Michael J. Spivey, Chair; James Cutting; Robert Johnston; Marianella Casasola

url: http://hdl.handle.net/1813/167
date: 2004-07-30
creator: Bull, Diana
viewed: 3263
title: A Study of Fluorescent Nanoparticles: Quantum Dots and Silica Dots
abstract: Optical techniques have here been employed for the study of two types of nanoscopic fluorescent probes, quantum dots and silica dots. Basic characterization of these fluorescent nanoparticles? photophysics and their capabilities have been explored utilizing the following techniques: fluorescence correlation spectroscopy, FCS, time resolved single photon counting lifetime decay measurements, and steady state absorbance, emission, and excitation measurements.
The unique properties of QDs, unmatched by any available organic fluorophore, have the potential to allow the development of FRET-based nanoscale biosensors. Unambiguous assignment of a quenching mechanism between partners as FRET may only occur through the measurement of the rate of transfer from the donor to the acceptor, this rate manifests itself as a negative amplitude component in the overall lifetime decay of the accepting partner. Two experimental regimes were executed in an attempt to identify the presence of FRET between fluorescent donor semi-conductor quantum dots surrounded by streptavidin with peak emission at 525nm (525-CdSe-ZnS QD-streptavidin) and biocytin dye acceptors chosen to have varying degrees of absorption overlap with the 525-CdSe-ZnS QD-streptavidin emission. Significant quenching of the donor, along with the acceptor, was seen when the donor was bound to the acceptor, signifying some form of energy transfer. The degree of donor quenching, illustrated by the decrease in average lifetime, corresponded with the loading ratio of the acceptor?the more acceptors present, the larger the quenching. An unambiguous assignment of the rate of transfer of excited state energy from the donor to the acceptor, signified by a negative amplitude component in the lifetime decay of the acceptor, was not accomplished.
Organic fluorescent dyes encapsulated in silica to create nanoscopic core-shell particles for use in biological applications have presented an interesting alternative to semiconductor fluorescent probes. In this experiment, an expanded core-shell morphology was surrounded by increasingly thicker layers of the siliceous shell to determine if this could control the photophysical properties of the nanoparticles. Sixteen nanoparticles were synthesized, all of distinct sizes and their photophysical properties investigated. No correlation between the thickness of the silica shell and the brightness of the particle was found. However, as the size of the particle increased the siliceous shell acted as a protective coating from potential quenchers for the TRITC dye in the center allowing molecules to stay in the triplet state for longer periods of time. Watt Webb, Frank Wise, Jim Alexander, IRG-New

url: http://hdl.handle.net/1813/168
date: 2004-08-02
creator: Sebastian, John Thomas
viewed: 3069
title: Lewd Imaginings: Pedagogy, Piety, and Peformance in Late Medieval East Anglia
abstract: Andrew Galloway (Chair), Thomas D. Hill, Judith A. Peraino, Masha RaskolnikovThis dissertation explores clerical and lay desires for spiritual teaching and learning at the end of the Middle Ages in England, desires that, while ostensibly contemplative, carried crucial ecclesiological, political, and literary implications. Where these desires met stood the image of the unlearned lay person. This image has a history of its own; tracing it reveals many of the discourses and identities structuring late medieval society. The iconic lay person was a creature of imagination, feeling, and desire, not desire for theological proposition and dispute, but for a palpable relationship to God. Addressing that desire led in late medieval England to an astonishing

increase in clerical awareness of the laity?s spiritual needs and clerical activism in addressing those.
Learned writers invented a discourse of ?lewdness? (after the technical term for the unlettered medieval laity) according to which the pious laity were supposed to learn by reading images as the learned did by reading books. Derived from an early pope?s rebuke of an iconoclastic bishop, this assumption maintained its authority throughout the Middle Ages, regularly resurfacing in a variety of contexts, although not always in immediately recognizable forms. The pervasive authority of this dictum led late medieval theologians to expound a system of participatory meditation on events from the life of Christ as particularly suitable for the laity on account of its imaginative methods. These trappings of ?lewdness? obscured, however, the much broader clerical origins of such mystical practice, from monastic and other learned traditions, that paradoxically were adapted to how the ?lewd? laity were instructed to pursue their own uniquely intimate kind of contemplation.
This discourse of "lewdness" assumed peculiar force within the region of East Anglia (the counties of Norfolk and Suffolk along with parts of Cambridgeshire and Kent), as evidenced by its refraction in the spiritual biography of a remarkable lay woman from Bishops Lynn, Margery Kempe, and its manifestation as the common dramaturgical foundation for a collection of plays otherwise notable for their formal and generic differences. Ultimately it coalesced, ironically, with the goals of later Reformers.

url: http://hdl.handle.net/1813/169
date: 2004-08-02
creator: Jones, Nicholas
viewed: 2205
title: Cosmic Strings in Brane Inflation and Superstring Theory
abstract: Observable predictions of Superstring theories are rare and important. Recent theoretical advances and upcoming experimental measurements of cosmological physics make the testing of generic predictions of string theories possible. Brane anti-brane models of inflation within superstring theory are promising as string theory descriptions of the physics of the early universe, and while varied in their construction, they can have the generic and observable consequence that cosmic strings will be abundant in the early universe. This leads to possible detectable effects in the cosmic microwave background, gravitational wave physics, gravitational lensing and pulsar timing. The string theory physics involved in the production of these defects at the phase transition at the end of inflation is reviewed herein. Detailed calculations of cosmic string interactions within string theory are also presented, in order to distinguish these cosmic strings from those in more conventional theories. It is found that cosmic strings are stable and have tensions compatible with current upper bounds and which are detectable in upcoming experiments. Interaction probabilities of these strings are found to be very different from conventional strings, providing the possibility of experimental tests of string theory.

url: http://hdl.handle.net/1813/170
date: 2004-08-02
creator: Caputo, Deanna
viewed: 2049
title: GOT PERP? EYEWITNESS ACCURACY, DECISION PROCESSES, AND PRESENTATION PROCEDURES USING SEQUENTIAL LINEUPS
abstract: It was my objective to understand whether accurate and inaccurate eyewitnesses could be distinguished by their decision-making during a sequential-lineup. All eyewitnesses, except in Study 6, were shown a video-taped crime and presented with sequential lineups.
Study 1 was designed to identify the decision processes of eyewitnesses. While viewing a culprit-present lineup, witnesses were asked to ?think aloud? and later describe in writing their thoughts as they reached a decision for each photograph; five decision process statements were then created or selected from previous research. In

Study 2, the main dependent measure asked eyewitnesses to endorse all applicable decision process statements from Study 1. Factor analysis revealed a simple matching strategy containing three decision processes and a deliberative strategy with four decision processes. Accurate eyewitnesses were significantly associated with the simple matching strategy, and inaccurate eyewitnesses with the deliberative strategy.
An automatic recognition statement was added to the decision process statements. Study 3 looked at inaccurate identifications in culprit-absent lineups and found that the decision processes of inaccurate eyewitnesses did not differ regardless of having selected an innocent suspect replacement or a known innocent picture. Study 4a and 4b successfully replicated previous findings using a new set of experimental materials with different witness viewing conditions.
Study 5 demonstrated that accuracy rates could not be predictably influenced via the manipulation of witness decision processes. Witnesses forced to use deliberative decision processes were not subsequently less accurate. Witnesses forced to use simple matching and automatic processes were also not subsequently more accurate. Study 6 participants were asked to postdict witness accuracy. They were given previous eyewitness identification judgment forms and some were informed about the decision strategies found to be indicative of accuracy and some were not. Unexpectedly, informed participants did not outperform the uninformed or perform better than chance.
Studies 7 and 8 tested whether logical modifications to the sequential procedure would affect accuracy. In Study 7, only culprit-present lineups were conducted and seeing it twice before making any identification (no-ID-first-view) presentation produced significantly greater accuracy than the traditional presentation. Study 8 served as a replication and extension, using both culprit-present and culprit-absent lineups. The superiority of the no-ID-first view condition did not reach significance. The implications of Studies 1-8 for memory, face recognition and the legal system are discussed.

url: http://hdl.handle.net/1813/171
date: 2004-08-05
creator: Hancock, Jeffrey T. (advisor);Pena-Herborn, Jorge
viewed: 3838
title: An interaction process analysis of text-based communication in an online multiplayer videogame An analysis of socioemotional and task-oriented communication in online multiplayer videogames
abstract: The present study examines the socioemotional and task-oriented content of text messages produced by players of an online multiplayer videogame. From a computer-mediated communication perspective, over five thousand messages produced by 65 players during a 2-week period were examined using Bales? interaction process analysis. The results suggest that players produced significantly more messages expressing socioemotional than task-oriented content. Of the socioemotional content that was produced, the vast majority of it was positive in nature, despite the primary game objective of fighting one another. Players' experience level also played an important role in content production. More experienced players produced significantly higher levels of positive socioemotional content than less experienced players, and they were more likely to use specialized conventions (e.g., emoticons, abbreviations, and scripted emotes). These results provide support for the social information processing theory of interpersonal computer-mediated communication in the context of graphical online multiplayer videogames. The use and modification of interaction process analysis for studying computer-mediated communication in graphical virtual spaces is discussed.

url: http://hdl.handle.net/1813/172
date: 2004-08-15
creator: Hirtle, Peter
viewed: 5006
title: The USA PATRIOT Act and Archivists
abstract: This presentation, given at the Spring 2004 meeting of the New England Archivists, discusses the

impact of the USA Patriot Act on archives. First, it discusses the real, though slight, risk the Patriot Act poses for archives, especially with regard for the privacy of archival donors and users. Second, it discusses some of the concrete steps that archives can take to lessen the potential negative impact on archives. Lastly, it talks about the archival and records management issues associated with terrorism investigations.

url: http://hdl.handle.net/1813/175
date: 2004-08-17
creator: Cooke, J. Robert
viewed: 2889
title: Workshop on 'Sustainable Models for University-based Scholarly Publishing'
abstract: Agenda for the Workshop on 'Sustainable Models for University-based Scholarly Publishing' from June 01, 2004.Columbia University
Cornell University

url: http://hdl.handle.net/1813/176
date: 2004-08-17
creator: Cooke, J. Robert
viewed: 3365
title: List of Attendees for the Workshop on 'Sustainable Models for University-based Scholarly Publishing'
abstract: List of Attendees for the Workshop on 'Sustainable Models for University-based Scholarly Publishing'.
Columbia University
Cornell University
University of Rochester

url: http://hdl.handle.net/1813/177
date: 2004-08-17
creator: Getz, Malcolm
viewed: 4411
title: Open-Access Scholarly Publishing in Economic Perspective
abstract: What is the prospect for migrating scholarly journals from paper to digital formats in a way that lowers university expenditures? Although many journals are published digitally, at least so far, the digital format complements paper, increasing university expenditures. Open-access publications that are free to readers and financed by publication fees paid by authors and their agents may both lower costs and allow scholarship to reach a larger audience. However, gains to universities may depend on open-access being qualityassured and controlled by not-for-profit publishers. Potential savings for a typical US research library might be on the order of $2.3 million per year even as the same level of effort goes to reviewing and editing published articles as at present. To launch the initiative, provosts might adopt policies to support publication fees and not-for-profit publishers might invest in start up funds for editing and marketing open-access journals.Department of Ecomomics, Vanderbuilt University

url: http://hdl.handle.net/1813/178
date: 2004-08-17
creator: Crow, Raym
viewed: 3658
title: Developing an Institutionally-Funded Publishing Channel: Context and Considerations for Key Issues
abstract: A Report prepared for the Creating an Open Access Paradigm for Scholarly Publishing ProjectCornell's Internet First University Press (IFUP) seeks to explore the practical viability of direct institutional funding

for serial and monographic publication of an institution?s faculty research. To effect fundamental change, such an institutional funding model must not simply shift the costs from the library to other budgets within the institution. It must disaggregate and restructure the academic publishing value chain to separate the services that facilitate publication from monopolistic control of the material published. To attain this goal in practical terms, the IFUP must demonstrate a sustainable economic model and guarantee author autonomy in the choice of publishing venue. This report reviews past and current academic publishing initiatives that provide context and practical insight into how an institutionally sponsored publishing model might be designed and implemented to satisfy these essential requirements.

url: http://hdl.handle.net/1813/179
date: 2004-08-17
creator: King, Kenneth M.
viewed: 3238
title: Creating a Sustainable Scholarly Communication System
abstract: The current process of scholarly publication is widely regarded as unsustainable.
Ensuring that scholarly information remains accessible to the world's scholars will require the work of a consortium of major research universities. A global consortium of research universities would have the power to negotiate a mutually beneficial relationship with cooperating publishers including permitting the open publication of preprints in disciplinary archives. This consortium could be built around a shared global electronic library constructed from components managed by individual cooperating institutions. These components built on Open Archives Initiative (OAI) compliant servers using open software (e.g. DSpace and EPrints) are currently installed at many universities. The shared library could look like an extension to an individual member's library and contain a full range of materials certified in a variety of ways by contributing institutions. In addition to publishing books, articles, course materials, videos and databases, universities could individually or cooperatively host open and subscription-funded journals in digital form. They could support open, discipline focused preprint archives and encourage faculty to publish in journals that permitted this. This system would help integrate and coordinate multiple efforts to promote open publication and enable open and not-for-profit publishers and university libraries to become partners in the scholarly enterprise, each responsible for a certain phase of the process.

url: http://hdl.handle.net/1813/180
date: 2004-08-24
creator: Carson, Joseph
viewed: 3162
title: THE CORNELL HIGH-ORDER ADAPTIVE OPTICS SURVEY FOR BROWN DWARF COMPANIONS AND RELATED INSTRUMENTATION STUDIES FOR BROWN DWARF RESEARCH
abstract: Committee Members: James Houck (chair), Peter Gierasch, Daniel Schwarz, Eanna FlanaganI begin this publication with a description of the procedures and results for the Cornell High-order Adaptive Optics Survey (CHAOS) for brown dwarf companions to stellar systems. This survey consisted of near-infrared coronagraphic observations of 80 stars out to 22 parsecs. The subsequent data analysis revealed that zero systems showed conclusive evidence for a brown dwarf companion. Accompanying Monte Carlo population simulations determined a brown dwarf companion upper limit of 9.7% for the 25-100 AU semi-major axis region. Such a value indicates, at an 89% confidence level, that the "brown dwarf desert" around stellar objects extends further than has been previously reported.
Following my descriptions of the CHAOS survey, I continue with a discussion of HD150451C, a likely white dwarf companion to the binary system HD150451AB. This object, discovered in the course of the CHAOS survey, shows infrared colors and H-band spectra consistent with a white dwarf. Common proper motion measurements confirm its classification as a physical companion. A mass estimate of 0.6-1.3 solar masses

constrains it among the population of medium to very large (i.e. approaching the Chandrasekhar mass) white dwarf stars. We discuss the implications of such a classification for the stellar system's origins and history. I conclude with a description of my work in the design, fabrication, and commissioning of WIRC, a state of the art wide-field infrared camera for the Palomar 200-inch Hale telescope. The instrument, along with the collecting power of the Palomar 200-inch Hale telescope, is currently the most powerful system in the world for wide-field infrared surveys. It presently resides at Palomar Observatory as a full-time facility instrument.

url: http://hdl.handle.net/1813/181
date: 2004-08-30
creator: Polianski, Mikhail
viewed: 4563
title: Dynamic Phenomena in Transport through Sub-micron Devices
abstract: This thesis considers dynamic phenomena in transport through electronic devices on sub-micron scale. It consists of two closely related parts, the first considering DC current through a quantum dot as a response to a periodic perturbation of its shape and the second, conversely, explores a finite-frequency spin wave in a ferromagnet due to a constant electric current. Both systems are very similar in their theoretical treatment by scattering matrix formalism.
The Chapters \ref{chap:2}--\ref{chap:4} consider a charge current induced by a periodic perturbation of an open quantum dot's shape. A dot being mesoscopic, its transport properties strongly fluctuate from sample to sample and therefore knowledge of full sample-to-sample distributions is essential. We consider a ``quantum pumping" regime of reservoirs in equilibrium and periodic variation of the dot's shape by AC voltages applied at the gates. Experimentally measurable first several moments of mesoscopic distribution of charge pumped in one cycle are explored.
Chapter \ref{chap:2} considers distributions of adiabatically pumped current $\bar I$ and voltage $\bar V$ and finds that even in a slow weak pumping regime they are not simply related via time-averaged conductance $\bar G$. Moreover, values of $\bar I-\bar V\bar G$ for few-channel dots exhibit strong mesoscopic fluctuations, comparable with those of $\bar I$.% and $\bar V$.
Chapter \ref{chap:3} explores mesoscopic distributions of noise and current-to-noise ratio in a weak pumping regime in a wide region of temperatures and pumping frequencies. Fluctuations of noise in the multi-channel limit $N\to\infty$ are found to be small as $1/N$. For a multi-channel system the ensemble-averaged noise is analytically found and calculated for experimentally relevant temperatures, frequencies and pumping strengths.
The Chapter \ref{chap:4} concerns the formalism of time-dependent scattering matrix theory and finds correlators of matrix elements up to the fourth order. Our findings allow a systematic treatment of various transport properties, as well as their ensemble-averaged correlations. We also compare our results with results obtained in Hamiltonian approach of Random Matrix theory.
The second part, Chapter \ref{chap:5}, considers magneto-transport through a single ferromagnetic layer. Electric current flowing perpendicular to the plane of a thin layer is shown to excite a finite frequency response in form of a spin wave. Unlike the previously known spin-torque due to a polarized current, another mechanism able to induce a destabilizing torque on a local magnetization is found. Spin-diffusion of reflected spins from one point on the normal-ferromagnet boundary to another might excite a spin wave at sufficiently strong currents. We analytically find the critical current value and discuss our results for experimentally relevant parameters. Prof. Brouwer (Cornell), NSF, Center for Nanoscale Systems

url: http://hdl.handle.net/1813/184
date: 2004-09-09
creator: Becker, Carl L.

viewed: 4827
title: Cornell University: Founders and the Founding
abstract: A print on demand of these books and articles can be obtained from Cornell Business Services (CBS) Digital Services by sending e-mail to digital@cornell.edu or calling 607.255.2524. In the body of the message include the identifier.uri for the book or article, and ask to be contacted regarding payment.Six lectures delivered at Cornell University on the Messenger foundation in the year 1943, in recognition of the 75th anniversary of the opening of that institution in the year 1868: together with fifteen interesting but hitherto unpublished documents relating thereto. The whole further adduced in explanatory and commentative notes and supported by exact references to the original sources according to the practice of the most eminent historians; with all of which is included an address entitled 'The Cornell tradition,' delivered on April 27, 1940, in recognition of the 75th anniversary of the signing of the charter.

url: http://hdl.handle.net/1813/185
date: 2004-09-10
creator: Chen, Yufen
viewed: 2787
title: TESTING THE ROLE OF SCHEMATA IN THE APPLICABILITY MODEL OF FRAMING EFFECTS: A SURVEY EXPERIMENT ON THE ISSUE OF BIOTECHNOLOGY
abstract: Researchers have argued that conceptualization of cognitive mechanisms that underlie framing is vague and have proposed an applicability model to account for cognitive processes contributing to framing effects (Price & Tewksbury, 1997). The applicability model assumes the central roles of schema and views framing effects as applicability effects. In particular, it assumes that media framing will only have an effect if it resonates with pre-existing schemata held by audience members.
The study described in this thesis tests the applicability model and its assumption of relevant schemata through a two-by-two experimental design. Through a national, computer assisted telephone survey of 781 respondents, the study utilizes a split-ballot technique to measure the effects of two frames (regulation versus non-regulation) on issues related to biotechnology and genetically modified food products. A secondary manipulation, varying the order of schemata measures (frame first versus schema measures first), tests the role of schemata in framing effects. Causal attributions, attributions of responsibility, and policy opinions are measured as outcomes of the main manipulation, or framing effects. Additional variables including demographics, attention to science and technology news across three media, awareness and support of biotechnology, and ideology were collected to control for and assess other influences on the outcome variables.
Analyses included independent t-tests to look for differences between the four experimental groups. Respondents? schematic strengths were assessed through six measures. Twelve measures assessed causal attributions, responsibility attributions, and policy opinions toward regulation of biotechnology.
Results reveal that schemata are directly related to people?s attributions and opinions on issues related to biotechnology and media attention is directly related to schema development. In particular, attention to science and technology news on television, in newspapers, and on the Internet contributed to stronger Information schemata, which emphasize the importance of science and research in determining the risks and safety of genetically modified food products. Television was the only medium that was related to Regulation schemata, which emphasize regulation as a necessity to protect consumers from the effects of biotechnology and preserve the environment.
Framing effects occurred across particular schematic strength groups. Two different schematic groups were more likely to attribute risks associated with biotechnology to global causes such as the nature of science and information if they were exposed to the Non-Regulation frame, which emphasized that science and research should determine if new regulations should be made. Furthermore, respondents with stronger schemata (medium Regulation and high Information schematic strength) were more likely to agree with treatment as

the cause of risk when exposed to the Regulation frame, which argued that the FDA must require research and create regulations to protect citizens from unsafe products. However, differences in Global attributions were not found across the seven other schematic groups.
Respondents with high Regulation schemas were more likely to attribute responsibility to the government even when they were exposed to the Non-Regulation frame. Framing effects were not found for policy opinions and responsibility attribution to other groups such as non-governmental groups, trade groups and private corporations, and individuals. These results suggest that schema determine to a large extent, whether or not framing effects would occur and thus, provide some support for the Applicability model of framing effects.
Furthermore, interaction effects were found between the main manipulation (type of frame) and the secondary manipulation (order of schemata measures) for particular schematic groups. Framing of genetically modified foods influenced policy opinions for particular schemata groups that were exposed to the schema measures after the frame manipulation, indicating that the content of schema measures may have contributed further to framing effects. Question order and possible priming effects are discussed.
In sum, the results provide limited support for the Applicability model and demonstrate the need for further research into the cognitive mechanisms that underlie framing effects. Future study can further illuminate the complexity of audience schemas and their role in framing effects. Understanding of these cognitive mechanisms can be used in both development and political communication campaigns, where message receptibility will depend on audience awareness and schematic frameworks.

url: http://hdl.handle.net/1813/186
date: 2004-09-10
creator: Cooke, J. Robert
viewed: 2777
title: Workshop on Sustainable Models for University-based Scholarly Publishing
abstract: The purpose of this presentation is to explore financially sustainable and effective approaches to scholarly communications for and by higher education, to identify shared interests, and to facilitate multi-campus collaborations.

url: http://hdl.handle.net/1813/187
date: 2004-09-10
creator: Neal, James G.
viewed: 1835
title: Workshop on Scholarly Publishing: Remarks during Open Session
abstract: A discussion of Scholarly Communication issues and concerns.

url: http://hdl.handle.net/1813/188
date: 2004-09-10
creator: Crow, Raym
viewed: 2417
title: Developing an Institutionally-funded Publishing Channel: Context & Considerations for Key Issues
abstract: The purpose of this presentation is to explore the viability of direct institutional funding for publishing faculty research, and to define a practical publishing mechanism by which to implement the model.Chain Bridge Group

url: http://hdl.handle.net/1813/189
date: 2004-09-10
creator: Wittenberg, Kate

viewed: 1554
title: Responsible Publishing
abstract: Responsible Publishing: Thinking Creatively and Collaboratively. Breaking Down Traditional Publishing Categories: Books, Journals, Databases, Grey Literature, Teaching Resources
Creating New Alliances with Scholars, Libraries, Technology Providers, Scholarly Societies, Publishers. Sharing skills of Librarians, Technologists, and Publishers in Creating Valuable Resources at Reasonable Prices.

url: http://hdl.handle.net/1813/190
date: 2004-09-10
creator: Getz, Malcolm
viewed: 2938
title: Open-Access Scholarly Publishing
abstract: Can open-access scholarship succeed? Should open-access scholarship succeed? The goals are to lower costs and increase access. Four topics are reviewed:
1) Three Fundamental Ideas
2) Transition from Paper to Digital
3) Market Forces
4)Strategies

url: http://hdl.handle.net/1813/191
date: 2004-09-10
creator: Gibbons, Susan
viewed: 2101
title: Building an E-Publishing Model from the Stakeholders on Up
abstract: Develop a business model to adapt DSpace for e-publishing. University of Rochester

url: http://hdl.handle.net/1813/192
date: 2004-09-17
creator: Rosenstein, Judith
viewed: 2679
title: A Theory of Intergroup Antagonism
abstract: The primary purpose of this paper is to present a macro-structural theory predicting which groups in a society will be antagonistic towards which other groups, with an eventual aim of understanding why certain societies experience one type of antagonism, while other, apparently similar societies do not. Drawing on many methods of interpreting conflict, the theory argues that intergroup antagonism is caused by a threat that is generated by a change in the level of interaction or stratification within the society. Interaction and stratification also predict the groups involved in antagonistic behavior.

url: http://hdl.handle.net/1813/193
date: 2004-09-22
creator: Walker, Kizer;Saylor, John M;How, Sarah;Habicht, Oliver;Ehling, Terry;Davis, Philip M.
viewed: 12630
title: Report of the CUL Task Force on Open Access Publishing Presented to the Cornell University Library Management Team August 9, 2004.
abstract: The Task Force on Open Access Publishing was convened by Ross Atkinson in January 2004.The purpose of the Task Force is to study the information available on Open Access publishing and to provide the CUL Library Management Team with a report that addressed specific questions. Alternative publishing

models that would offer free and unimpeded access to scholarship promise both a more affordable system for academic institutions and their libraries and a more democratic one for readers and authors. The present Report examines both aspects of the Open Access promise and offers recommendations for CUL's involvement in the arena of Open Access publishing.
>>CLARIFICATION:
This Report of the Cornell University Library's Task Force on Open Access represents the Task Force's initial examination into the Open Access publishing model and its impact on the Library. On October 7, 2004 the Library Management Team reviewed the report and requested additional analysis, particularly with regard to the underlying economic model from an institutional, rather than library, perspective and more consideration of projected costs and benefits,especially when considered from a multi-institutional or consortial point of view.<<

url: http://hdl.handle.net/1813/194
date: 2004-09-23
creator: Golovachkina, Natalia
viewed: 2819
title: Performance Analysis of Contract for Options
abstract: In this dissertation I analyze performance of the contract for options in various settings.
In the second chapter, I consider a contract for options between a supplier and a manufacturer in the presence of a spot market with uncertain spot price, limited supplier capacity, and where the manufacturer must fulfill the stochastic demand of a downstream supply-chain link in full. I model the contract negotiation as a two-stage Stackelberg game in which the supplier is the leader. I derive a closed-form expression for the optimal number of options that the manufacturer should purchase, and show the (unrestrictive) conditions under which the supplier's profit is unimodal in the reservation and exercise prices. I make observations based on analytical results and numerical experimentation to assess when such a contract is incentive compatible for the players and effective in coordinating the channel.
In the third chapter, I analyze different mechanisms that lead to channel coordination. Specifically, I show channel coordination is achieved by a contract for options when the manufacturer is the leader, when a quantity discount contract is used, and when renegotiation is allowed. I demonstrate how different coordinating mechanisms affect the allocation of the profits between the supplier and the manufacturer and give some insight on when each mechanism might be appropriate. I highlight the desirability of renegotiation as a coordinating mechanism by showing that it is robust -- coordination is achieved despite information asymmetry -- and leads to a more equitable sharing of the contract benefits than do the other mechanisms.
In the fourth chapter, I evaluate capacity investment decisions of the players in the supply chain consisting of a supplier and two identical manufacturers. I compare the performance of the linear-price contract (when the supplier must use an allocation mechanism) with that of the contract for options. I demonstrate that when the supplier sets transfer prices, the contract for options performs only slightly better than the linear-price contract, which implies that the contract for options is not always an obvious choice over the linear-price contract.

url: http://hdl.handle.net/1813/195
date: 2004-09-27
creator: Sontag, Timothy
viewed: 2085
title: ENZYMATIC REGULATION OF VITAMIN E STATUS: IDENTIFICATION AND CHARACTERIZATION OF THE NOVEL TOCOPHEROL-OMEGA-HYDROXYLASE PATHWAY OF VITAMIN E CATABOLISM
abstract: Tocopherols and tocotrienols all possess to varying levels the vitamin E activity of alpha-tocopherol,

the most bioactive form of the vitamin in vivo. alpha-Tocopherol is the most abundant vitamer in vivo, potentially explaining its higher bioactivity. This is despite higher dietary levels of other vitamers. The preferential retention of alpha-tocopherol appears to be at the level of elimination. Urinary metabolites of tocopherols, with the phytyl tail truncated to a three-carbon carboxylated moiety, were reported previously. The goal of this work was to elucidate the pathway(s) by which these metabolites are formed. Incubations of tocopherols in hepatocyte culture produced all expected intermediates in the predicted pathway of catabolism of vitamin E. This pathway involves omega-hydroxylation of a terminal methyl group of the phytyl tail, followed by step-wise removal of two or three carbon units by a omega-oxidation mechanism. Analysis of microsomal enzyme activity led to the elucidation of CYP4F2 as the major P450 involved in the initial omega-hydroxylation reaction. Substrate-specificity of this enzyme was high, with activity toward gamma-tocopherol being 10-fold greater than toward alpha-tocopherol. Sesamin, known to raise plasma gamma-tocopherol to levels near those of alpha-tocopherol in vivo, was a potent inhibitor of this enzyme. Together, these data supported the hypothesis that the omega-oxidation pathway is an important regulator of vitamin E status.
Kinetic analyses revealed key features of the tocopherol molecule which govern the affinity and activity of the enzyme toward its substrates. These studies also revealed an allosteric nature of CYP4F2. The finding that alpha-tocopherol is a positive effector of gamma-tocopherol metabolism may explain why supplementation with alpha-tocopherol decreases plasma concentrations of non-alpha-tocopherols.
Tocotrienols differed from tocopherols in their effects on lateral and rotational mobility of the microsomal membrane components, and inhibited the activity of membrane-bound P450 enzymes, possibly through inhibition of interaction of components of the cytochrome P450 multi-enzyme complex. These effects may play a role in the cytotoxic nature of the tocotrienols and highlight the importance of the tocopherol-omega-oxidation pathway in minimizing their concentration in biomembranes.National Institutes of Health Training Grant DK07158-25

url: http://hdl.handle.net/1813/197
date: 2004-10-28
creator: Producer: Fly on the Wall Productions;Handler, Maddy;Handler, Philip
viewed: 5360
title: Being Eisenman: Peter Eisenman ‘54
abstract: Being Eisenman is also available at http://ifup.cit.cornell.edu/eisenman/This video is a highly personal account of Eisenman’s life and work told by alumnus Peter Eisenman’54, created in celebration of his 50th Cornell Reunion. Vintage pictures from Eisenman’s years at and right after Cornell, as well as recent video taken of Professor Eisenman teaching at Yale, overlay the narration by Eisenman. Brief comments by nine of his well-known colleagues and friends in the architectural field, including Cornell architect and friend Richard Meier’56, are interspersed throughout the riveting story he shares about his Cornell years, the years following Cornell, and his current work as head of his NYC firm, Eisenman Architects.Producer: Fly on the Wall Productions
Videographer, Technical Director & Editor: Phil Handler’62
Creative Director & Senior Editor: Maddy Handler’65

url: http://hdl.handle.net/1813/198
date: 2004-11-01
creator: Frangipani Almeida, Marialuci
viewed: 2780
title: Modeling Infrared and Combination Infrared-Microwave Heating of Foods in an Oven
abstract: Fifth Chapter “Combined Microwave and Infared Heating of Foods” is a collaboration chapter written with Srikanth Geedipalli.A quantitative, model-based understanding of heat exchange in infrared

and combined infrared-microwave heating of food inside an oven is developed. The research is divided into three parts: measurement of optical properties, radiative heat transfer analysis and combined microwave-radiative heat transfer analysis. Optical properties of reflectance, absorptance and transmittance in a potato tissue are measured as a function of wavelength, using a spectroradiometer. Penetration of energy is higher for halogen lamps that emit in the near- and mid-infrared range, compared to ceramic rods that emit mostly in the far infrared range. Reflectance in the near infrared range increases with moisture content of the food, thus decreasing the energy coupled. Surface structure has significant influence on the optical properties. A 3-D radiative heat exchange model of an oven-food system is developed using a commercial finite-element package. The air in the oven is assumed transparent to the radiation. Heat conduction is assumed in the entire oven (food and air) for the short duration. The wavelength dependence of emissivity (non-gray surface) is found to significantly affect the surface radiative flux and the use of a non-gray model is recommended for such materials, although simplification of the emissivity variation is required to keep the computation time reasonable. Lowering food surface emissivity reduces the radiative flux that is absorbed by the food surface. Reducing oven wall emissivities increase the radiative flux on the food surface. The location of the radiative heat source in the oven as well as placement of the food relative to the heat source were found to have significant influence on the radiative heat flux over the food surface. To add microwave heating, Maxwell's equations of electromagnetics were solved for the same cavity using separate finite element software and the volumetric heat generation, in the food, obtained from this model was input to the radiative heat transfer model, thus coupling them. Using measures such as mean temperature rise and the standard deviation of temperatures, it was demonstrated that combination heating leads to more uniform heating, without compromising the speed of heating.

url: http://hdl.handle.net/1813/199
date: 2004-11-10
creator: Lautenschlager, Catherine
viewed: 1641
title: Structural Studies of Protein-Small Molecule Interactions: Bombyx Mori Pheromone Binding Protein Specificity for Bombykol, and the Substrate Specificity of Pantocin A Biosynthetic Proteins
abstract: Jon Clardy, Steve Ealick, Jerrold Meinwald, Brian CraneInteractions between small molecules and proteins mediate the biological processes of life. A knowledge of how proteins specifically interact with small molecules provides us with the tools to probe complex biology, but also allows us to develop potent and specific drugs to manipulate these processes to prevent, manage and cure disease.
In the first part of this thesis, the interactions between non-pheromone small molecules and the pheromone binding protein from Bombyx mori were explored by using X-ray crystallography to solve structures of these complexes. Pheromone signal transduction in moths provides a relatively simple model of the complex biology of neurological processing.
The second part of this thesis aimed to discover the functional form of a peptide substrate that interacts with biosynthetic enzymes to make pantocin A. This antibiotic is effective against Erwinia amylovora, the pathogen that causes fire blight disease. The functional form of the substrate was explored through genetic manipulation of the biosynthetic pathway that produces pantocin A.NIH

url: http://hdl.handle.net/1813/202
date: 2004-11-12
creator: Scott, Bill;Savath, Vince;Putnam, Lauren;Ho, Jeff
viewed: 3346
title: Albuterol Uptake in Bronchioles
abstract: Millions of people around the world suffer from asthma, which is characterized by breathing problems due to constricting bronchioles. While current remedies involve an effective inhaler drug, such as

Albuterol, that relieves such symptoms, it still has not been determined exactly how often such a drug should be administered. This project uses GAMBIT and FIDAP to model the uptake of Albuterol in bronchioles in order to determine how often these inhalers should be used to maximize drug delivery and quickly minimize symptoms. A suitable model of drug flow through the bronchioles was developed and we were able to determine how much Albuterol was present in the bronchioles at any given time. It was determined that the concentration reaches steady state at about 0.004 seconds, and concentration at every point was directly proportional to the defined inlet concentration after that. However, since we were not able to find the therapeutic concentration, or the minimum amount of Albuterol needed to be effective in relieving symptoms, we could not quite figure out the proper time spacing between inhaled dosages.

url: http://hdl.handle.net/1813/203
date: 2004-11-12
creator: Lundeen, Anna;Tataria, Jigar;Ross, Rachel;Dy, Eric
viewed: 3577
title: Bald is Beautiful, but is it Warm?
abstract: The head is a major source of heat loss (60-80%), and therefore, if conditions are cold enough, not keeping the head properly insulated could lead to hypothermia. Because of this, we were interested in determining to what extent hair aided in insulating the head. Are bald people at an extreme disadvantage in winter weather even if they wear a hat? Using Gambit to create a mesh of the head and Fidap to run simulations on that mesh, we were able to model the heat loss through the head for a twelve-minute walk. Because we are concerned with our own well being as well as the well being of our fellow students, we modeled our scenario as if a person were walking from Carpenter Library to Riley Robb Hall in cold temperatures. In our analysis, we focused on the temperature at the surface of the skin to compare all of our results. We found that all individuals wearing a hat (regardless of their hair thickness or lack thereof) are at an equal position in cold weather (skin temperatures varied by only 0.08°C). However, without a hat, the thickness of hair causes the skin temperature to change drastically. Small amounts of hair (up to one cm) have very little effect on the overall temperature of the skin after twelve minutes in cold temperatures, but once hair reaches a thickness of two cm, the head becomes significantly insulated and skin temperatures are much higher.

url: http://hdl.handle.net/1813/204
date: 2004-11-12
creator: Lyubchenko, Lev;Liem, Andre;Van Fleet, Geoff;Gaites, Craig;Cargioli, Theresa
viewed: 3655
title: The Mysteries of Firewalking Revealed
abstract: The act of firewalking was once thought of as a supernatural experience, shrouded in mystery and revered as a feat of courage and determination. Through the use of computer aided engineering and basic thermodynamics, firewalking can now be explained scientifically. We created a mesh in GAMBIT that included a representation of a human foot, a steam layer and the hot coals. The steam layer was created by the Leidenfrost effect, which we were testing the validity of. We determined, using FIDAP, that the combined effect of the steam layer?s poor conduction and the favorable thermal properties of both the foot and coal make it is possible for anyone to walk along a hot coal bed. After taking away the steam layer, we discovered that the steam layer played a vital role in protecting the foot. If it is not present, the foot will be burnt, as the temperature of the foot at the location of the nerve ending will surpass the pain threshold temperature of 318 Kelvin.

url: http://hdl.handle.net/1813/205
date: 2004-11-12
creator: Colosi, Lisa;Morehead, Justin;Reed, Kory;Eckhardt, Ben;Chanler-Berat, Derek

viewed: 4306
title: Development of Frostbite in the Fingers
abstract: Physiologically, frostbite can only occur after a segment of tissue has been exposed to the elements for sufficient time such that the tissue temperature remains constant at 0 ?C and the solutions inside the tissue itself begin to form ice crystals and freeze. We will be exploring the time necessary for the development of each of the four degrees of frostbite as a function of the weather conditions , which will be represented by a reference temperature and a heat transfer coefficient (hc) based on the wind velocity. Additionally, we will also give consideration to two different insulation scenarios (bare finger versus gloved fingered) in order to determine the optimal type of insulation for different weather conditions. Our results, in the format of individual contour plots for selected temperatures and each of the insulation scenarios will provide insight into the relative danger of frostbite development and determine exactly what portions of the finger are most at risk.

url: http://hdl.handle.net/1813/206
date: 2004-11-12
creator: Drost, Laurens;Loaknauth, Nicholas;Auerbach, Eric;Gupta, Sameer;Jolly, Aaron
viewed: 3988
title: Laser Hair Removal
abstract: Laser hair removal, through a process known as selective photothermolysis, is a new trendy way to remove all that unwanted hair. Traditional methods such as waxing, tweezing, shaving and electrolysis each have their disadvantages. However, selective photothermolysis provides a simple and relatively painless way to achieve that hair free physique. From our knowledge of the procedure, we found that the most ideal way to model the hair follicle would be in an axis-symmetric model that divides the follicle and its surrounding tissue in half. The follicle was modeled at a depth of .0035m. Other parts of the hair are neglected as we concluded them to be insignificant. After calculating the laser?s power and inputting it as a flux over the surface of the follicle, we found very pleasing results that agree with our target values. These values include a threshold of 60 degrees C for the follicle in order to completely damage it and a threshold of 50 degrees C for the skin that would cause a mild pinching sensation because of the minute sizes we are dealing with. To obtain optimal results the following three laser parameters were varied: fluency, pulse duration and thermal relaxation time. After rigorous testing we found the optimum values as follows: pulse duration of 10ms, thermal relaxation time of 40ms and finally a fluency of 50 J/cm^2. We also found through sensitivity analysis that the specific heat and conductivity do not vary with temperature within a certain range. However, density proved to be very significant and varied drastically with temperature change within the follicle.

url: http://hdl.handle.net/1813/207
date: 2004-11-12
creator: Ward, Briana;Kaufman, Aaron;Gordon-Messer, Susannah;Buhmann, Brendan;Barten, Garrett
viewed: 4324
title: Optimization of Nicotine Patch Placement
abstract: Nicotine patches are currently used as a transdermal drug delivery method help to people trying to quit smoking. Currently, those trying to quit smoking are encouraged to place the nicotine patch on the outside of the upper arm. This study examined the effect of placing the nicotine patch in different locations on the body. This was accomplished by examining a cylindrical section of skin (epidermal and dermal layers) with a nicotine patch placed on top. Epidermal layers were varied depending on the location of the patch: abdomen, back, ear and buttocks. The results showed that the placement of the patch on the body is relevant and that the epidermal layer of the skin is the biggest barrier to transdermal drug delivery. For faster delivery directly to blood it is useful to use an area of the body with a thin epidermal layer, but for a more time consistent delivery to the blood, a thicker epidermal layer is preferable. http://instruct1.cit.cornell.edu/

courses/bee453/secure/student2002/Albuterol/Webpage/

url: http://hdl.handle.net/1813/208
date: 2004-11-12
creator: Patel, Payal;Miksic, Vonya;Meltzer, Sara;Jones, Caroline;Gonzalez, Ruth
viewed: 4059
title: Radiofrequency Ablation for Treatment of Osteoid Osteoma Tumors
abstract: This project analyzes the different parameters involved in the use of radiofrequency ablation in destruction of osteoid osteoma tumors. Osteoid osteomas occur most frequently in the long tubular bones, especially those in the lower extremities. Studies in destruction of these types of tumors are critical because they occur most commonly in people that are in the prime of their life, between the ages of seven and twenty-five. Previous treatments such as surgical tumor removal are painful, costly, and require longer healing times. Radiofrequency ablation promises to destroy the cancerous cells with minimal invasion and loss of healthy tissue at a lower cost and shorter recovery time. Using finite element analysis, we determined the optimal probe placement and size, heating voltage, and duration of treatment. To find these parameters our group utilized FIDAP and GAMBIT to model and simulate physiological conditions during the ablation. We used the energy equation to govern our system simulation and neglected the convective heat transfer because heat loss due to blood flow was negligible compared with that generated by the probe. The electric field generated was modeled as a species concentration by the Laplace equation. This field was the determining factor in heat generation and therefore tumor destruction. Our model was three-dimensional and the radius of the bone was determined so that we could assume a semi-infinite region, in which the outer boundary was held constant at body temperature. Our initial conditions assumed that the tissue was at average body temperature (37 degrees). Our findings suggest that having a two-probe system, each probe with a radius of .0001m, held at 11 mV for 60 seconds is the most efficient, less invasive method. Our study also indicated that the number of probes used was insignificant and that the specific heat, the tissue density, electrical conductivity, and thermal conductivity were of less importance to this process.

url: http://hdl.handle.net/1813/209
date: 2002-11-12
creator: Wong, Hing Fei;Suzuki, Kei;Shanbhag, Mihir;Prabhu, Anoop;Hai, Jimmy
viewed: 3163
title: Thermal Capsulorraphy for the Treatment of Acute or Chronic Shoulder Instability
abstract: Shoulder instability resulting from over-used and/or damaged ligaments is a frequent problem for physically active individuals, especially professional athletes. This chronic ailment had been traditionally treated with open procedures in the past, but arthroscopic alternatives have become the new wave in orthopedic treatment. Thermal capsulorraphy utilizes a Radio Frequency (RF) probe that is inserted in the shoulder to shrink the ligaments by denaturing the fibers and letting them stiffen during the subsequent renaturation process, thereby curing the instability. Our goal in this project is to model the heating of the shoulder ligament to determine the optimal time, convective heat transfer coefficient (h), and the proper heat generation (Q) to generate the most uniform results, while limiting the unwanted heat that is delivered to the surrounding tissue. We concluded that computer simulation can be used to better understand the heat transfer in the shoulder during thermal capsulorraphy. We also found that the optimal Q was 60,000 kW/m3 , the optimal h was 50 W/m2-K, the optimal time was 600 seconds per ligament strip, and the optimal number of probe sweeps was three to get the most effective results.

url: http://hdl.handle.net/1813/210
date: 2004-11-12
creator: Whitman, Kimberly;Patcha, Prasanth;Pardo, Jaime;Gaborski, Thomas;Davis, Philip M.

viewed: 4601
title: The Effects of Topical Heating for Therapeutic Uses
abstract: The application of topical heat for therapeutic purposes has become commonplace in America. It is used by professionals including physical therapists and physicians to treat their patients as well as by individuals within their home or at work. Using computer simulation of two-dimensional heat transfer through the outer tissue layers of the body, the process of heat transfer and temperature gradients within the tissues can be predicted. The objective of this study was to determine the temperature gradient of the muscle layer after applications of heat for less than one-half hour. Finite energy heat sources such as a hot water bottle as well as electric heat constant-temperature sources were evaluated. Applied temperatures were maintained at 50 C or less so not to irritate the skin surface. It was determined in all cases that the temperature of the muscle did not significantly increase within our time frame and actually began to cool after fifteen minutes with the hot water bottle case studies. On the other hand, the temperature of the epidermal-dermal layer, where nerve endings exist, remained at an elevated state of above 40 C for an extended period of time. It is inferred that a heat stimulated response of the neurons may be the cause of muscle relaxation and pain relief when a topical heat source is applied.

url: http://hdl.handle.net/1813/211
date: 2002-11-12
creator: Mok, Lawrence;Chan, Jason;Kou, Cynthia;Teh, Cheryl;Ho, Calvin
viewed: 2479
title: Will You Warm My Hand?
abstract: The objective of this design was to determine the effect of a commercial heating patch in a gloved hand on a cold day. Using Gambit and FIDAP, we meshed a gloved hand with results showing that this patch indeed warms the hand to normal body temperature in about 13 minutes. We also showed that varying blood perfusion rates do change the final temperature significantly. We also performed a sensitivity analysis with different types of leather gloves, but this only showed a change in temperature of about two degrees.

url: http://hdl.handle.net/1813/212
date: 2004-11-12
creator: Yoo, Sylvia;Tiberio, Christine;Reynolds, Jaimee;LeBarron, Jamie;Cuneo, Kyle
viewed: 4689
title: Cryogenic Treatment of the Common Wart
abstract: This study models the effect of applying subzero temperature liquids to the surface of a common wart. The goal was to determine which variables (i.e. conductivity of skin, temperature of liquid, duration of application) that affected the extent of wart death versus healthy skin damage and to maximize this ratio. The wart was analyzed as an axi-symmetric, isotropic solid that protrudes from the skin surface. GAMBIT was used to create the mesh of skin and wart, and FIDAP was used to conduct finite element analysis to model the freezing process. Our results showed that liquid nitrogen was the most effective agent for cryogenic treatment of warts. The application time that resulted in maximal wart death and minimal skin damage was nine seconds with liquid nitrogen. In addition, sensitivity analyses were performed to determine the impact of changes in parameters and properties. The bioheat term and changes in the heat transfer coefficient did not significantly affect the results. However, a thermal conductivity that varied with temperature produced significantly different results compared to a constant conductivity.

url: http://hdl.handle.net/1813/213
date: 2004-11-29
creator: Pleasant, Andrew
viewed: 1868

title: Public engagement with health research: Development of knowledge and attitude scales
abstract: This dissertation reports on the development of two measures useful to help understand how health research does - and does not - get used by the public. This project is important for several reasons. First, most major advances in health since the beginning of the 20th century are due to the application of new knowledge and technologies such as immunizations and preventive medicine. Also, there is an ongoing shift in the burden of disease away from infectious diseases and toward chronic diseases requiring increased patient self-management as well as behavior and lifestyle changes. Finally, a continuing emergence of self-care protocols as basic treatment practices combined with cutbacks in health services compound the need for a public that is fully engaged with the products of health research.
This work is conducted within a theoretical framework that posits health literacy as a primary tool individuals use to engage with the products of scientific research on health. Building upon that theoretical framework, this dissertation reports on the development of a method to assess the level of knowledge based on scientific research on health, or health research, that a person holds. Second, as attitudes are also important in terms of changing behavior to improve health, a measure to assess attitudes toward health research is developed. Both measures were tested in China, Mexico, Ghana, and India as part of a larger research effort conducted by the World Health Organization and local partners.
This work has developed two measures that will provide new information about public engagement with health research and health literacy. In addition to the central methodological developments, key lessons from this research are related to the role of health literacy in relation to the process of public engagement with health research, the design of international research projects, and the role of strict methodological guidelines to ensure validity and reliability. When applied, that knowledge can enhance efforts to promote public engagement with health research and, over the long-term, improve public health.

url: http://hdl.handle.net/1813/214
date: 2004-11-29
creator: Anderson, Garrett
viewed: 1751
title: TOR Signaling and Arabidopsis Development
abstract: TOR (target of rapamycin) proteins are central regulators of cell growth in eukaryotes. Acting as protein kinases, they integrate nutrient, amino acid and hormonal signals to regulate ribosomal activity, mRNA recruitment to the ribosome and other processes via the phosphorylation of downstream activators. Their ability to phosphorylate target substrates depends on the activity of a second conserved eukaryotic protein, Raptor (regulatory associated protein of TOR), which as a TOR binding partner presents substrates to TOR for phosphorylation.
Mei2 is a putative TOR substrate in the fission yeast Schizosaccharomyces pombe. It acts in concert with a noncoding, mRNA-like molecule meiRNA to trigger meiosis in conjugated diploids under low nutrient conditions. Mei2 is present as a single-copy locus in a variety of eukaryotes and as a small conserved gene family in land plants.
This thesis describes efforts to characterize the Arabidopsis Raptor and Mei2 homologues as a means of understanding TOR signaling in land plants. Using a reverse-genetics approach, I have isolated Arabidopsis lines harboring disruptions of the Raptor homologues AtRaptor1A and AtRaptor1B, and crossed these lines to generate AtRaptor double mutants. AtRaptor1B mutants show subtle defects to root and shoot development; AtRaptor double-mutants show normal embryonic development but arrest growth as seedlings with minimal post-embryonic meristem-based growth.
AtRaptor1B interacts with the Arabidopsis Mei2 homologue AML1 (Arabidopsis Mei2-like 1) in a yeast two-hybrid assay, in an interaction mediated by the AML1 N-terminus. This implicates AML1 as a substrate for AtTOR in Arabidopsis TOR signaling. Using reverse-genetics complemented by a phylogenetic analysis of the AML gene family in Arabidopsis and elsewhere in the angiosperms, I show that there are two conserved

clades of AML-like gene products in the angiosperms. There is considerable redundancy among and between members of these clades. Single and higher-order mutants harboring disruptions of the AML loci yielded subtle defects in the timing of the transition to flowering. A line homozygous for disruptions in all five AML loci did not differ dramatically from lower-order insertion allele homozygotes; this may be due to accumulation of transcript fragments expressed from the disrupted AML5 locus.Dr. Maureen Hanson
PCMB Fellowship

url: http://hdl.handle.net/1813/215
date: 2004-11-29
creator: Chen, Chun-yen
viewed: 2442
title: Impossible Difference: "Writing" and the Question of Community in Modern and Postcolonial Literature
abstract: This dissertation contests indiscriminate valorization of "difference" and its cognates in postcolonial discourse by shifting attention to the ontological "impossibility of difference" of postcoloniality and to the ethical demand born of such an ontological consideration. The study begins with an analysis of Charles Baudelaire's treatment of the ethos of sameness in his lesbian poems. My argument is that at a time when the conceptualization of difference is assuming formative importance in modernity's political philosophy, cultural imaginary, and epistemology, Baudelaire's work is already undermining the Self-Other demarcation. The reason for my extending the scope retroactively to European modernity is that Baudelaire's time, as I view it, marks a historical juncture where the Self-Other dynamic begins to materialize a certain episteme by assuming a material "content."
Then, spanning the work of writers from a wide range of areas including Salman Rushdie (Indian British), Theresa Hak Kyung Cha (Korean American), and Dancing Crane (Taiwanese), this study examines, in particular, the way in which these writers approach the impossibility of difference by problematizing the concept and praxis of writing. That is, writing assumes a quasi-ontological status and functions as the site where the postcolonial subject materializes his/her conception of "community." The governing argument of the study is that the singular reliance on the singularized Self-Other model in the construction of postcolonial theory risks neglecting the relationship between the self and the collective, which too constitutes a crucial portion of the subject's ethico-political experience. Secondly, since the Self-Other model is conventionally premised on a power relation, sanctification of this model as the prominent language in postcolonial theory risks losing sight of postcolonial theory's own limitations, especially the confinement of political idioms. I argue that to consider postcoloniality in light of "community" is to configure postcoloniality not merely as a historical juncture but as a futurist episteme anticipating an emancipatory agenda that can break out of the dilemma of the idiom of difference and difference-driven identity politics. Theorists discussed in this study include Walter Benjamin, Jacques Derrida, Jean-Luc Nancy, and Emmanuel Levinas.

url: http://hdl.handle.net/1813/216
date: 2004-11-30
creator: Saunders, Liindsey A.;Ritchie, Thompson Cavage;Rickert, Linda M.;Posner, Emily A.;Merola, Nicholas A.;Kornet, Allison D.;Kornblatt, Julia R.;Heinlein, Jennifer L. S.;Greene, Ilana M.;Curry, Lauren E.;Cohen, Stuart L.;Brown, Jacob R.;Savory, Elizabeth A.;Ma, Janet M.;Fraker, Emily J.;Arcate, Jessica M.;Horn, Matthew G.;Meigs, Garrett W.;Kiernan, Laura D.;Juice, Stephanie M.;Hayn, Melanie K.;Hartman, Elizabeth A.;Grinath, Joshua B.;Farr, Rachel H.;Fairbairn, Madeleine P.;Andersen, Michael J.;John, Dustin F.;Johansen, Anna K.;Corriel, Sean Adam;Harper, Matthew P.;Wolfer, Nicholas R.;Wels, Jared I.;Wei, Melissa Y.;Wei, Catherine J.;Talbot, Jared C.;Smith, Terry Ann;Shaw, Andrea W.;Seidman-Zager, Michael I.;Robinson, Jon F.;Patrawala, Zeenat;O'Donnell, Kelly L.;Mitschelen, Matthew C.;Miller, Allison M.;McDonald, Erin M.;Livingstone, Esther A.;Kozak, Genevieve M.;Kim, Chung-Eun Joanne;Johnson, Amy E.;Ilic, Nina;Hoffman, Catharine

E.;Geiler, Kerry A.;Egan, J. Franklin;Doyle, Adam J.;Colangelo-Lillis, Jesse R.;Cheng, Christina W.;Briggs, Benjamin J.;Bartoli, Carol Renato;Armsby, Michelle L.;Aridgides, Paul D.;Sepp, Peter J. Jr.;Savageau, Nicole R.;Rokhsar, Jennifer L.;Plotnik, Joshus M.;Kulick, Amy E.;Kepping, Sheryl A.;Johnson, Jennifer L.;James, Karen L.;Hanley, Daniel;Cassano, Amy E.
viewed: 4962
title: 2003-2004 Research Honors Program Abstracts (for the College of Agriculture and Life Sciences Undergraduates)
abstract: Faculty in the College of Agriculture and Life Sciences at Cornell University mentor and guide undergraduate students who have chosen to pursue a research project and graduate with honors. These abstracts reflect the depth of their scholarship and intellectual ability. The research projects encompass work in animal science, biological science, entomology, landscape studies, natural resources, physical science, plant science, and social science.

url: http://hdl.handle.net/1813/217
date: 2004-12-01
creator: Cuk, Matija
viewed: 3171
title: Dynamics and Origin of the Irregular Satellites of the Giant Planets
abstract: Although analytical studies on the secular motion of the irregular satellites have been published recently, these theories have not yet been satisfactorily reconciled with the results of direct numerical integrations. These discrepancies occur because in secular theories the disturbing function is generally averaged over the Sun's orbital motion, whereas instead one should take into account some periodic terms, most notably the so-called ``evection'', which can be large for distant, slow-moving satellites. Here it is demonstrated that the evection and other terms from lunar theory can be incorporated into the more modern Kozai formalism, and that our synthetic approach produces much better agreement with results from symplectic integrations. Using this method, the locations of secular resonances are plotted in the orbital-element space inhabited by the irregular satellites. The present model is found to predict correctly those satellites that are resonant or near-resonant.
The octupole term in the disturbing function is also analyzed to determine the strengths of resonant-locking for satellites whose longitudes of pericenter are librating. By independently integrating these satellites' nominal orbits using a symplectic integrator, the strength of this resonance can be successfully obtained from simple analytical arguments.
To elucidate the capture of Jupiter's irregular moons, we reverse-evolve satellites from their present orbits to their original heliocentric paths in the presence of Jupiter's primordial circumplanetary disk. These orbital histories use a symplectic integrator that allows dissipation. The present satellites Himalia, Elara, Lysithea and Leda are assumed to be collisional fragments of a single parent. The simulations show that this prograde-cluster progenitor could be derived from objects with heliocentric orbits like those of the Hilda asteroid group. The capture is shown to be energetically possible using analytical approach. The spectroscopic characteristics of the prograde cluster members are compared with those of the Hildas, with the conclusion that the surface color of the prograde-cluster progenitor is consistent with an origin within the Hilda group.
The effects of radiation forces on small irregular satellites are also explored. Two new radiation effects, the orbital YORP and the gradient Yarkovsky effect are presented as possible perturbations on irregular satellites' orbits. It is found that the orbital evolution of irregular moons due to radiation effects is small, but that their rotation should be strongly dominated by YORP effect. Various spin orbit resonances are found to be likely for many small irregular satellites.
The distribution of irregular satellite clusters in the space of proper orbital elements appears to be non-random. The large majority of irregular-satellite groups cluster are found close to the secular resonances, with several objects having practically stationary pericenters. The name ``Main Sequence'' is proposed to describe this

grouping, and it is noted that none of the largest satellites (those with radii $R >$ 100 km) belong to this class. Finally, this dichotomy appears to imply that the smaller near-resonant satellites might have been captured differently than the largest irregulars.

url: http://hdl.handle.net/1813/218
date: 2004-12-06
creator: Lohmueller, Torben
viewed: 1628
title: The Cunning Lust. Aesthetic and Political Perspectives on Masochism.
abstract: While the works of Alphonse Donatien de Sade have widely impacted aesthetic and critical discussions in 20th century avant-garde art and critical theory, the supposed ?inventor? of masochism, Leopold von Sacher-Masoch, has been largely neglected by scholars and critics alike. Only in recent years and in a tardy response to Gilles Deleuze?s Pr?sentation de Masoch (1969) have Sacher-Masoch and the subject of masochism received some attention within the debates in both German and Cultural Studies, notably by Albrecht Koschorke. Leopold von Sacher-Masoch (1988), John Noyes. Mastery of Submission (1997), Michael Gratzke. Liebesschmerz und Textlust (2000).
Die verschlagene Lust expands the contexts in which Sacher-Masoch?s work has hitherto been treated to problems in philosophy (master slave dialectic), confessional writing (Rousseau, recent queer studies), history (Sacher-Masoch?s historical and political writings), art history (strategies of visual appropriation), and performance studies (Nietzsche, Cansinos Assens, performance art of the 1960?s). Examined under these cross-disciplinary perspectives masochism proofs to be both a political and an aesthetic strategy, circumventing the dialectical impasses of transgression (as in Sad(e)ism and the early avant-garde) by operating through disavowal, seduction, and experimental reconfigurations of the given. While in existing research, Sacher-Masoch?s work has been predominantly classified as a phenomenon particular to the late nineteenth century, I argue that we must consider its refusal of artistic authorship and destabilisation of the reality principle as prefiguring post-modern theory and aesthetics.
The literature discussed includes: Sacher-Masoch?s collections Das Verm?chtnis Kains, Vols. I and II (1877), Russische Hofgeschichten (19uu), his historical works Der Aufstand in Gent unter Kaiser Carl V. (1857), Ungarns Untergang und Maria von ?sterreich (1862), and among others the following: G.W.F. Hegel. Phenomenology, Jean Paul Sartre. Being and Nothingness, Jean-Jacques Rousseau. Confessions, Eve Kosofsky Sedgwick. A Poem is Being Written, Rafael Cansinos Assens. Est?tica y Erotismo de la Pena de Muerte, Herrmann Nitsch. orgien mysterien theatre, and Friedrich Nietzsche. Birth of Tragedy.

url: http://hdl.handle.net/1813/219
date: 2004-12-06
creator: Gold, richard;Wei, Thomas;Wang, Ray;Toor, Neelu;Tang, Michael;Pedersen, Linda;Lucadamo, Kirk;Holmberg, Andrew;Ghassabeh, Ali John;Bhattacharyay, Madhurima;Caretto, Carlo
viewed: 2897
title: The Visible Hand, Volume 12, Issue 1
abstract: This is the fall 2004 edition of Cornell University's longest-running undergraduate economics and business journal. This issue focuses on the hotly contested U.S. election of 2004 under the economic issues of jobs and taxes. Other topics include globalization and the expansion of the EU, ethics in the aftermath of corporate scandal, and many other subjects in the world of economics and business.

url: http://hdl.handle.net/1813/220
date: 2004-12-07
creator: Para, Pilar A.;Pfeffer, Max J.
viewed: 3448

title: Immigrants and the Community
abstract: First in a series based on the research project "Integrating the Needs of Immigrant Workers and Rural Communities," which attempts to inform New York communities about the nature and consequences of increasing immigrant settlement.Many upstate New York communities have experienced population loss and decline in the last decade. Increasing numbers of immigrants have settled in many of these communities, which poses possible community development challenges and opportunities. Because each community must address these issues in its own way, this report is intended to make communities aware of changes in their populations and highlight issues they may choose to address.USDA Fund for Rural America (grant #2001-36201-11283) and Cornell University Agricultural Experiment Station (grant #33452)

url: http://hdl.handle.net/1813/221
date: 2004-12-10
creator: Irvine, Thomas Alexander
viewed: 2478
title: Echoes of Expression: Text, Performance, and History in Mozart's Viennese Chamber Music
abstract: This dissertation begins with a source-critical problem with consequences for performance: the many differences between autographs and disseminated sources of Mozart's Viennese instrumental music. This problem serves as a foil for two lines of inquiry: the notion of performance in the late-eighteenth century and the place of performance in historical scholarship. The first chapter traces the recent history of Mozart scholarship in the context of wider debates about writing history; here, the central methodological question of the dissertation -- is there a musical way to write music history? -- is raised for the first time. The second chapter compares traditional musicological techniques of textual editing with more recent developments in the fields of "performance studies" and considers their application to the "multi-textuality" of some of Mozart's Viennese instrumental music. In the third chapter, the growing interest in the expressive qualities of human language in German aesthetic thought beginning around 1770 serves as background to an examination of shifts in thinking about the place of expression in musical performance. String quartets by Mozart and his contemporaries are explored for evidence of this change, and for the clues they might offer to their composers' opinions about fixing musical expression in text. The fourth chapter appraises two performances of Mozart's Fantasy for Clavier in c Minor K. 475, one by the composer himself and one in Wilhelm Heinse's 1795 novel Hildegard von Hohenthal. If performance is a criteria for interpretation, it is argued, then these performances yield two different meanings for K. 475. In the fifth chapter an instance of 'multi-textuality' in the String Quintet K. 593 is studied in detail. K. 593's material sources (autograph manuscript, manuscript copies, and early engraved editions) are considered in relation to documents of an early performance involving Mozart. Read together, these "echoes" of the expressive acts of performance paint a complex picture. Finally, a short epilogue draws major themes of the dissertation together and suggests that the arrival of both new theories of linguistic expression and the birth of "historicism" around the time Mozart was active as a composer is no coincidence.

url: http://hdl.handle.net/1813/222
date: 2004-12-10
creator: Harbold, Jeffrey
viewed: 3609
title: THE ELECTRONIC AND OPTICAL PROPERTIES OF COLLOIDAL LEAD-SELENIDE SEMICONDUCTOR NANOCRYSTALS
abstract: Quantum dots of the IV-VI semiconductors, and specifically lead selenide, strongly confine both electrons and holes, leading to a dramatic modification of the bulk semiconductor properties. This dissertation is devoted to the study of the electronic and optical properties of colloidal lead-selenide nanocrystals or quantum dots. We begin by discussing the synthesis and characterization of high-quality colloidal lead-

selenide nanocrystals with a narrow size distribution and well-passivated surfaces. With diameters between 3 and 8 nanometers, these lead-selenide quantum dots exhibit size-quantized transitions in the infrared region of the electromagnetic spectrum and exhibit bright band-edge photoluminescence tunable from approximately 1000 to 2000 nanometers. These properties are extremely promising for applications. The current theoretical understanding of the electronic states of IV-VI semiconductor quantum dots is based on envelope function approaches and tight-binding methods. While successful in explaining many features of the electronic structure, all current calculations fail to explain the presence of additional peaks in the optical absorption spectrum of lead-selenide and lead-sulfide quantum dots. We re-examine the leading explanations for these unexplained transitions and also consider a new possibility, that of enhanced electric quadrupole transitions. In addition, the degeneracy of the lowest optical transition in IV-VI quantum dots is predicted to split by the intervalley coupling of the 4 equivalent L-valleys in the first Brillouin zone. Low-temperature photoluminescence and size-selective photoluminescence experiments reveal, for the first time, a splitting in the emission spectra of lead-selenide and lead-sulfide nanocrystals. These observations are consistent with a theoretical treatment of the splitting of the lowest transition in lead-selenide quantum dots due to intervalley coupling.The dynamics of electrons and holes are crucially influenced by quantum confinement. In the strong confinement limit, a dramatic reduction in the excited state (or intraband) relaxation rate of carriers is predicted to occur. With its sparse electronic states and simple energy spectra, lead-selenide quantum dots represent an ideal material system in which to study the intraband carrier relaxation. We present the first measurements to directly time-resolve the intraband relaxation of electrons and holes in lead-selenide nanocrystals. Prior theories cannot explain the observed picosecond time-scale intraband relaxation and we discuss several possible explanations.This work is primarily supported by the Center for Nanoscale Systems at Cornell University, under the Nanoscale Science and Engineering Initiative of the National Science Foundation: NSF Award # EEC-0117770

url: http://hdl.handle.net/1813/223
date: 2004-12-13
creator: Zarruk, Gustavo

title: AN EXPERIMENTAL AND ANALYTICAL INVESTIGATION OF WAVE INTERACTION WITH AN OFFSHORE SUBMERGED CYLINDRICAL STRUCTURE
abstract: The interaction of periodic waves with a model offshore submerged water intake structure was examined experimentally and analytically. Two wave conditions, with long and short wavelengths relative to the structure?s characteristic length scale were tested. Flow kinematics were characterized using particle image velocimetry and the wave motion measured with capacitance wave gages. Pressure distributions at key locations around the model as well as inline and uplift forces were measured with an array of pressure sensors distributed around the model. The two types of waves tested simulated the maximum and minimum typical conditions estimated to be present on existing intake structures. Additionally, flow visualization was carried out for a solitary wave traveling over the structure to better characterize the processes that occur in the vicinity of the structure. A complete description of the flow kinematics is presented for the long wave case. The main vortex patterns are related to the wave motion induced inline and uplift forces. Large scale vorticity patterns generated on the weather and lee sides of the structure influence the loading of the structure, primarily the uplift force where large uplift coefficients were found. The dominant vorticity pattern, a vortex filament pair, was linked to the maximum uplift coefficient. The inline force coefficient found is similar to coefficients previously reported for cylindrical structures. The ratios of total vs two component turbulent kinetic energy were estimated. Results disagree with typical ratios found in other studies and generally used to estimate total kinetic energy when one component of velocity is missing. However, large turbulent kinetic energy uncertainty levels were found and caution is advised when using this information. An analytical model based on small amplitude wave theory and irrotational flow solved using a eigenfunction expansion

method is presented. Results are compared with experimental values measured for a short wavelength case, conducted specifically to verify and validate the model. Horizontal and vertical velocities as well as inline and uplift force coefficients are in good agreement. Force coefficients were also compared with the long wavelength case results and similar maximum values were obtained. The model is capable of estimating wave scattering, flow kinematics, and wave induced loading on the structure in the diffraction range.

url: http://hdl.handle.net/1813/224
date: 2004-12-13
creator: Martin, Pal
viewed: 2280
title: Cost Sharing and Approximation
abstract: Central to this thesis are problems in which a group of users can benefit from building and jointly using some kind of infrastructure, be it a set of supply depots, service stations, or a communication or transportation network. We study two important questions related to these kinds of scenarios: (1) how to build the shared facility that satisfies the needs of a given set of users in a cost-effective way, and (2) how to split the cost of the shared facility among the participating users in a fair and reasonable way.

In the first part of the thesis, we seek to design cost sharing functions with desirable game-theoretic properties. We are looking for cost sharing functions that are fair, and encourage cooperation among users. This is captured in the notion of cross-monotonicity: it says that a cost share of any user should never increase as more people join the system, and never decrease when players leave. Towards this end, we develop a new technique to generate such cross-monotonic cost shares using a primal-dual type process, and use it to design cross-monotonic cost shares for several NP-hard optimization problems.

In the second part we proceed in a slightly different direction, applying cost sharing to the design of approximation algorithms. We consider a class of two-stage stochastic problems with recourse. In these problems, we can buy building blocks (edges, facilities, vertices..) in two stages. In the first stage, the elements are relatively inexpensive, but we do not know the requirements of users we will have to serve (we only have a probabilistic forecast of their demands). In the second stage, the actual demands are revealed, and we must buy enough elements (now at a higher price) to satisfy all user demands.

We show that whenever the underlying deterministic problem admits a certain type of cost sharing, an extremely simple strategy gives us good approximation guarantees: in the first stage, take several samples from the forecasted distribution, and build a solution that covers all the sampled clients at the low price. When the real users materialize, augment the first stage solution to cover the actual demands. In this way we obtain constant approximation algorithms for stochastic versions of problems like Uncapacitated Facility Location, Steiner tree, Steiner Forest or Vertex Cover.

url: http://hdl.handle.net/1813/225
date: 2004-12-13
creator: Vishwasrao, Harshad
viewed: 2550
title: Quantitative two-photon redox fluorescence microscopy of neurometabolic dynamics
abstract: The fluorescence of the intracellular electron donor reduced nicotinamide adenine dinucleotide (NADH) is a well established probe of cellular metabolic state. This technique, called redox fluorimetry, can be combined with two-photon microscopy to provide functional imaging deep in living neural tissue with a spatio-temporal resolution far exceeding that of conventional functional imaging techniques (e.g. fMRI, PET). This resolution offers a new opportunity to explore spatio-temporal heterogeneities in the response of neural tissue to stressors such as metabolic inhibition and activity induced metabolic load. These metabolic responses were found to differ between cell types in the brain (astrocytes and neurons) and between sub-cellular compartments (mitochondria and cytosol). The time course of compartmental responses revealed that

transient hypoxia caused an NADH increase followed by a post-hypoxic mitochondrial NADH hyperoxidation and a cytosolic lactate accumulation. A similar analysis of the time course of electrical activity induced metabolic responses revealed that the metabolic cost of neural activity was first met by oxidative neuronal metabolism followed by glycolytic metabolism in astrocytes.

The accuracy of redox-fluorimetry is limited however, by the effect of the local environment on the fluorescence of intracellular NADH. To characterize the effect of the intracellular environment on the photophysical properties of intracellular NADH, we measure its time resolved fluorescence and rotational anisotropy decays. These decays characterize the excited state and rotational dynamics of intracellular NADH, and from them we can infer how metabolic inhibition affects the enzyme binding states of NADH and the local viscosity for NADH rotational motion. The net effect is a reduction of the average lifetime of intracellular NADH fluorescence upon metabolic inhibition, causing the fluorescence increase during inhibition to underestimate significantly the actual concentration increase.

Historically, measurements of the NADH response to metabolic perturbations have not significantly described the complexity of this response. The research presented here shows that metabolism associated changes of intracellular NADH are not only spatio-temporally heterogeneous, but also entail changes in the NADH conformation and its photophysical properties. By characterizing and accounting for these effects, we make progress towards quantitative redox-fluorimetry and the development of an accurate picture of in vivo NADH dynamics.NIH-NIBIB, Number 9 P41 EB001976-18, "Biotechnology Research Digital Electro-Optical Imaging."

url: http://hdl.handle.net/1813/226
date: 2004-12-15
creator: Volz, Erik
viewed: 1765
title: Random Networks with Tunable Degree Distribution and Clustering
abstract: We present an algorithm for generating random networks with arbitrary degree distribution and clustering (frequency of triadic closure). We use this algorithm to generate networks with exponential, power law, and poisson degree distributions with variable levels of clustering. Such networks may be used as models of social networks and as a testable null hypothesis about network structure. Finally, we explore the effects of clustering on the point of the phase transition where a giant component forms in a random network, and on the size of the giant component. Some analysis of these effects is presented.NSF (IGERT-0333366)

url: http://hdl.handle.net/1813/227
date: 2004-12-15
creator: Nakahara, Miwako
viewed: 2643
title: SIMULATION OF THE INTERACTION BETWEEN PROTEINS AND A CHARGE-NANOPARTTERNED SURFACE
abstract: The characteristics of protein recognition and actuation on a silicon device are investigated using Dynamic Monte Carlo simulations with both a simple cubic lattice model and a high-resolution lattice model. The surface of a model device has a nanoscale electrostatic charge distribution produced by charged nanocrystals embedded into the model device. Thermodynamic and structural quantities of the protein-surface interaction are calculated using the Miyazawa-Jernigan contact energies for the simple cubic lattice model, and the Skolnick-Kolinski interaction scheme for the high-resolution lattice model. A parallel tempering method is applied in the simulation.

The results indicate that the B1 domain of Protein G (1gb1) and two mutants of 1gb1s with the same mass, isoelectric points, and amino acids can be separated on the surface based on binding affinity differences. The differences are caused by the different surface charge distributions of the proteins. A protein with a more

disperse charge distribution along the sequence has a lower affinity, while a protein with a more segregated charge distribution has a higher affinity. The segregated charge allows the protein to be denatured further by the generation of stronger Coulombic forces between the protein and the charged nanocrystals. This suggests that charge-patterned surfaces may be able to differentiate similar proteins that are usually difficult to separate by conventional methods.

It is also demonstrated by the simulation that proteins can be actuated by switching and moving the charges of the nanocrystals. This result suggests that if fast reprogrammability of charges is realized, the device could be used to actuate a single biomolecular in a controllable manner.

The simple cubic lattice model allows us to predict thermodynamic properties with ease, while the high-resolution lattice model enables us to estimate realistic protein structures. A combination of the two methods will be a useful tool to obtain thermodynamic, kinetic, and structural characteristics of protein adsorption on model devices.

url: http://hdl.handle.net/1813/228
date: 2004-12-15
creator: Bush, Evelyn
viewed: 2005
title: Transnational Religion and Secular Institutions
abstract: TRANSNATIONAL RELIGION AND SECULAR INSTITUTIONS: STRUCUTURE AND STRATEGY IN HUMAN RIGHTS ADVOCACY
Evelyn Louise Bush, Ph.D.
Cornell University 2005
This dissertation examines the influence of international institutions on religious NGO claims making. An analysis of religious participation in Human Rights addresses three general questions. First, how has the rationalization of the human rights field influenced levels of religious mobilization in human rights? Second, how, and through what mechanisms, do religious NGO frames transform as a result of participation in secular international institutions? Third, how, and through what mechanisms, is access to human rights institutions associated with religious and regional characteristics of NGO? These questions are addressed through analyses of 24 key- informant interviews, United Nations documents and press releases pertaining to the UN Declaration of Commitment on HIV/AIDS, and an original dataset comprised of 591 religious human rights organizations.

First, religious NGO foundings over the past century show that religious movement into the public sphere increased while Human Rights was becoming a highly bureaucratized regime with international institutions at its core. Interviews with religious NGO members confirm that the increase in religious NGO foundings over the past fifty years does not indicate cooptation of religious NGOs for the pursuit of secular agendas. Rather, religion still serves as the primary motivating force behind human rights activism among religious NGOs.

Second, analyses of interviews and United Nations documents reveal two strategies ? discursive secularization and procedural rationalism ? that religious groups use to assert claims, to create alliances with other NGOs, and to minimize conflict in situations where religious and secular human rights norms conflict. Religious NGOs use these strategies to capitalize on advantages and mitigate disadvantages associated with religious affiliation in terms of alliance formation and competition for funding within Human Rights.

Third, binomial logistic regression reveals that NGO consultative status with international institutions systematically varies by religious affiliation and location of secretariat. This variation is explained by the intersection of two types of variables: those indicating conformity to hegemonic principles and those indicating organizational resource capacity. In spite of institutional differentiation, religion not only remains relevant in the public sphere, but also continues to be influenced by relationships with states at the transnational level of analysis.Research based on grants from National Science Foundation and Mario Einaudi Center for

International Studies

url: http://hdl.handle.net/1813/229
date: 2004-12-16
creator: Producer: Fly on the Wall Productions;Handler, Maddy;Handler, Philip
viewed: 3215
title: Portrait of a Cornell Artist: Elsie Dinsmore Popkin, BFA'58
abstract: Portrait of a Cornell Artist is also available at http://ifup.cit.cornell.edu/popkin/This video about pastel artist, Cornell alumna Elsie Dinsmore Popkin, BFA '58, is an entertaining narrative by the artist of her life while an art student at Cornell in the mid-1950's. This video has the artist describing how she creates her art, and shows her current work displayed in the NYC Uptown Gallery as well as her recent exhibition at the Herbert F. Johnson Museum of Art created from the 5th floor of the Museum while looking up Lake Cayuga, as well as looking down upon the beautiful Cornell campus as the seasons changed. Created in 2003, on the occasion of her 45th Reunion, this video includes vintage photos from her years at Cornell, as well as recent video taken of Popkin creating her floral pastels in the Cornell Plantations.Publisher: Fly on the Wall Productions

url: http://hdl.handle.net/1813/230
date: 2004-12-17
creator: Rothenbuehler, Joerg
viewed: 3201
title: Dependence Structures beyond copulas: A new model of a multivariate regular varying distribution based on a finite von Mises-Fisher mixture model
abstract: A multivariate regular varying distribution can be characterized by its marginals and a finite measure on the unit sphere. That measure is referred to as the spectral measure of the distribution. The spectral measure describes the structure of the dependence between the marginal distributions. An important class of multivariate regular varying distributions are multivariate extreme value distributions. Existing models for multivariate regular varying distributions in general and multivariate extreme value distributions in particular do not utilize the spectral measure. They focus on closed form equations of the cumulative distribution function. The resulting models are not flexible enough to give a realistic and adequate description of the dependence structure of real life data.

We propose a new model for multivariate regular varying distributions, based on a very flexible parametric model of the spectral measure. We use a finite mixture model to obtain a model with as much flexibility as needed to accurately describe the spectral measure of real life data.

Since the spectral measure is a measure on the unit sphere, we chose directional distributions as the distributions of the components of the mixture model. Directional distributions provide models for the distribution of random variables on unit spheres. In particular, we use the von Mises-Fisher distribution. Its properties allow it to be interpreted as an directional analogue of the well known normal distribution on a Euclidian space.

We describe how to estimate the parameters of this new model from datasets. We introduce a modified version of the likelihood ratio test to decide on how many components are needed for an accurate model of the spectral measure.

We show how our model explains the structure of the spectral measure of several financial time series. We develop a comprehensive model for a multivariate regular varying distribution that is based on our model of the spectral measure. As one particular application of this new model we describe how it can be used for portfolio optimization. We found that our model gives much more accurate results than two other well established models. It significantly improves on the deficiencies of the two existing models.

url: http://hdl.handle.net/1813/231
date: 2004-12-20
creator: Anderson, Briana
viewed: 3954
title: EFFECTS OF ENDORSER ATTRACTIVENESS ON AUDIENCE PERCEPTION OF ENDORSER CREDIBILITY IN CORPORATE SOCIAL RESPONSIBILITY MESSAGES
abstract: Much research has been conducted regarding the physical attractiveness of spokespersons as related to perceptions of credibility of the spokesperson and the sponsoring organization. Advertising and marketing research has shown that physical attractiveness can lead to greater perceptions of credibility of both the spokesperson and sponsoring organization, but these findings often depend on the type of products being marketed, e.g. everyday products versus beauty-enhancing products. This thesis is an experiment that tests whether a highly attractive or moderate/unattractive endorser leads to greater perceived credibility of corporations in the context of selling ideas, i.e. the concept and credibility of corporate social responsibility messages, rather than the selling of commercial products. The study also tested for interactions between attractiveness of endorser, company type, and personal involvement.
One hundred and thirty-seven subjects participated in a 2X2X2 experimental design study (in survey form) in which I manipulated the independent variables of endorser attractiveness and company type and measured cognitive involvement (control variable) and examined their effects on perceived credibility of the endorser and organization. Furthermore, this thesis examines the relationship between endorser credibility and organizational credibility.
Results from the data analysis suggest, first, that there is a positive correlation between endorser credibility and corporate credibility. Second, attractiveness does not behave the same in public relations as in product marketing and advertising. Specifically, this study's findings suggest that attractiveness was negatively correlated with perceptions of overall endorser credibility as well as endorser expertise and trustworthiness. Third, there is an interaction between company type and endorser attractiveness for perceptions of endorser expertise. Finally, the results show that high cognitive involvement does not lead to smaller differences of means in endorser credibility between attractive and unattractive endorsers as was hypothesized in this study.

url: http://hdl.handle.net/1813/232
date: 2004-12-20
creator: Berenson, Dmitry;Lucks, Emily;Waldo, Amanda;Puleo, Connor;Tobenkin, Billy;Bernardo, Katrina;Suarez-Rubio, Santiago;Shishkin, Konstantin;Crawford, Dan;Ingraham, Laurel;Giedinghagen, Andrea;Stewart, Brian;Myron, T. J.;Nawaz, Yasir;Scheines, Emily;Mendelson, Brian
viewed: 3743
title: The Quad, Volume 10, Issue 1
abstract: Editors-in-Chief: Dmitry Berenson and Billy Tobenkin Associate Editors: Anastasia Poushkareva and Madeleine WellsThe Quad is a literary and art magazine celebrating its tenth year at Cornell. We publish poetry, prose, and art on any subject from any author. This is our fall 2004 issue. Enjoy!

url: http://hdl.handle.net/1813/233
date: 2004-12-20
creator: Rippke, Ian
viewed: 3961
title: Design of Integrated, Efficient Power Amplifiers for Next-Generation Wireless Communications
abstract: Kevin Kornegay, Alyssa Apsel, Lester EastmanAn integrated power amplifier and DC-DC converter are presented to create a variable supply voltage power amplifier to improve battery life in cellular handsets. This system has the ability to reduce the average battery current drawn by a handset power amplifier by

operating at lower supply voltages when not transmitting at maximum power. This type of system has not been adopted because of the need for additional circuitry when used with traditional power amplifier modules. To be attractive to system designers, advanced power amplifiers need to exhibit the integration that has been seen in modern radio receivers. In this work, SiGe BiCMOS technology is harnessed to achieve the integration of both circuits on one die, presenting a solution to the desire for high efficiency in a single chip solution.

The design of power amplifiers in SiGe technology is explored, with a focus on the design of a WCDMA handset power amplifier for third generation mobile systems. The design challenges of such a circuit are presented, along with a design methodology involving a mix of time and frequency domain simulation techniques. Layout concerns are addressed in regards to the SiGe BiCMOS process, and their impact on power amplifier performance is highlighted. Measured results are presented which meet the linearity requirements of WCDMA.

A high switching frequency DC-DC converter is also examined, with a focus on integration of such a circuit with a power amplifier. The impact of frequency selection and converter efficiency is analyzed, and several techniques to improve the efficiency are presented. Simulation and measurement results are presented which show excellent agreement over the broad range of converter operating conditions. An analysis method for determining the average reduction of battery current in a variable supply voltage system is presented, with results given for the DC-DC converter/power amplifier integrated system. The integration issues and system performance in regards to physical layout are discussed. The final system measurements show the successful performance of the power amplifier under variable supply voltage operation with the DC-DC converter. The results of this work demonstrate the feasibility of such an integrated, efficient power amplifier and provide a path for integration of advanced power amplifier systems with other transceiver components.

url: http://hdl.handle.net/1813/234
date: 2004-12-22
creator: Cons, Jason G.
viewed: 2281
title: Claiming Territory
abstract: Masters ThesisIn this thesis, I examine the discursive construction of colonial state space in the context of British India's turn of the century North-West Frontier. My central argument is that notions of a uniform state space posited in official theorizations of the frontier need to be reexamined not as evidence of a particular kind of rule, but rather as a claim to having accomplished it. Drawing on new colonial historiographies that suggest ways of reading archives and archival documents for their silences and on historical sociological understandings of state-formation, I offer close readings of three different kinds of documents: writing about the North-West Frontier by members of the colonial administration, annual general reports of the Survey of India, and narratives written by colonial frontier officers detailing their time and experience of "making" the frontier. I begin by looking at the writings of George Nathanial Curzon and others attempting to theorize the concept of frontiers in turn of the century political discourse. Framed against the backdrop of the "Great Game" for empire with Russia and the progressive territorial consolidation of colonial frontiers into borders in the late 19th century, these arguments constitute what I call a "colonial theory of frontiers." This theory simultaneously naturalizes colonial space and presents borders as the inevitable result of colonial expansion. This theorization, I argue, is particularly important to reexamine as it operates on a set of assumptions that have been adopted into social science notions of territory. These assumptions take space as "given" and static as opposed to fluid, contingent, and contested.

I explore this late colonial theory of frontiers as "claims" to territorial rule by looking at the discourse of cartography in the context of the North-West Frontier. Cartography, like colonial frontier theory, posits a uniform state space where the boundaries of rule are neatly demarcated by borders. A closer examination of maps along the North-West Frontier, however, suggests that processes of territory making in this region

neither conform to simple notions of cartographic demarcation nor to colonial frontier theory more generally. Finally, I suggest that these spaces are better understood as zones of negotiation and state formation where claims of colonial territorial integrity are anything but certain. Such an understanding of territory displaces approaches that tacitly designate places as either state or non-state and demonstrates that claims to territorial control must always be understood in the context of the contingent, contested, and negotiated claims for making space into place.

url: http://hdl.handle.net/1813/235
date: 2004-12-22
creator: Cappers, Peter Andrew
viewed: 2931
title: An Evaluation of Demand Response in New York State's Wholesale Electricity Markets
abstract: Dr. Richard Boisvert, Dr. Timothy MountThis thesis identifies the conditions under which and quantifies how much society gains from integrating demand response directly into wholesale electricity markets and the level of participation that will bring about these improvements. Furthermore, it identifies the conditions under which the bulk power system is made more reliable through the participation of demand response and the inducements necessary to achieve this improvement. To accomplish these goals, an econometric representation of New York's wholesale electricity markets' supply curves is developed in order to understand exactly how changes in load affect price.

Economic demand response is very sensitive to locational differences in the bulk power system. The simulations undertaken illustrate how a significant amount of demand response is needed in Western NY to generate a positive change in net social welfare, under rather extreme conditions, whereas very little must be relied upon in New York City and Long Island, under much more reasonable circumstances. From a reliability standpoint, demand response can play a vital role in accurately maintaining reserve margins provided the payment or tariff rate is allowed to fluctuate given the quantity of reserves needed. When a fixed rate is instead used, the reliability benefits from load curtailments are almost always less than the costs to achieve them.

url: http://hdl.handle.net/1813/236
date: 2004-12-22
creator: Cornell University Library. Task Force on Open Access Publishing;Davis, Philip M.
viewed: 7479
title: Calculating the Cost per Article in the Current Subscription Model
abstract: This spreadsheet is an addendum to the Report of the CUL Task Force on Open Access Publishing Presented to the Cornell University Library Management Team August 9, 2004. Cornell University Library. Technical Reports and Papers. Library Papers and Preprints; 2004-3 http://hdl.handle.net/1813/193This spreadsheet calculates the cost per article published in the current subscription model for 113 institutions designated under the Association of Research Libraries. It graphs these institutions by FTE (full time equivalent enrollment) and compares the results to a range of costs postulated in the producer-pays open access model.

This spreadsheet uses publicly-available information and the author regrets any errors within. It was designed to promote dialog and additional analysis -- not to advocate a particular position.

Modifying the starting assumptions will recalculate the values in the spreadsheet and update the graph. Readers are encouraged to change the assumptions based on more accurate information or alternative scenarios.

Questions and clarification can be sent to the author, Philip Davis at: pmd8@cornell.edu
Dec 20, 2004 (Revised May 13, 2005)

url: http://hdl.handle.net/1813/237
date: 2005-01-03
creator: Coryell, Erin
viewed: 4379
title: Isms, Schisms, and Decisions: Preservation Planning for the Parishes of the Roman Catholic Archdiocese of Boston
abstract:

url: http://hdl.handle.net/1813/238
date: 2005-01-03
creator: Venkataraman, Sriraman
viewed: 2088
title: ESSAYS ON STRUCTURAL ANALYSIS OF RETAIL COMPETITION USING CLASSICAL AND BAYESIAN ESTIMATION TECHNIQUES
abstract: The thesis is a collection of three essays on retail competition that are relevant to both the theory and practice of marketing. Essay 1, examines the role of price and category assortment on competition between EDLP (Every Day Low Price) format and HILO (Promotion) format retail stores. Policy experiments are conducted to study the strategic implications of 1) retail assortment reduction and 2) customized (household specific) coupons. The empirical analysis is conducted using a) household and store level scanner data and b) combination of hierarchical Bayes and classical estimation techniques.
Essay 2, models the price and geographic location elements of consumer demand, firm costs and competition in the lodging industry. A new demand model (Heterogeneous Aggregate Generalized Nested Logit) is introduced. The essay demonstrates the role of geographic location as an important element of retailers? marketing mix. Essay 3, proposes an empirical framework for long-run discrete dynamic games to study market firm's entry, stay, and exit decisions in the lodging market. The econometric model is based on Markov perfect equilibrium concept and relies on dynamic programming computational techniques. Essays 2 and 3 use aggregate data and classical estimation techniques to recover the underlying structural parameters.

url: http://hdl.handle.net/1813/239
date: 2005-01-04
creator: Stuhmiller, Jacqueline
viewed: 2825
title: The Hunt in Romance and the Hunt as Romance
abstract: Winthrop Wetherbee, Andrew Galloway, Masha RaskolnikovThis dissertation examines the English and French late medieval hunting manuals, in particular Gaston Phebus' Livre de chasse and Edward of Norwich's Master of Game. It explores their relationships with various literary and nonliterary texts, as well as their roles in the late medieval imagination, aristocratic self-image, and social economy. The medieval aristocracy used hunting as a way to imitate the heroes of chivalric romance, whose main pastimes were courtly love, arms, and the chase. It argues that manuals were, despite appearances, works of popular and imagination-stimulating literature into which moral or practical instruction was incorporated, rather than purely didactic texts.
The first three chapters compare the manuals' content, style, authorial intent, and reader reception with those of the chivalric romances. Both genres are concerned with the interlaced adventures of superlative but generic characters. Furthermore, both genres are popular, insofar as they are written for profit and accessible to sophisticated and unsophisticated readers alike.
The following four chapters examine the relationships between hunting, love, and military practices and ethics, as well as those between their respective didactic literatures. Hunters, dogs, and animals occupied a sort of interspecific social hierarchy, and the more noble individuals were expected to adhere to a code of

behavior similar to the chivalric code. Military and amatory manuals, like hunting manuals, are texts that encourage imagination and role-playing and utilize the characters and narratives of chivalric romance. The hunting manual is a kind of arms manual that explains how to make war against animals; but it is also a sort of anti-love manual that teaches the hunter how to avoid feminine wiles.

The final chapter documents a wide-ranging literary motif ("the generic literary hunt") that informs the structure and content of a large number of medieval works, from the most primitive hunting manuals to Sir Gawain and the Green Knight.

The concluding chapter explores the evolution and popularity of the English printed hunting manuals from the fifteenth through the seventeenth centuries. The new manuals appealed to the social aspirations of an up-and-coming urban bourgeoisie, even as the European forests and their animals were disappearing.

url: http://hdl.handle.net/1813/240
date: 2005-01-04
creator: Roth, Martin
viewed: 4071
title: Termite: A Swarm Intelligent Routing Algorithm For Mobile Wireless Ad-Hoc Networks
abstract: A biologically inspired algorithm is presented to route messages in mobile wireless ad-hoc networks. Such computer networks are primarily characterized by their quickly changing topologies due to frequent node mobility. The principles of swarm intelligence are used to define a probabilistic algorithm for which routing through paths of maximum utility is an emergent property. This adaptive algorithm, dubbed \ emph{Termite}, uses stigmergy to reduce the amount of control traffic needed to maintain performance. Strong routing robustness is achieved through the use of multiple paths; each packet is routed randomly and independently. Once the basic operation of Termite is verified, alternative metric estimation techniques are tested via simulation. Optimal system parameters are selected by testing over orders of magnitude. A simple analytical model is built in order to explain the simulation results. The model also used to propose two heuristics for determining the optimal pheromone decay rate. All of the enhancements to Termite, now known as \emph{ReTermite}, are consolidated and tested against Ad-hoc On-demand Distance Vector (AODV), a leading ad-hoc routing algorithm. ReTermite is shown to be superior in many primary metrics and the reasons for this explained. Previous heuristic models are also compared to simulation results.The work presented in this thesis was made possible with the generous support of DARPA ITO under the project name, "Self-Configuring Wireless Sensor Networks," and of NSF - CRCD, Microsoft, and Hewlett Packard under the project title, "The Ad Hoc Classroom: Integrating Emerging Wireless Communications and Networking Technologies into Mainstream Computer Science and Electrical Engineering Curricula."

url: http://hdl.handle.net/1813/241
date: 2005-01-04
creator: Khambaty, Lulua
viewed: 3688
title: Integrating Societal Culture and Corporate Culture through Workplace Design
abstract: This study examines the connections between societal culture, corporate culture, and workplace design, highlighting the importance of employees' societal culture to the effectiveness of design within multinational corporations (MNCs). Models of culture, behavioral theories, and research on workplace design are reviewed to explore their inter-relations. An exploratory case study using the narrative method, describing the design process of a new office facility for the Latin American division of Discovery Networks International, is presented to illustrate the salient points discussed. Findings from this study support related research conducted by such as Lincoln, Hanada, and Olson (1981); England (1983); Erez and Earley (1993); and Mendenhall, Punnell, and Ricks (1995) that the consideration of contextual societal culture is relevant in managing human resources and promoting employee satisfaction and efficiency. The considered case

illuminates certain conflicts that arose when traditional corporate-culture-influenced design clashed with the societal culture of the new office's denizens. These conflicts manifested in areas involving (a) private space, (b) worker autonomy, (c) personal expression, and (d) hierarchical reinforcement. The narrative also illustrates how resolution of the issues was possible through an integrated approach that took into account aspects of both societal culture and corporate culture in the design.

url: http://hdl.handle.net/1813/242
date: 2005-01-05
creator: Hahn, Kandalyn L.
viewed: 14
title: The Successful Preservation of Rock and Roll Music Sites: Paul McCartney's Childhood Home in Liverpool, England and the Chess Records Office and Studio in Chicago, Illinois
abstract: Michael Tomlan, Associate Professor & Director, Historic Preservation Planning Program; Mary Norman Woods, Associate Professor, History of ArchitectureGroundbreaking preservation efforts for two highly significant rock and roll music sites are examined: Paul McCartney's childhood home in Liverpool, England, under the protection of the National Trust, and the former Chess Records office and studio in Chicago, Illinois, landmarked under city ordinance.

Mid to late twentieth-century popular music sites face multiple threats of demolition, neglect, and inappropriate treatment. The lack of architectural distinction, bias against relatively recent history, and need to establish the relevance of popular culture inhibit successful preservation of rock and roll sites. Yet popular interest in such sites has exploded since the 1990s and visitation is on the rise. Increasing interest in these locations translates into more opportunities for funding and support. At the same time, it intensifies the need for preservation as popularity attracts exploitation schemes that threaten the integrity of the sites. Finally, given the difficulty of finding accurate documentation of these sites, the critical time to work on their preservation is while people who know their history firsthand are still alive.

The examination includes a review of the literature, much of it in popular media, and primary research in the form of site visitation; interviews with key people and related experts; collection of original documentation; and some observation of work in progress.

Research establishes the historic context, significance, and local preservation climate for each site. The preservation projects' processes and outcomes are documented and critiqued. Findings suggest that there are five major components necessary for successful preservation of rock and roll music sites: preservation protection through institutional purpose or legal status; funding; long-term preservation philosophy; regular observation of work and adherence to a restoration design plan; and research. Noting that these are widely applicable components, three non-critical factors are distinguished which have special significance for this subset of historic sites: the need for significance to counter biases; public value and visitation; and support of name stars.Cornell University Institute of European Studies; Cornell University Department of City and Regional Planning

url: http://hdl.handle.net/1813/243
date: 2005-01-05
creator: Provine, John
viewed: 3235
title: Optical Micro-Electro-Mechanical Systems for Add/Drop Multiplexing and Infrared Spectroscopy
abstract: Wide ranging efforts in development of various Micro-Electro-Mechanical (MEM) devices over the past twenty years have created a vast collection of novel devices that can be fabricated in numerous ways. As the MEMS field matures it is important to remember the systems aspect the name implies and ensure useful and complete systems are constructed utilizing these wonderful devices. This thesis focuses on two different areas of application for optical MEM systems.

The first is a system for optical telecommunications networks that enables an optical add/drop multiplexer, also frequently called a wavelength selective switch. Wavelength selective switches anticipate the need for inexpensive optical switching components with the extension of the optical domain of telecommunications to the end user through fiber to the home. The wavelength selective switch studied is based on the hybridization of a MEMS based optical switch with a particular type of planar lightwave circuit, or on-chip waveguiding device, called an Arrayed Waveguide Grating (AWG). Three separate MEMS switches were implemented into this type of system: a lateral fiber actuator, a scanning micro-mirror, and a binary micro-mirror array. The binary micro-mirror array displayed the greatest performance and is additionally advantageous because of the possibility of further integration. This implementation of a wavelength selective switch provides excellent optical networking properties and performance at low power and with a small device area compared to other switch implementations. Additionally, the system is scalable as the network increases in port count and channel density.
The second system studied is an optical gas spectrometer. A scanning MEMS mirror was used with various additional optical components to create a Non- Dispersive Infra-Red (NDIR) gas detector. The MEMS mirror is used in conjunction with a Linear Variable Filter (LVF) to scan a particular range of IR radiation. By detecting the transmission spectrum within the IR radiation band, detection of gases based on their unique radiation absorption pattern can be carried out. Detection of CO2 in concentration ranges from 400ppm to a few percent was performed. Simultaneous detection of multiple species is possible. The system offers a potentially portable and inexpensive gas spectrometer with accuracy necessary for various commercial needs.

url: http://hdl.handle.net/1813/251
date: 2005-01-07
creator: Srikiatden, Jaruk;Meng, Yizhi;Lo, Peter
viewed: 2513
title: Normal vs. Abnormal Pharyngeal Bolus Transport
abstract: Paper is in HTML on a secure site.Normal and abnormal swallowing (dysphagia) processes in the pharynx were modeled using the computer-aided engineering software, FIDAP. In the normal case, boundary conditions for the epiglottis were established to prevent fluid flow into the larynx/trachea area. In the abnormal case, the boundary conditions for epiglottis were changed to allow some flow into the larynx/trachea. The program converged successfully when the mesh was simplified, and two distinct flow patterns were observed for both normal and abnormal cases. Sensitivity analysis of abnormal swallowing behavior showed that the flow present in the trachea was slower at higher viscosities. This suggests that the method of feeding dysphagia patients with thickened liquids is useful in preventing aspiration.

url: http://hdl.handle.net/1813/253
date: 2005-01-07
creator: Peterson, David;Joslin, Lisa;Cunningham, Megan;Matthews, James
viewed: 2283
title: Comparison of Vaccine Freezing Methods
abstract: We have developed a temperature-sensitive vaccine formulation in a glass vial that needs to be frozen prior to lyophilization.The method for freezing the vial has traditionally been liquid nitrogen tunnel freezing, but this method can be expensive and has problems with sterilization of the tunnel.We explored the advantages of a shelf-freezing method and did a comparison analysis on the two freezing methods to determine which situation was the preferred one.For our analysis, the vaccine vial dimensions were obtained from research performed by Merck & Co., Inc.We predicted that the shelf-freezing method would take too long to freeze the vaccine, which in turn would decrease the potency of the vaccine.We simulated both freezing methods using the Gambit and FIDAP programs to produce two different designs.For the sensitivity analysis, we manipulated the boundary temperatures of the shelf and the liquid nitrogen as well as the convective

coefficient for the ambient air in the shelf design.We determined that the shelf freezing method was the most optimal for the freezing of the vial when we lowered the shelf temperature due to the small differences in the freezing times between the two methods.

url: http://hdl.handle.net/1813/256
date: 2005-01-07
creator: Yeung, Roger;Leung, Andrea;Jackson, Andrea;Ishikawa, Dave;Fong, Jeannette
viewed: 2608
title: Freezing a Fillet-o-Fish
abstract: The frozen food industry is a billion dollar industry that demands efficient manufacturing of consumer products. Through modeling the freezing within a fish fillet, the process of storing and distributing this product is better understood. The purpose of this experiment is to determine the time to freeze a fillet of tilapia (Oreochromis aureus) of known shape and properties. Then through utilizing the fillet temperature, the shelf life or freshness is determined through a consumer based freshness test that provides a nominal shelf life for common species, including tilapia. Another objective is to determine the bacteria concentration of Pseudomonas aeruginosa, common bacteria found on fish and other seafoods, during and after freezing. Using Gambit and FIDAP, a three dimensional slab of 10cm x 5cm x 2 cm was modeled in a -4?C freezer where each side was exposed to convection except for the bottom which was simulated as resting on a surface (a shelf in the freezer). This fillet model froze in ~ 45 minutes and the shelf life was determined to be 22 days, according to the industry freshness chart by Dr. Joe Regenstein. The initial concentration of the Pseudomonas aeruginosa was 1x105 CFU (colony forming units). After freezing, this concentration decreased to 9.8x10-4 or 0.2%.

url: http://hdl.handle.net/1813/257
date: 2005-01-07
creator: Pan, Katy;Mukherjee, Rani;Connelly, John;Bui, Jojo;Beelitz, Carolyn
viewed: 1527
title: Optimization of Chemotherapy for Lung Cancer
abstract: Chemotherapy is a common treatment method for lung cancer. Using FIDAP, this study simulated the diffusion of the drug, Cisplatin, from the blood stream throughout a lung tumor that partially blocked an airway. Two treatment methods were compared by the level of exposure (area under the concentration vs. time plot). One method was a single dose at time zero and the other method was the same dose spread over an entire day.
The results show that both methods have nearly the same levels of exposure (AUC). The main difference between the treatments was a higher peak concentration with the single dose. It was also shown that diffusivity had a significant impact on the peak concentration and level of exposure.

url: http://hdl.handle.net/1813/259
date: 2005-01-07
creator: Patel, Payal;Lee, Sui Ping;Ishman, Naquan;Avissar, Michael
viewed: 4902
title: Ferromagnetic Thermal Ablation of Prostate Tumor
abstract: There are many forms of treatment for prostate cancer. One set of treatments is called hyperthermia, the heating of tumor tissue to destroy it. Thermal ablation is a form of hyperthermia that destroys both normal and cell tissue. It occurs at temperatures of about 46 C or above. Heating is accomplished via various methods that have their own advantages and disadvantages. Furthermore, heating can be local, regional, or whole-body, meaning it can focus on small specific location, large organ areas, or the whole body. Our project focuses on ferromagnetic heating of local tumors. Ferromagnetic materials are magnetic materials that heat

under an alternating, appropriately oriented, magnetic field. They heat until they reach their Curie point, the temperature at which they become non-magnetic and stop heating. The advantages of ferromagnetic heating is that is self-regulating since ferromagnetic implants will not heat beyond their Curie point, it can be easily localized since implants can be inserted in various configuratoins, it is repeatable if the implants do not degrade, and it is relatively inexpensive. Our goal was to simulate, via computational methods, the work done by Thermal Ablation Technologies, a company that designs ferromagnetic heating systems for thermal ablation of prostate tumors. We will examine the results of computer simulations of single implants and an array of implants. These results will be displayed in the form of temperature contours at specific times and temperature-time history plots at specific locations. We will determine from our analysis which parameters of ferromagnetic implant design are most crucial.

url: http://hdl.handle.net/1813/261
date: 2005-01-07
creator: Price, Andrew;Padron, Sonya;Lee, Jessica;Amobi, Ngozi
viewed: 2882
title: Making Your Sausage Clean. The Art of Sausage Sterilization
abstract: Thermal processing of temperature and species within a sausage were modeled using FIDAP. A mesh was created in GAMBIT to recreate the sausage geometry; diameter = 0.072m and length = 0.21m. The sausage was assumed to be axis-symmetric, therefore one-quarter of a cylinder was modeled and used for analysis. A three step heating process was implemented using the time function in FIDAP: (1) smoke for 1 hour at 140 degrees Fahrenheit, (2) smoke at 160 degrees Fahrenheit, (3) smoke at 180 degrees Fahrenheit for two hours or until internal temperature reaches 155 F. The destruction of Escherichia coli O157:H7 was analyzed. At the end of the three-step process (14400s), the sausage center reached its final temperature and all E.coli were destroyed.

url: http://hdl.handle.net/1813/262
date: 2005-01-07
creator: Tong, Gary;Robilotto, Anthony;Jap, Bennett;Felsovalyi, Flora
viewed: 4179
title: Delayed Effects of Hydrofluoric Acid Burn
abstract: Hydrofluoric acid burn is a common work related injury. After initial contact, hydrofluoric acid diffuses through the skin where it eventually reaches the bone. Once in contact, dissociated F- ions react with the calcium in the bone forming calcium difluoride. Because of this mechanism, exposures often go undetected until the internal damage is extensive and patients experience excruciating pain.
Therefore, it is the purpose of our project, using finite element analysis, to model both the diffusion of HF through the skin and fat as well its reaction with calcium once it reaches the bone. We will attempt to determine the pattern of HF diffusion within the skin, fat, and bone layers; and most importantly, the time it takes for HF to reach the bone where irreversible damage occurs. We will also aim at determining the exact extent of the damage to the bone as a function of time. Finally, in our analysis we will vary the concentration of HF, its drop size, and the diffusivity of the dermal layers, and examine the effects on our results.

url: http://hdl.handle.net/1813/263
date: 2005-01-07
creator: Poon, Billy
viewed: 2591
title: Drug Delivery in the Brain
abstract: In this study, the diffusion of nerve growth factor (NGF) from a polymeric matrix into brain tissue was simulated using the finite element method (FEM). Two release profiles were studied and it was

found that a constant release rate was a much better candidate than the normal release profile achieved by a disc. The concentration profile at various points in the brain created by a constant release rate showed a sharp increase toward a steady state concentration. This is opposed to a giant spike in concentration, which subsequently drops to zero that was the result from the normal release profile. The implications of this study are that for the release of therapeutic compounds into the brain, a constant release implant is much more desirable because it avoids a huge concentration spike at the start, which can cause harmful effects, and can maintain a steady state concentration.

url: http://hdl.handle.net/1813/264
date: 2005-01-07
creator: Schleifer-Schneggenburger, Jill;Pino, Chris;Furman, Guy;Cohen, Rich;Alexander, Conor
viewed: 3822
title: Heat Treatment of an Enlarged Prostate
abstract: An enlarged prostate, known in the medical field as either benign prostate hyperplasia or benign prostate hypertrophy, is a common affliction among older men, resulting in a difficulty in urination. The condition is also dangerous because it can lead to infections of the kidney and bladder. A stent, made up of a shape memory alloy, such as nitinol, inserted in the urethra can serve as a means to rectify the problem ? the stent can deliver heat to the prostate, killing the obtrusive tissue. The goal of this simulation is to determine the time and power required to heat the stent to a point where a sufficient amount of inflamed tissue is killed while maintaining healthy tissue. Using GAMBIT to establish the geometry of the prostate and surrounding tissue, FIDAP can be implemented to solve the heating of the prostate by the stent. Temperature and damage profiles can be obtained to determine the appropriate wattage application and time for the procedure. We determined that the optimal way of heating was to use a lower heat flux for a longer time.

url: http://hdl.handle.net/1813/266
date: 2005-01-10
creator: Hickerson, H. Thomas
viewed: 2828
title: Project Euclid and the ArXiv: Complimentary and Contrasting Elements for Sustainability
abstract: This is an edited version of remarks presented at the "Workshop on Sustainable Models for University-Based Scholarly Publishing," conducted at Columbia University on June 1, 2004.New models of sustainability are evolving for the development and dissemination of scholarly information, but viable options are dependent on stable organizational foundations and sound managerial and financial models. My remarks today are not designed to provide an overarching vision for the future of scholarly publishing, but are intended to elucidate factors critical to the success of such visions. I am pleased to have this opportunity to review with you strategies presently being employed by the electronic publishing program of the Cornell University Library. I will focus on two particular research publishing endeavors, Euclid and the physics, mathematics, and computer science e-print arXiv. These two alternative publishing instances offer us a lens through which to analyze elements critical to sustainability. Their very different operational models illustrate differences in sustainability strategies, and yet there are important similarities between the two.

url: http://hdl.handle.net/1813/269
date: 2005-01-10
creator: Lo, Darrick;Hui, JenYee;Chow, Kim Foo;Chen, Diana;Chen, Chih Hao
viewed: 3976
title: Thermal Effects of Laser Eye Correction on the Cornea
abstract: Eye laser surgery such as Photo Refractive Kerotectomy (PRK) has been the most recent technology towards correcting vision disorders. However, 20/20 vision is not guaranteed and side effects are possible. By

measuring the properties of the patient's cornea, the surgeon can customize the laser surgery procedure for more accurate results. Using GAMBIT and FIDAP, two dimensional (2D) design simulations of the cornea in contact with a laser beam were used to determine the optimal surgical time for laser eye correction. Three dimensional (3D) simulations were designed for an off center laser and four coupled lasers in contact with the cornea. Results indicated a directly proportional relationship between corneal density and conductivity with ablation time. An indirect relationship existed between laser power and time for ablation. Design simulations indicated a longer ablation time compared with centered lasers, but can be useful for specific vision disorders such as hyperopia.

url: http://hdl.handle.net/1813/270
date: 2005-01-10
creator: Saikkonen, Kelly;Pecak, Garry;Levine, Jacob;Gaines, Carmen;Foote, Stacey
viewed: 2103
title: Heart Cryopreservation
abstract: Heart disease affects many people and heart transplants are becoming more common. Limited shelf life is a major hindrance to the success of heart transplants. Cryopreservation opens an avenue for increasing shelf life. Our goal in this study was to model the preservation of a heart using finite element software to determine the time needed to sufficiently cool the heart and to compare the average temperature to the maximum temperature of the heart. We found a range of minimum times varying with material properties of the heart. We concluded that computer simulation can be used to approximate the minimum time needed to reach a desired maximum temperature. We also found that average temperature of the heart during cooling was not an accurate approximation of the maximum temperature.

url: http://hdl.handle.net/1813/271
date: 2005-01-10
creator: Park, Jennifer;Neidrauer, Mike;Lau, Ingar;Chow, Brian
viewed: 1531
title: Prostate Cryosurgery with Various Numbers of Probes
abstract: Cryosurgery is an increasingly popular way to treat prostate cancer. This process includes inserting one or more probes directly into the prostate to freeze the whole tissue and kill the cancer cells. The number of probes is a determining factor for the effectiveness of the procedure. In our project, we varied the number of probes to see how much of the prostate is frozen in twenty minutes. We used an argon cryogen system with probe temperature of -150oC. Using FIDAP to model the freezing of the prostate, we looked at the temperature data of nodes 2 cm away from the center of the prostate after 20 minutes. For the 1 probe model, the average temperature of the tissue was 25.76 deg C, for the 3 probe the average was 1.05 deg C and for the 5 probe, -16.97 deg C. From these results, it is evident that 1 probe is insufficient for prostate freezing since the temperature only went from 35oC to 25oC in twenty minutes, a mere 10 degree change. Even three probes will be inefficient for prostate freezing since it was twenty degrees away from reaching the optimal temperature of -20oC. We recommend using 5 probes for prostate freezing and looking into using even more probes for more time-efficient freezing. A colder cryogen would also lead to faster cooling. Our model used an argon system; liquid nitrogen with temperature -196oC could be a better alternative.

url: http://hdl.handle.net/1813/272
date: 2005-01-10
creator: Rasmussen, Jessica;Millis, Carrie;Goodman, Joshua;Campbell, Mike
viewed: 2909
title: Thermal Burning and Its Effects on Human Skin
abstract: The objective of this paper is to model thermal burning due to application of a heat source, in

the form of a cylindrical disc, through the three distinct layers of human skin, the epidermis, dermis and subcutaneous fat. The temperature of the disc was varied from 50 to 80 degrees Celsius, and was applied for 20 seconds. After the disc was removed, the exposed skin experienced natural convection at ambient air temperature. Metabolic heat generation and blood perfusion in the dermis were taken into consideration. We modeled heat conduction in the skin, tissue damage as a function of time and temperature, and finally, we determined that metabolic heat generation and blood perfusion heat were negligible. The following report introduces our problem, discusses the methods used to generate results and the results obtained, and finally presents our major conclusions and recommendations.

url: http://hdl.handle.net/1813/273
date: 2005-01-10
creator: Yi, Jason;Thompson, Glenn;Seth, Rajeev;Flynn, Terence;Ehrenberg, Morton
viewed: 4525
title: Cryogenic Freezing of the Entire Prostate Gland
abstract: The goal of this study was to model cryogenic freezing of the entire prostate, using five cryoprobes, while minimizing damage to the surrounding tissue. A 3-D model was attempted, but failed due to time constraints; therefore, a 2-D model was constructed. It was determined that probe placement was the key factor in minimizing the time required to freeze the prostate and the extent of damage to the surrounding tissue. Varying probe temperature between -180 deg. and -195 deg.C had little affect on these results. We also increased the temperature of the center probe outside of the range currently used for this procedure. This decreased the frozen area below the prostate where the rectum is located.

url: http://hdl.handle.net/1813/274
date: 2005-01-10
creator: Egan, John;Weinert, Peter;Tyler, John Poe;Bahr, Douglas
viewed: 3903
title: Heat and Moisture Transport in the Nasal Cavity
abstract: The intake of air into the lungs is obviously a vital process for the survival of humans, and the conditioning of this air from ambient to alveolar is a necessity accomplished primarily in the nasal cavity. The human nose is capable of taking in air of nearly all conditions (hot, cold, dry, moist) and properly maintaining the required equilibrium. Increased awareness of nasal diseases, the use of drugs to aid in breathing, and surgeries (cosmetic and medical) have placed a premium on the understanding of the dynamics of the heat and water vapor transport phenomenon. This report takes a two-dimensional cross section and models flow past the inferior turbinate, producing velocity, temperature and water vapor profiles for normal breathing conditions and shows a control when the turbinate is not present. The results show that the turbinate (concha) is vital for processing the air to alveolar conditions. The results obtained at the exit match those in previous literature -- nearly saturated and near body temperature air leaves the cavity when the concha is present. However, the air is considerably closer to ambient conditions when turbinate is not present.

url: http://hdl.handle.net/1813/275
date: 2005-01-10
creator: Smith, Chris;Avrin, Becky;Aridgides, Lynn
viewed: 2507
title: Frostbite in Ithaca: A Walk to Riley-Robb
abstract: Frostbite occurs when body tissues freeze after being exposed to extreme cold and wind. It's most likely to occur on body extremities ? fingers, nose, ears, and toes ? areas far from the warm body core and exposed to the elements. We have modeled tissue freezing in a finger in order to predict combinations of wind speed and temperature likely to lead to frostbite. Our model incorporates different tissue layers in the

finger, sources of heat, transient properties, and heat transfer through convection and conduction. Such a model is valuable because it accurately predicts the existence and extent of tissue freezing.

The model uses two tissue layers in the finger because of their disparaging material properties. It also contains a region attached to the finger to simulate heat flux from the hand to the finger. Heat generation was ignored, and heat transfer to the finger from blood flow was accounted for by a source term. The model is axi-symmetric, with radial heat flow into the finger. The edges of the finger have a convection boundary condition, and the region attached to the finger was perfectly insulated. The far edge of the region attached to the finger was set to a constant temperature equal to average body temperature.

Each simulation was performed for a time span of thirty minutes for each set of ambient conditions. We then noted whether or not the conditions were conducive to frostbite. A sensitivity analysis was performed to ensure that the solutions converged.

url: http://hdl.handle.net/1813/276
date: 2005-01-10
creator: Lee, Jeff S.;Schlesinger, Nicole;Pottle, Bill;Lai, Sherry
viewed: 2501
title: Cold Therapy Analysis in Structurally Damaged Tissue
abstract: For our project, we conducted an analysis of cold therapy for structurally damaged tissue. Our intent was to determine the ideal conditions of temperature and time of cold therapy needed to most effectively treat a bruise. To do this, we devised a model of damaged tissue via GAMBIT and FIDAP and exposed this tissue to cold therapy at varying temperatures and times. We created a function to assess effectiveness of treatment which was dependent on the depth of penetration at 34 deg. C (ideal temperature for treated tissue) and the depth of penetration of 5 deg. C(temperature at which vasodilation occurs in order for the body to maintain homeostasis). The significance of this effectiveness value is that it is an indication of how effectively we have reduced blood flow in and surrounding the damaged tissue layers. A high effectiveness value translates into significantly reduced blood flow which mitigates the extent of damage. The applications of our findings could be put towards devising an ice pack/gel pack which is maintained at an appropriate temperature and left on an injury for an appropriate time.

url: http://hdl.handle.net/1813/277
date: 2005-01-10
creator: Selig, Mike;Lally, Sean;Ho, Jeremy;Gurzo, Mike
viewed: 5176
title: Accidental Freezing of the Tongue to Metal Poles
abstract: In an attempt to verify the age-old claim that your tongue will freeze to a metal pole and become stuck if you decide to lick it in the midst of winter, we have modeled tongue contact with a cold metal surface using finite-element analysis techniques. After varying ambient temperatures, we have concluded that accidental tongue-freezing is not a myth, and below -5 deg. C the tongue will freeze before it can be removed. An accompanying sensitivity analysis showed that variations in contact area, metal properties, and the convection coefficients do not significantly change this conclusion. Our simulation has opened the possibility for further study of the accidental freezing process, including the modeling of methods to remove the tongue once it is stuck.

url: http://hdl.handle.net/1813/287
date: 2005-01-10
creator: Ogura, Nori;Bhebe, Prince;Akinwale, Pamela
viewed: 4099
title: Computer Aided Simulation of Varying Viscosities in Orange Juice Pasteurization

abstract: This project presents a FIDAP simulation for determining the effect of viscosity on the process time required to pasteurize orange juice of varying Brix* . Destruction of C. Botulinum and Ascorbic Acid (Vitamin C) were also modeled.
Process time was found to be positively associated with viscosity, up to 30* Brix. There was a high retention of Ascorbic Acid for all concentrations. The highest retention was found with the 10*Brix juice. The highest bacterial destruction of approximately 0.5 log reduction was attained for an axis temperature of 73*C with the 35* Brix juice. Because FDA requirements specify a 5 log reduction, a holding tube needs to be added.

url: http://hdl.handle.net/1813/288
date: 2005-01-10
creator: Tacy, N;Rumondor, A;Bu-Contreras, R;Acquarone, V
viewed: 2652
title: Numerical Simulation of Natural Convection Heating in Canned Foods Containing Solid Particles
abstract: In this work we investigated the influence of solid particles on the heating of canned foods. A numerical model for natural convection heating of liquids developed by Datta and Teixeira in 1987 was used for predicting the values of temperature and velocity inside a can filled with liquid and grain. The solid particles influence the buoyancy that drives the flow during the heating of the can, and this problem has not been solved until now. As a first attempt to solve it, we assumed a radical simplification and treated the system composed of liquid and particles as a porous medium. FIDAP (Fluid Dynamics Analysis Package) was the finite-element-based software used for simulating the fluid and heat flow. The plots of distribution of temperature and velocity in the cans showed that the qualitative behavior of both cans (liquid and liquid+grain system) was the same: the liquid near the hot wall becomes lighter and rises, there is radial flow near the top and uniform flow near the centerline. In conclusion, we observed that the solid matrix reduces the magnitude of the velocities by approximately 10% and slows down the distribution of temperature in the can filled with liquid and grain.

url: http://hdl.handle.net/1813/290
date: 2005-01-10
creator: Raile, Benjamin William;Lau, Christina Mei Lan;Jarrad, Daniela Elizabeth;Fryman, Rodney Sean
viewed: 2932
title: Angiography
abstract: This paper explores the use of Computer Aided Engineering (CAE) to model angiography dye flow in the detection of cerebral aneurysms. To obtain a discernable image, the concentration of the dye, Conray-60 ? , needed to be above 0.2 in the desired region. The design goal was to optimize the appropriate dye injection catheter diameter while maintaining dye flow rate constant to provide the longest time window to take an angiogram of the carotid artery. A geometric model of the system, consisting of a tubular 5 mm diameter artery of 0.3 m in length with the catheter outlet at the beginning of the tube, was produced using the graphical program GAMBITTM. After specifying initial and boundary conditions of the model, including velocities and concentrations, the CAE program FIDAPTM was used to compute the resulting fluid velocity and concentration change of the imaging dye, Conray-60? . Analysis was performed using a 2 mm diameter catheter and a 3 mm diameter catheter. The time window was obtained by finding the amount of time when the entire length of the region 5 cm from the inlet to the end of the tube maintained the desired concentration. For the 2 mm catheter, the time window was determined to be 1.5 seconds. The 3 mm catheter provided a time of 1.3 seconds. This analysis concludes that a smaller catheter provides a larger time window for the purpose of taking an angiogram when the flow rate cannot be changed.

url: http://hdl.handle.net/1813/291
date: 2005-01-10

creator: Mohan, Vivek;Kim, Becky;Mintseris, Julian;Bunimovich, Yuri
viewed: 3252
title: Heating Effects of Dental Drilling
abstract: Drilling causes pain in the tooth for various reasons. This paper addresses the heating of the pulpal region due to friction from drilling. The heating may depend on such parameters as the speed of the drill, water supply, and the rate of drilling. By coupling the semi-infinite geometry of a tooth with complex mechanisms of drilling, it may be possible to optimize the conditions of drilling such that the patient feels minimal pain. Modeling the above process on the computational software called FIDAP, we concluded that higher drill speeds correlate to the reduction of perceived temperature, and thus, pain level.

url: http://hdl.handle.net/1813/292
date: 2005-01-10
creator: Piech, Tomasz;Linhart, David;Leary, Dan;Langford, Darcey;Gupta, Meghna
viewed: 2607
title: Water Flow and Heat Transfer Pattern in a HPS lamp
abstract: The purpose of this report is to model a High Pressure Sodium (HPS) light bulb. Velocity and heat transfer profiles were computed to determine the optimal configuration of heat evacuation using a liquid coolant. In this simulation, water is forced over the bulb to evacuate the large amount of heat that the HPS system produces. The results obtained show the velocity and heat transfer profiles for varying geometries of the HPS bulb. These conclusions can be used to optimize both the flow of coolant and the position of the inlet and outlet on the outer jacket to maximize operating efficiency.

url: http://hdl.handle.net/1813/293
date: 2005-01-10
creator: Stepp, Eliza;Johnson, Leigh Ann;Jennifer, Burlingame;Beers, Craig
viewed: 4405
title: The ABC's: Atherosclerosis, Blood Flow, and the Carotid Artery
abstract: The effects of blood flow were analyzed in the carotid artery, using computer aided engineering software (FIDAP and GAMBIT). The study was conducted because patients that have atherosclerosis often have plaque build up on the interior walls of the carotid artery directly before bifurcation. The design objectives were to analyze the velocity and shear stress through the carotid artery as the common section splits into the external and sinus sections. The results obtained demonstrated minimal velocity and shear stress in both the sinus and external sections of the artery. These differ from the expectations. In reality neither velocity nor shear stress decrease to this extent in normal blood flow through arteries. The results should have shown a decrease in both velocity and shear stress directly before the bifurcation. The plots obtained did demonstrate decreased velocity near the interior walls of the artery, as expected. Errors in the results relate to numerical problems with meshing. Further studies should be conducted to improve upon these results and include more realistic, less simplified parameters.

url: http://hdl.handle.net/1813/295
date: 2005-01-10
creator: Utz, Edward;Taxier, Karen;Gartenberg, Shaun;Calve, Sarah
viewed: 4513
title: Renal Tissue Preservation: Cooling the human kidney for optimal transport conditions
abstract: End Stage Renal Disease affects over 80,000 Americans each year. While there is no known cure, kidney transplants are the most effective way to combat the disease while bettering the quality of life for the patient. In this study, we implemented computer aided engineering in order to determine how a kidney cools during the time between harvest and transplantation. Our goal was to sustain the organ as long as possible

outside the body while controlling for temperature and oxygen supply. We found that oxygen concentration of the kidney is only dependent on the boundary condition placed on the oxygen, and not at all related to the cooling rate. Our results showed that perfusion is beneficial because it is able to maintain the necessary amount of oxygen required for the kidney to sustain its own metabolism.

url: http://hdl.handle.net/1813/307
date: 2005-01-13
creator: Getz, Malcolm
viewed: 4023
title: Three Frontiers in Open Access Scholarship
abstract: There are three important frontiers in moving from subscription-based scholarly publications to delivery of scholarly works to readers without charge via the Internet. First are automated archives of preprints and post prints that do not require formal editorial review before posting. The arXiv service, now at Cornell, is emblematic of this frontier. (arXiv, 2004) Second are the quality-assured journals that are distributed on an open-access basis. The Public Library of Science initiative in launching journals in biology and medicine is emblematic of the second frontier. (Public Library of Science, 2004) Third are open access indices to the scholarly literature. Google Scholar, launched in beta version in November 2004, is emblematic of this frontier. (Google, 2004) Each frontier advances the prospect that the best scholarship will be readily available to all via the Internet. Our goal here is to identify where each frontier is today and how it may evolve.Vanderbilt University

url: http://hdl.handle.net/1813/318
date: 2005-01-17
creator: Elliot, John Murray
viewed: 4388
title: Animal Science at Cornell University 1963 - 2000: Observations and Reflections of an Insider
abstract: A professionally printed and bound version may be obtained by contacting: Dorothy I. Ceurter, Animal Science Department, 149 Morrison Hall, Cornell University, Ithaca, NY 14853This is an update to the 1987 book by Kenneth L. Turk, Animal Husbandry at Cornell University: A History and Record of Development from 1868 to 1963 prepared by a retired (1991), succeeding Department Chair, J. Murray Elliot. Former chairs provided suggestions of what they considered significant items during their administrations. From the beginning it was agreed that this volume would be relatively brief, without some of the detail that characterized Ken Turk's history. Somme additional information has been made available on the department web site (www. ansci.cornell.edu), rather than including it in the new volume.
Although individual faculty members have received numerous local, regional, national, and international awards recognizing their superior accomplishments in research, teaching, and extension, no attempt has been made to develop an exhaustive list of such honors. Where deemed appropriate, however, many of the more important of these awards are woven into the narrative. The present effort also differs from Ken's in many other respects and is more accurately described as "observations and reflections" than as "history". No doubt my items worthy of note during that and especially other time periods have been overlooked.

url: http://hdl.handle.net/1813/352
date: 2005-01-28
creator: Nandagopal, Sudha;Abbett, Elizabeth;Poon, Elaine;Clark, Steven;Karabinakis, Elizabeth;Wolfe, Benjamin;Newton, Michelle;David, Filiberto;Berger, Bonnie;Pimentel, David
viewed: 4476
title: Water resources, agriculture and the environment.
abstract: In this article, water utilization by individuals and especially agricultural systems is analyzed.

Interrelationships exist among population growth, water use and distribution, the status of biodiversity, the natural environment, plus the impacts of water borne human diseases are reported.

url: http://hdl.handle.net/1813/353
date: 2005-02-03
creator: Holland, Robert F.;Bandler, David K.
viewed: 3295
title: Food Science at Cornell University: A Century of Excellence, 1902-2002
abstract: A print on demand of these books and articles can be obtained from Cornell Business Services (CBS) Digital Services by sending e-mail to digital@cornell.edu or calling 607.255.2524. In the body of the message include the identifier.uri for the book or article, and ask to be contacted regarding payment.This publication is a comprehensive look at the evolution of the Department of Food Science at Cornell University from the early years through its centennial celebration in 2002.

url: http://hdl.handle.net/1813/356
date: 2005-02-15
creator: Stanton, Lara K.
viewed: 3846
title: History of Kendal at Ithaca, 1990 toward 2000
abstract: A print on demand of these books and articles can be obtained from Cornell Business Services (CBS) Digital Services by sending e-mail to digital@cornell.edu or calling 607.255.2524. In the body of the message include the identifier.uri for the book or article, and ask to be contacted regarding payment.Lara K. Stanton, a resident of Kendal at Ithaca, provides a history of the development of New York State's first continuing care retirement community.

url: http://hdl.handle.net/1813/357
date: 2005-02-16
creator: Chen, Yi-Fan
viewed: 2278
title: Saturable Nonlinearity and Stable Multi-dimensional Optical Solitons
abstract: Stable multi-dimensional optical solitons have been predicted to exist in saturable instantaneous Kerr-like nonlinear systems for many years. The experimental observation of these objects is interesting scientifically and can have important applications. However, to date no experimental observation has been reported.
The prospects of realizing these predicted phenomena depend on the accessibility of the nonlinear parameters in a physical feasible system. To address this question, we first develop a systematic way of determining the nonlinear properties of materials based on the previously developed spectrally-resolved two-beaming coupling measurement. This new method is used to measure the nonlinear properties of several materials. The results are used to assess the prospects of producing stable multi-dimensional optical solitons in saturable instantaneous Kerr-like nonlinear systems. We conclude that the prospects for producing three-dimensional solitons are poor. However, it is more likely to succeed in producing stable two-dimensional optical solitons. Natoinal Science Foundation (PHY-0099564)

url: http://hdl.handle.net/1813/370
date: 2005-02-22
creator: Han, Sung Hun
viewed: 2472
title: REPORT ON CRITICAL DIMENSIONS AND PROBLEMS OF THE NORTH KOREAN FOOD

SITUATION
abstract: This paper suggests one possibility for the elimination of poverty in North Korea. Despite its efforts to increase food production, North Korea has been suffering a serious food shortage problem. Under the current political and economic system, it is very unlikely that North Korea by itself can supply adequate food to its people. A viable way to solve the chronic food shortage is to change government policies regarding the kind of crops farmers raise. Instead of pushing for increased grain production, the government needs to encourage farmers to raise non-grain crops, which can be exported to South Korea or Japan. Since prices in the South are much higher than those in North Korea, exporting non-grain crops and importing grains would be more profitable to the North Korean government than producing more grains in the current system. In order for such a change to be successful, the North Korean government must try to reduce transportation costs and facilitate construction and utilization of railroads and roads between North and South.

url: http://hdl.handle.net/1813/390
date: 2005-02-25
creator: Henick-Kling, Thomas
viewed: 2514
title: Proceedings of the 29th Annual New York Wine Industry Workshop 2000
abstract: Table of Contents

url: http://hdl.handle.net/1813/391
date: 2005-02-25
creator: Dalton, Anne V.
viewed: 3998
title: Your Energy.....Your Choice
abstract: Ms. Dalton has many years of experience in the business community and public sector. Currently Ms. Dalton, as a Business Advocate for the Department of Public Service, educates the business community on competitive opportunities in energy and telecommunications. She also advocates for businesses on issues related to economic development or dispute resolution. Ms. Dalton holds a Bachelor of Arts degree in Psychology and a Masters degree in Public Administration.You no longer have to buy your electricity or gas only from your local utility. Instead, you can shop among the new ENERGY SERVICE COMPANIES (ESCOs) that will compete for your business

url: http://hdl.handle.net/1813/392
date: 2005-02-25
creator: Martinson, Timothy E.
viewed: 2378
title: Trends in Acreage of Red Wine Varieties
abstract: Discusses changes in the number of acres under cultivation in New York State for different varieties of red wine from 1990 to 1996.

url: http://hdl.handle.net/1813/393
date: 2005-02-25
creator: Weston, Leslie A.
viewed: 3732
title: Grape and Wine Tannins and Phenolics: Their Roles in Flavor, Quality and Human Health
abstract: Describes the roles of grape and wine tannins and phenolics in flavor, quality and human health.

url: http://hdl.handle.net/1813/394

date: 2005-02-25
creator: Peyron, Dominique
viewed: 3556
title: Ripening Conditions for Reds and Measurements to Assess Ripeness: A Burgundy Model
abstract: The quality of the food products from raw material is generally dependent on phenolic compounds, mainly in the case of grapes and wines. In Burgundy, the phenolic composition of Pinot Noir grapes can be very different from one year to another one. Since a few years, we have been trying to measure the phenolic compounds evolution in the berries in order to be able to choose the best time for harvest. In Pinot Noir seeds the tannins are low molecular weight (Mr) condensed molecules and may contribute, in so far as they are released into the medium, to organoleptic qualities. Examples will be presented to compare in the same area, the phenolic composition of the grape berries, the extractibility of both anthocyanins and proanthocyanidins, and the wine composition.

url: http://hdl.handle.net/1813/395
date: 2005-02-25
creator: Pool, Robert
viewed: 1700
title: New Red Wine Varieties for Trial in the Northern Parts of Eastern North America
abstract: Discusses new red wine varieties being produced in the northern parts of Eastern of North America.

url: http://hdl.handle.net/1813/396
date: 2005-02-25
creator: Acree, Terry E.;Mitrakul, Craig;Licker, Jonathan;Egli, Christoph;Henick-Kling, Thomas
viewed: 3254
title: Brettanomyces in Wine
abstract: The Brettanomyces / Dekkera yeasts can be found in fermenting must and in wine. Typically they grow after alcoholic and malolactic fermentation during storage of wine in tank, barrel, or bottle. They contribute characteristic bretty flavors which are described as smoky, barnyard, plastic, burnt plastic, vinyl, Bandaid, and creosote. They can also contribute a metallic bitterness. Compounds which are responsible for brett flavor in wine include 4-ethyl phenol, 4-ethyl guaiacol, isovaleric acid, and unidentified burnt plastic compound. Descriptive sensory evaluations show an inverse relationship between fruity and bretty flavor perception. The brett aromas in some wines are considered a positive attribute, especially when present at low concentration. Often these flavors are considered a defect. The wine's varietal and regional flavor characteristics might be completely masked by these flavors and the wine can be unpleasantly bitter. 4-ethyl phenol is used by some wineries as an indicator compound for the activity of Brettanomyces. Yet some wines having a strong brett flavors do contain none or very little 4-ethyl phenol. Preliminary studies show that 4-ethyl phenol is formed all through growth of Brettanomyces. Thus this compound can be used to confirm the presence of bretty flavors. The search for indicator compounds formed during early stages of growth of B. continues. The Brettanomyces yeasts can produce the characteristic brett flavors when growing at low cell density of several hundred to several thousand cells per mL. The fact that these yeasts are often present at low cell numbers and that they are slow growing makes detection difficult. Genetic analyses of wine isolates have shown that only strains of B. bruxellensis grow in wine. Semi-selective plating is performed prior to genetic analysis on media including cycloheximide. The development of DNA based probes has made it possible to reliably identify the yeast once it is plated on a nutrient agar plate. Further developments of specific probes and of probe application techniques will improve the specificity and speed of detection.

url: http://hdl.handle.net/1813/397

date: 2005-02-25
creator: Henick-Kling, Thomas;Mitrakul, Craig;Egli, Christoph M.
viewed: 2203
title: Molecular Identification of Brettanomyces yeasts
abstract: Brettanomyces/Dekkera yeasts grow in wine mainly during barrel aging. Their presence is often associated with formation of off-flavors. This potential spoilage generates a high demand for a fast, sensitive and reliable identification procedure in the food industry. Presently, these exigences are only fulfilled by the use of genetic techniques. In addition to yeasts from type culture collections Brettanomyces yeast strains isolated from Cabernet Sauvignon wines characterized by winemakers panels as having 'bretty' aromas were extensively analyzed in this regard. Brettanomyces/Dekkera reference strains from a type culture collection were included for comparison. Whereas karyotyping and chromosomal RFLP resulted in clear distinctions it did not allow for relatedness studies due to the lack of pattern conservation among species and strains. Conversely, i) ribosomal DNA restriction fragments length polymorphism, ii) comparative sequence analysis of the two internal transcribed spacer (ITS) regions located between the ribosomal RNA genes and iii) RAPD-PCR allowed for species discrimination within the genus Brettanomyces and strain discrimination within the species B. bruxellensis. All wine-isolated Brettanomyces/Dekkera yeasts belonged to the species B. bruxellensis. Cabernet Sauvignon wines were chosen from the seven vintages 1989 and from 1991 to 1996. Merlot, Chardonnay, and Sauvignon blanc were taken from vintage 1995. All wines originated from the same winery. Whereas populations of one single or two strains were found, one strain always dominated in the examined wines. Populations of two clone A and B were found in 1989 in the ratio of 90% to 10%. Clone B was not found in 1991 but clone A completely dominated. Populations derived from clone C were found in 1992 (100%), 1993 (90%), 1994 (100%), 1995 (90%), and 1996 (70%). Clone D started to evolve in 1995 (10%) and was present in the following year 1996 to 30%. Clone B which was present in 1989 (10%) was not found any more in the following vintages. Brettanomyces yeasts were found in Merlot, but no yeasts were found in the two white wines. This established procedure for the first time makes the determination of Brettanomyces yeast possible thus allowing to learn about their successions in wine.

url: http://hdl.handle.net/1813/398
date: 2005-02-25
creator: Henick-Kling, Thomas;Acree, T. E.;Licker, J. L.
viewed: 3394
title: Impact of Brettanomyces Yeast on Wine Flavor: Sensory Description of Wines with Different
abstract: Growth of the yeast Brettanomyces/Dekkera in wine can drastically alter the aroma characteristics to the point where all varietal and regional flavor characteristics are overwhelmed by the flavors produced by these yeasts. To avoid spoilage it is important to know more about the aromas formed by these yeasts and be able to detect the changes in aroma early so that further growth of the yeast and further aroma modification can be avoided. Two groups of commercial wines with suspected "Brett" character were evaluated by two trained panels of judges. The first group included four Cabernet Sauvignon and two Pinot Noir wines; the second included four Cabernet Sauvignon wines. All were evaluated by sensory descriptive analysis and GC/MS 4-ethyl phenol analysis. Characteristic "Brett" aromas such as plastic, burnt plastic, Band-aid (TM), cow manure, barnyard, and horse sweat were summarized by the first group of tasters as 'plastic.' For the second group 'plastic' included only pastic, burnt plastic, and Band-aid (TM) odors. Dry manure and sweaty/animal were separate descriptors. In both groups, the wines were differentiated by univariate analysis of variance (ANOVA) and multivariate discriminant analysis (DA) by two descriptors: plastic and fruity. The greatest fruit character and lowest plastic scores defined the younger Cabernets, and the opposite was true for the older wines. There was little difference between the two Pinot Noirs for either descriptor. The a priori "Brett" observations from the winemakers proved to be a consistent predictor of Brett character for all wines. The observations also agreed with the 4-ethyl phenol concentrations and the post-hoc plastic mean scores from

the ANOVA analyses. The "strong Brett" wines were the older vintage wines with higher 4-ethyl phenol concentrations, higher plastic and lower fruity mean scores. Wines with "maybe some" and "no Brett" had the lower 4-ethyl phenol concentrations and more fruit with less plastic scores. This investigation shows that aroma modifications by Brettanomyces yeasts can be reliably detected and quantified with trained tasters. Further investigations into the chemical basis of the 'Brett' aromas will allow us to use chemical indicators to detect activity of these yeasts early.

url: http://hdl.handle.net/1813/399
date: 2005-02-25
creator: Specht, Katie Scully
viewed: 2454
title: Enzymes for Aroma and Mouthfeel Enhancement
abstract: Selected enzymatic activities can have positive and negative effects on the mouthfeel and aromatic characteristics of red and white wines. Different enzymatic applications and their effects are examined.

url: http://hdl.handle.net/1813/400
date: 2005-02-25
creator: Gerland, Christophe
viewed: 1665
title: Color and Tannin Stability: Influence of Microaeration and Enological Tannin Addition
abstract: It is well known that the stability of color is under the influence of the anthocyanins and tannins complexation. The traditional vinification technique relies on high temperature to liberate more anthocyanins and then a long maceration to extract tannins, to stabilize this color. The problem is that anthocyanins are very unstable, and can precipitate during fermentation.
There are now tools to avoid a part of this instabilization: use of extraction enzymes which liberate grape tannins at the begining of the AF, use of certain yeast strains (production of polysaccharides), use of enological tannins in fermentation or just after, and microaeration. These last two techniques will be discussed.

url: http://hdl.handle.net/1813/401
date: 2005-02-25
creator: Gerland, Christophe
viewed: 2819
title: Use of Lysozyme in Enology: Applications and Limits
abstract: Describes the role of the enzyme lysozyme in wine making or enology.

url: http://hdl.handle.net/1813/402
date: 2005-02-25
creator: Dulau, Laurent
viewed: 3351
title: Mouthfeel: Different Biotechnological Ways to Manage It
abstract: The role of polysaccharides in wine, and the role that they play in wine production and quality, has recently attracted some attention. There is good evidence that winemakers can use oenological and biotechnological tools to shape polysaccharide levels, and as a consequence, the mouthfeel of a wine.

url: http://hdl.handle.net/1813/403
date: 2005-02-25
creator: Olsen-Harbich, Richard
viewed: 3005

title: Evaluating Red Wine Cultivars on Long Island
abstract: Discusses different conditions for growing wine on Long Island.

url: http://hdl.handle.net/1813/404
date: 2005-02-25
creator: Pool, Robert M.;Lakso, Alan N.
viewed: 3209
title: Drought Stress Effects on Vine Growth, Function, Ripening and Implications for Wine Quality
abstract: In wine production the role of water stress has been debated for many years. It has become clear that neither end of the spectrum of water stress is optimal for desired balances of yields and wine quality. We will discuss how the range of water status affects vines and wines in this section. Following sections address the fundamentals of water balance in vineyards and how irrigation may fit, and the effects of drought stresses as seen in 1999 on vine performance and management options.

url: http://hdl.handle.net/1813/405
date: 2005-02-25
creator: Lakso, Alan N.
viewed: 1986
title: Basics of Water Balance in New York Vineyards
abstract: In the humid climate of New York and the Northeast, rainfall is erratic and therefore drought stresses are not easy to predict. Do we have significant problems due to drought (significant enough to change cultural practices or invest in irrigation)? We know the answer depends on how dry the seasons are, how much water our vineyard soil holds, how much the vines need. Since we cannot predict the weather, we must take a risk assessment approach, and then evaluate methods to reduce risks we find. To do that we need to understand the factors that either increase or reduce our risks of significant loss from drought stress.

url: http://hdl.handle.net/1813/406
date: 2005-02-25
creator: Lakso, Alan N.;Pool, Robert M.
viewed: 2661
title: Recognizing and Responding to Drought Stress in Maturing Grapevines
abstract: Discusses dealing with drought effects on grapevines.

url: http://hdl.handle.net/1813/407
date: 2005-02-25
creator: Durand, Pascal
viewed: 3623
title: Comparison of Pinot Noir Production in New York and Burgundy, A
abstract: New York State has long been recognized for its leading edge in the production of Concord and Niagara grapes for juice products. More recently, New York has experienced great growth in its wine related industry. With 33,000 acres of grapes under production, New York ranks second to only California in wine production. The number of wineries has increased rapidly in the past 20 years, from approximately 20 to over 125 today. In 1976, the Farm Winery Act was first passed, resulting in explosive growth of the wine and grape industry and the development of numerous farm wineries.
The moderate climates of the Finger Lakes area, the Lake Erie escarpment, the Hudson River Valley and Long Island simulate some of the best grape production regions in France and Germany. Pioneers of the grape growing industry in New York worked diligently to introduce classic Old World style grape cultivars such as Riesling, Chardonnay and most recently Pinot Noir. The microclimates encountered in this diverse state

have supported the production of high quality Vitis vinifera cultivars and today winemakers on Long Island, in the Hudson Valley, the Finger Lakes and along Lake Erie are winning international wine competitions and gaining some market share. New York is starting to show that it can produce excellent wines in various regions around the state.

New York State has a variable climate in each of these regions and in fact, this microclimate, its soil, and viticulture, or terroir, is thought to impart very specific and characteristic qualities to the wine products produced in each of these regions. The climate, mineral soils, sunlight and water availability of the Finger Lakes Region are in fact, reminiscent of the conditions observed in Burgundy France, the home of the popular and complex grape, the Pinot Noir.

url: http://hdl.handle.net/1813/408
date: 2005-02-25
creator:
viewed: 2846
title: Title One
abstract:

url: http://hdl.handle.net/1813/409
date: 2005-02-25
creator: Couly, Bertrand
viewed: 3402
title: Experience with Cabernet Franc along the Loire, France
abstract: Discusses the production of Cabernet Franc in the Loire, France.

url: http://hdl.handle.net/1813/410
date: 2005-02-25
creator: Price, Steven
viewed: 3587
title: Analysis of Finger Lakes Cabernet Franc: Phenolic Profile, Oak Profile, Brettanomyces
abstract: Describes an anaylsis of Finger Lakes (New York) Cabernet Franc wines using phenolic acid, oak, and brettanomyces profiles.

url: http://hdl.handle.net/1813/411
date: 2005-02-25
creator: Pool, Robert
viewed: 1438
title: Clones for Finger Lakes Wine Growers
abstract: Describes the method of cloning for the growing of wine in the Finger Lakes region of New York State.

url: http://hdl.handle.net/1813/412
date: 2005-02-25
creator: Pool, Robert
viewed: 3551
title: Cabernet Franc for New York Vineyards
abstract: Describes the making of Cabernet Franc wine in New York State.

url: http://hdl.handle.net/1813/413

date: 2005-02-25
creator: Berry, Jennifer
viewed: 3355
title: What's new at the Bureau of Alcohol, Tobacco and Firearms (ATF)?
abstract: Describes current policies and activities of the Bureau of Alcohol, Tobacco and Firearms.

url: http://hdl.handle.net/1813/414
date: 2005-02-25
creator: Fugelsang, Ken;Smith, Clark
viewed: 3626
title: Winegrape Maturity Enhancement via Reverse Osmosis
abstract: Describes the process of enhancing winegrape maturity through the reverse osmosis process.

url: http://hdl.handle.net/1813/415
date: 2005-02-25
creator: Arvik, Torey
viewed: 1951
title: Brettanomyces spp. in Wines and the Winery Environment
abstract: Discusses Brettanomyces in wine and the winery environment.

url: http://hdl.handle.net/1813/416
date: 2005-02-25
creator: Acree, Terry E.;Licker, Jonathan;Egli, Christoph;Henick-Kling, Thomas
viewed: 2411
title: Brettanomyces in Wine
abstract: Discusses the effects of brettanomyces on wine.

url: http://hdl.handle.net/1813/417
date: 2005-02-25
creator: Paul, Robert;Wollan, David;Parish, Matthew
viewed: 4036
title: Micro-oxygenation: A Review
abstract: Discusses the use of micro-oxygenation in wine making.

url: http://hdl.handle.net/1813/418
date: 2005-02-25
creator:
viewed: 3262
title: World Class Dry Riesling from the Pfalz: Ernst Loosen and the J. L. Wolf Estate
abstract: Provides an overview of Ernst Loosen's work at the J. L. Wolf estate in Germany making dry riesling wine.

url: http://hdl.handle.net/1813/419
date: 2005-02-25
creator:
viewed: 3371
title: World-Class Riesling from the Mosel: Ernst Loosen and the Dr. Loosen Estate
abstract: Discusses production of riesling wine by Ernst Loosen in the Mosel region of Germany.

url: http://hdl.handle.net/1813/420
date: 2005-02-25
creator:
viewed: 2163
title: Washington State Viticulture
abstract: Discusses the wine making industry in the state of Washington.

url: http://hdl.handle.net/1813/421
date: 2005-02-25
creator: Martin, Dennis
viewed: 2847
title: Introduction to California Riesling, An
abstract: Discusses the production of riesling wine in the state of California.

url: http://hdl.handle.net/1813/422
date: 2005-02-25
creator: Olsen, Erik
viewed: 2449
title: Marketing Riesling: Chateau Ste. Michelle Case Study
abstract: Discusses the marketing and production of Riesling wine in the state of Washington.

url: http://hdl.handle.net/1813/423
date: 2005-02-25
creator: Pool, Robert
viewed: 2668
title: Brief History of Riesling Research at Geneva and Fredonia, A
abstract: Describes the production of riesling wine in upstate New York.

url: http://hdl.handle.net/1813/424
date: 2005-02-25
creator: Pisoni, Mark E.;White, Gerald B.
viewed: 2529
title: Cost of Establishment and Production of Vinifera Grapes in the Finger Lakes Region of New York, 2001
abstract: In recent years there has been increased interest in the Finger Lakes, as well as in other producing regions in New York state, in planting Vitis vinifera grapes for premium wine production. Red varieties such as Pinot Noir, Cabernet Sauvignon, and Cabernet Franc all experienced increased acreage in the most recent orchard and vineyard survey compiled by The New York Agricultural Statistics Service.
Several factors are affecting the interest in new V. vinifera plantings. First is the declining real prices (adjusted for inflation) or in some cases, declining nominal prices for traditional American wine varieties and some French American hybrid varieties (e.g. Aurore, Catawba, DeChaunac, Delaware, and Dutchess). A second factor has been an increase in consumer demand for quality wines (roughly defined as French American hybrid or V. vinifera varietals or appellation wines). Wine consumption in the United States has increased during the last seven years, driven by good news regarding the health benefits of moderate wine consumption. A third factor is that most Finger Lakes wineries are reporting increased winery visitation by tourists as well as local area repeat purchasers. Well-managed wineries in the Finger Lakes are reporting annual sales increases of ten to as high as 25 per cent over the last several years. In addition to the increase in the number

of tourists resulting from promotional efforts that have been made by several local agencies, New York is gaining stature as a producer of high quality wines that command premium prices.

Growers who are considering planting additional V. vinifera acreage need to carefully weigh the cost of planting and establishing a vineyard, the cost of production of a mature vineyard, and the expected yields and prices in order to determine whether the investment of $13,000 per acre or more required to bring a V. vinifera vineyard into production will result in a profitable return on investment. This question is complicated by the long-run nature of the investment (payback periods are in excess of ten years and can be even much longer), as well as the risk from an over supply from significant plantings of wine grapes worldwide that could lead to price cutting at the retail level. There has been a great increase in new plantings of V. vinifera in California. By some estimates, nonbearing or not yet mature acreage in California is now 100,000 acres (Wines and Vines). Although the New York industry is somewhat insulated by a market structure of the premium wine sector that is based on most wineries selling over 50 per cent of their wine (volume) through direct sales, wineries cannot expect to be completely unaffected if national supply outstrips demand in the future. The acreage of V. vinifera varieties in the Finger Lakes is still quite limited. For example, the two most widely planted V. vinifera varieties, Chardonnay and Riesling, accounted for just 314 acres and 231 acres, respectively, in the most recent survey of acreage by New York Agricultural Statistics. Given the limited area planted, a small increase in planted acreage can have a large impact on supply when the new acreage begins bearing.

The objective of this project was to determine the cost of producing V. vinifera grapes in the Finger Lakes region in a commercial sized operation. Estimates of the total investment in land, machinery, vineyard establishment and development costs, and annual operating costs were developed.

These estimates may be used by growers and potential investors to compute and analyze the costs and profit potential for their own situations. The estimates are not necessarily representative of average costs for grape production in the Finger Lakes, but rather are typical costs for well-managed vineyards using recommended practices. The yield estimates used for estimation of typical returns assume better sites (well-drained, productive soils with appropriate slopes for air drainage). We also assumed that vineyard practices were used which would result in premium quality grapes. Practices such as leaf pulling and cluster thinning of certain varieties, would limit yields and contribute to higher quality wine. Poorer sites and/or failure to follow optimal management practices can have a significant negative impact on the earnings estimates presented in this publication.

url: http://hdl.handle.net/1813/425
date: 2005-02-25
creator: Schultz, Hans R.
viewed: 3398
title: Vineyard Management and Fruit Ripening and Flavor Development
abstract: Discusses the many factors involved in establishing and managing a vineyard that influence fruit ripening and flavor development.

url: http://hdl.handle.net/1813/426
date: 2005-02-25
creator: Sponholz, Wolf Rudiger
viewed: 2676
title: Atypical Aging, The: A Surway
abstract: Atypical Aging (ATA) was first detected in Germany in 1988 in the wine growing area in Franconia. Thereafter, in all the German wine growing regions ATA was expressed more or less severe. It was detected in all white wine varieties and also in Ros? wines, but never in red wines. Mainly it was found in light wines, like base wines for sparkling wines. In over-cropped vineyards and in such with a low water table, that means on dry sites. Looking around whether this phenomenon is a solely German problem, it quickly became clear,

that this unpleasant odor defect can be found around the world. In Europe ATA has been detected so far in Austria, Switzerland, Italy, and France. But also it has been found overseas. In wines from the Finger Lakes it has been recognized for several years, but it was not taken into account as a separate fault. Originally it seen as a fault coming from mixing native American or American-French hybrid wines into a vinifera wine. But California, Oregon, Australia, New-Zealand and South Africa experience this defect. If some more countries would show the fault in their wines, it would not be surprising.

url: http://hdl.handle.net/1813/427
date: 2005-02-25
creator: Gafner, Jurg
viewed: 3107
title: Atypical Aging (ATA): The Influence of Free Sulphurous Acid on the Occurrence of ATA and Its Curing by the Addition of Ascorbic Acid
abstract: Discusses the influence of free sulphurous acid on the occurrence of atypical aging (ATA) in wine and its curing by the addition of ascorbic acid.

url: http://hdl.handle.net/1813/428
date: 2005-02-25
creator: Schultz, Hans R.
viewed: 2895
title: Viticulture and Atypical Aging
abstract: Discusses possible causes for atypical aging (ATA) in wine.

url: http://hdl.handle.net/1813/429
date: 2005-02-25
creator: Lakso, Alan N.
viewed: 3041
title: Effect of Water Stress on Vineyards and Wine Quality (in Eastern Climates - OK?), The
abstract: Discusses the effect that the lack of water has on vineyards and wine quality in the eastern United States.

url: http://hdl.handle.net/1813/430
date: 2005-02-25
creator: Li, K-T;Martinson, Timothy;Cheng, Lailiang;Pool, Robert M.;Lakso, Alan N.
viewed: 3117
title: Drought and Water Stress in New York Vineyards and the Potential for Atypical Aging of New York Wines
abstract: Discusses how drought and water stress in New York vineyards might cause atypical aging (ATA) in New York wines.

url: http://hdl.handle.net/1813/431
date: 2005-02-25
creator: Lakso, Alan N.;Henick-Kling, Thomas;Martinson, Timothy;Cheng, Lailiang
viewed: 2164
title: Nitrogen Management to Improve Vine N Status and Reduce Atypical Aging of Wine in New York
abstract: Discusses the use of nitrogen management to improve Vine N status and reduce atypical aging of wine New York State.

url: http://hdl.handle.net/1813/432
date: 2005-02-25
creator: Rauhut, Doris
viewed: 2780
title: Volatile Sulfur Compounds: Impact on "Reduced Sulfur" Flavor Defects and "Atypical Aging" in Wine
abstract: Discusses the impact that volatile sulfur compounds have on wine, especially in relation to atypical aging (ATA).

url: http://hdl.handle.net/1813/433
date: 2005-02-25
creator: Gafner, Jurg
viewed: 2203
title: Origin of Acetic Acid and Increased Acidity in General in Wines: Stressed Fermentation
abstract: Discusses how spoilage of wines by microorganisms can be prevented when conditions are created by the winemakers which favor the growth of the desired microorganisms.

url: http://hdl.handle.net/1813/434
date: 2005-02-25
creator: Sponholz, Wolf Rudiger
viewed: 1930
title: Treatment of Cork with Suberase
abstract: Discusses how treating wine bottle corks with the enzyme suberase can prevent the wine leaching the corks and disturbing its flavor as a result.

url: http://hdl.handle.net/1813/435
date: 2005-02-25
creator: Henick-Kling, Thomas;Arvik, Torey
viewed: 4297
title: Brettanomyces Bruxellensis Occurrence, Growth, and Effect on Wine Flavor
abstract: Discusses the occurence of brettanomyces bruxellensis, its growth, and its effect on wine flavor.

url: http://hdl.handle.net/1813/436
date: 2005-02-25
creator: Henick-Kling, Thomas;Conterno, Lorenza;Arvik, Torey
viewed: 3091
title: Brettanomyces Bruxellensis in New York State Wines: A Global Issue
abstract: Recent work in our laboratory to identify strains of Brettanomyces bruxellensis in New York State has focused on red wines from the Finger Lakes region and Long Island. Most isolates were from barrel samples and were therefore unfiltered blends of several separate environments. Two isolates were from finished wines in bottle, one of which was not filtered as a matter of style.

url: http://hdl.handle.net/1813/437
date: 2005-02-25
creator: Peterson, David
viewed: 2637
title: Overview of Riesling Viticulture in New York
abstract: Provides an overview of New York viticulture that utilizes the Riesling grape.

url: http://hdl.handle.net/1813/441
date: 2005-02-25
creator: Curtis, Glenn
viewed: 3861
title: Role of Enzymes in Wine Making, The: An Overview
abstract: Discusses the role of enzymes in wine making.

url: http://hdl.handle.net/1813/442
date: 2005-02-25
creator: Gerland, Christophe
viewed: 2014
title: Addition of Enzymes to White and Red Wines: Timing, Amounts and Effects on Color and Flavor Extraction
abstract: Enzymes have been used for many years in winemaking. This presentation shows some new applications and protocols used in Europe to enhance aromas, color and structure of wines.

url: http://hdl.handle.net/1813/443
date: 2005-02-25
creator: Collins, Thomas
viewed: 3710
title: Tannins: Types and Amounts in Grapes and Wines
abstract: Discusses the types and amounts of tannins in grapes and wines.

url: http://hdl.handle.net/1813/444
date: 2005-02-25
creator: Gerland, Christophe
viewed: 3587
title: Addition of Tannins Before, During or After Fermentation
abstract: The utilization of tannins has been increasing during the last 10 years in Europe, with several applications in white, ros? and red wines. This addition can be done at different stages of winemaking, depending on the effect desired, the type of wine and the type of tannins. This paper describes those applications, and some work to better anticipate the use of tannins, regarding the quality of the grapes.

url: http://hdl.handle.net/1813/445
date: 2005-02-25
creator: Burnett, Diana M.
viewed: 3156
title: Increasing Wine Quality with the Addition of Enological Tannins and Enzymes in Red Wine
abstract: Discusses how the quality of red wine can be increased with the addition of enological tannins and enzymes.

url: http://hdl.handle.net/1813/446
date: 2005-02-25
creator: Curtis, Glenn
viewed: 3695
title: Filtration and Winery Size: Selecting an Appropriate Filtration System
abstract: Discusses how to select an appropriate filtration system based on the size of a winery.

url: http://hdl.handle.net/1813/447
date: 2005-02-25
creator: Gerland, Christophe
viewed: 2004
title: Filtration Practice in France
abstract: Discusses the use of filtration systems in the cultivation of wine in France.

url: http://hdl.handle.net/1813/448
date: 2005-02-25
creator: Henick-Kling, Thomas;Conterno, Lorenza
viewed: 1996
title: Result of Brett Survey in Finger Lakes Pinot Noir
abstract: Brettanomyces bruxellensis has been associated with wines which exhibit off-flavors and odors described as "burnt plastic," "wet wool," "horse sweat," and "barn yard." The yeast can grow in wines at very low cell densities and can withstand the combined stresses of acetic acid, free SO2, tartaric acid and ethanol. Brettanomyces bruxellensis tends to overproduce acetic acid and convert fruity phenolic compounds into undesirable aromas such as 4-ethylphenol and 4-ethylguiacol which give wine burnt plastic, Bandaid (R), plastic, and barnyard aromas (Chatonnet et al., 1992, 1997; Licker, 1998; Arvik, 2002).
These products are malodorous by themselves, but small concentration of "bretty" aroma compounds may increase the wine's aroma complexity if they are kept at concentrations near the odor threshold. Some winemakers are convinced that any amount of Brettanomyces is bad for a winery. Others like the character that some B. bruxellensis strains may give an under-ripe, simple fruity wine. Because there is evidence for the global presence of "Brett" (Fugelsang, 1997), the issue has become more of an immediate priority for wine researchers. We have isolated Brettanomyces from several NY wines as well as from bottled wines from other parts of the USA and Europe (Arvik, 2002). A wide overview on the "Brett" phenomenon was presented at the 31st Annual NY Wine Industry Workshop (Arvik and Henick-Kling, 2002).
In this research a survey on Brettanomyces bruxellensis occurrence in the 28 samples of Finger Lake Pinot Noir has been accomplished. The wines were produced in the wineries member to the Pinot Noir Alliance that supported the project submitted in 2002, as well. Moreover, more information about factors affecting B. bruxellensis wine-altering activity will be added to our database. The results were also compared to the survey previously performed on Cabernet Franc (Arvik and Henick-Kling in progress).

url: http://hdl.handle.net/1813/449
date: 2005-02-25
creator: Arnink, Kathy;Krieger, Sibylle
viewed: 3317
title: Malolactic Fermentation: A Review of Recent Research on Timing of Inoculation and Possible Yeast-Bacteria Combinations
abstract: Despite a considerable research effort, the malolactic fermentation (MLF) process remains to be an imperfectly controlled process and at times MLF can be difficult to get started. One possible explanation for this difficulty is that the wine may be lacking essential nutrient factors for the lactic acid bacteria. Another possible argument is that inhibitory substances are accumulated in wine. Sulfur dioxide and alcohol concentrations and pH have been included among the most significant parameter influencing the growth of malolactic bacteria in wine. King and Beelman suggested that the growth of Oenococcus oeni during alcoholic fermentation might be retarded by the production of toxic compounds by yeasts other than ethanol and sulfur dioxide. Moreover, the malolactic fermentability of wines produced from the same must differ according the yeast strain used in alcoholic fermentation. Previous studies have shown the inhibition

of malolactic starter cultures by active growing yeasts due to the production of high levels of SO2 during the early stage of alcoholic fermentation and the effect of acetic acid formed by Kloeckera yeasts and some lactobacilli on growth of Saccharomyces. The goal of our recent investigations is to better understand these interactions, to quantify the nutrient demand by yeast and the nutrient requirements of wine lactic acid bacteria, and to determine whether there are other synergistic interactions between S. cerevisiae and O. oeni in wine. A better understanding of these aspects of wine microorganism physiology will allow us to better match combinations of yeast and bacteria starter cultures with grape varieties, and select the timing of yeast and bacteria inoculations.

url: http://hdl.handle.net/1813/450
date: 2005-02-25
creator: Gafner, Jurg
viewed: 2281
title: Biological Stability of Wine and Biogenic Amines
abstract: Biogenic amines should not be present in wines and they are always an indication for the activity of undesired micro-organisms with a high amino decarboxylase activity as found in the lactic acid bacteria Pediococcus damnosus. By microscopic control during winemaking it is possible to detect the appearance of Pediococcus damnosus and to prevent their further growth. The addition of Oenococcus oeni bacteria starter cultures can prevent or delay the growth of Pediococcus damnosus and therefore the formation of biogenic amines. By use of bacteria starter cultures and/or the microscopic control during wine-making the wine-maker can prevent the formation of biogenic amines in a simple, inexpensive and successful fashion.

url: http://hdl.handle.net/1813/451
date: 2005-02-25
creator: Pool, Robert;Acree, Terry;Lakso, Alan;Henick-Kling, Thomas;Cheng, Lailiang;Martinson, Timothy
viewed: 3311
title: Update on Atypical Aging Research
abstract: Discusses wines with the atypical aging (ATA) defect, which lose their varietal flavors very quickly.

url: http://hdl.handle.net/1813/452
date: 2005-02-25
creator: Ramroth, Perky
viewed: 3217
title: Alcohol and Tobacco Tax and Trade Bureau: U. S. Dept. of the Treasury
abstract: Provides a general overview of the Alcohol and Tobacco Tax and Trade Bureau, formerly the Bureau of Alcohol, Tobacco, and Firearms.

url: http://hdl.handle.net/1813/453
date: 2005-02-25
creator: Roberts, John S.
viewed: 4073
title: Winery Design: Energy Requirements
abstract: Provides an overview of how to evaluate a winery's energy requirements, focusing on the heating and cooling operations of a winery and the different ways these operations are carried out.

url: http://hdl.handle.net/1813/454

date: 2005-02-25
creator: Beckley, Jacqueline H.
viewed: 2408
title: Why Marketing Counts
abstract:

url: http://hdl.handle.net/1813/455
date: 2005-02-25
creator: Weybright, Robert;Beckley, Jacqueline H.
viewed: 3249
title: Making Your Product Real
abstract: Provides information about positioning a grower's wine product in the marketplace. Encourages them to fully understand both their product and their competitors' products; to understand what customers want from a product like theirs; how to implement what customers want; and how to maintain these ideas during the continuous refinement of a product.

url: http://hdl.handle.net/1813/457
date: 2005-02-25
creator: Lerch, Steve;Pool, Robert
viewed: 2072
title: Living with Winter Injury: How Did We Do in 2003?
abstract: Report on a new approach for dealing with winter cold injury in wines.

url: http://hdl.handle.net/1813/458
date: 2005-02-25
creator: Henick-Kling, Thomas
viewed: 3556
title: Proceedings of the 33rd Annual New York Wine Industry Workshop 2004
abstract: Table of Contents

url: http://hdl.handle.net/1813/459
date: 2005-02-25
creator: Acree, Terry;Martinson, Tim;Henick-Kling, Thomas;Lakso, Alan;Cheng, Lailiang
viewed: 3436
title: Conclusions for 3 Years of Study on the Effect of Drought Stress and Available Nitrogen on Formation of Atypical Aging Flavor Defect in Wine
abstract: Describes a three year vineyard study that used irrigation and supplemental nitrogen to reduce or delay appearance of Atypical Aging (ATA) wine flavor defect.

url: http://hdl.handle.net/1813/460
date: 2005-02-25
creator: Reinhardt, Johannes
viewed: 3484
title: Stress in Vine and Wine
abstract: Describes how to best deal with the effects of drought on wine and wine making.

url: http://hdl.handle.net/1813/461
date: 2005-02-25

creator: Acree, Terry;Henick-Kling, Thomas;Martinson, Tim;Lakso, Alan;Cheng, Lailiang
viewed: 3618
title: Final Report to the Viticulture Consortium-Eastern Grants Program January 2004: Water and Nitrogen Management to Reduce Atypical Aging of Wine
abstract: A report on the use of water and nitrogen management to reduce atypical aging of wine.

url: http://hdl.handle.net/1813/462
date: 2005-02-25
creator: Brindle, I;Ker, K.;Soleas, G.;Reynolds, A.;Riesen, R.;Lin, J. Y.;Pickering, G. J.
viewed: 3550
title: Harmonia Axyridis and Wine Quality
abstract: Discusses whether or not Harmonia axyridis, a beetle introduced into the US to control for aphids and other pests, is affecting the aroma and flavor of some wines.

url: http://hdl.handle.net/1813/463
date: 2005-02-25
creator: Martinson, Tim
viewed: 2888
title: Asian Lady Beetle Control Update
abstract: Discusses developments in tactices to control for Asian Multicolored Lady Beetles and their effect on grapes and wine growing.

url: http://hdl.handle.net/1813/464
date: 2005-02-25
creator: Keller, Markus
viewed: 2210
title: Irrigation Strategies for White and Red Grapes
abstract: Discusses irrigation methods for red and white grapes.

url: http://hdl.handle.net/1813/465
date: 2005-02-25
creator: Wample, Robert L.
viewed: 3568
title: Grapevine Irrigation Management
abstract: Discusses the management of the irrigation of grapevines.

url: http://hdl.handle.net/1813/466
date: 2005-02-25
creator: Gerling, Christopher;Preston-Wilsey, Luann;Henick-Kling, Thomas
viewed: 2996
title: Working with Uneven Ripeness and Under-Ripe Grapes
abstract: Discusses how to evaluate a grape crop to determien whether or not it is ripening at the expected pace or not.

url: http://hdl.handle.net/1813/467
date: 2005-02-25
creator: Keller, Markus
viewed: 3531

title: Grape Ripening and Determination of Grape Maturity
abstract: Discusses how to determine when grapes are ripe or mature.

url: http://hdl.handle.net/1813/468
date: 2005-02-25
creator: de Savigny, Christiane;Reynolds, Andrew G.
viewed: 3094
title: Experiences with Spatial Variation of Yield and Fruit Composition in Premium Vinifera Vineyards in Niagara
abstract: Discusses experiences with spatial variation of yield and fruit composition in premium vinifera vineyards in Niagara.

url: http://hdl.handle.net/1813/469
date: 2005-02-25
creator: Kong, Soon
viewed: 3789
title: OSHA: Friend or Foe?
abstract: Discusses OSHA's (Occupational Safety and Health Administration) relationship with grape growing and wine producing businesses.

url: http://hdl.handle.net/1813/470
date: 2005-02-25
creator: Casler, Michael;Kong, Soon
viewed: 3327
title: How to Work with OSHA: Free On-site Safety and Health Services
abstract: Provides information for grape growers and wine producers on working with the Occupational Safety and Health Administration.

url: http://hdl.handle.net/1813/471
date: 2005-02-25
creator: Roberts, John S.
viewed: 3153
title: Winery Design: Energy Requirements
abstract: Provides an overview of how to evaluate a winery's energy requirements, focusing on heating and cooling operations and the different ways these operations are carried out.

url: http://hdl.handle.net/1813/472
date: 2005-02-25
creator: Worobo, Randy W.
viewed: 4830
title: Non-chlorine Sanitizer Options for the Wineries
abstract: Discusses non-chlorine sanitizer options for wineries.

url: http://hdl.handle.net/1813/615
date: 2005-03-04
creator: Vernaleken, Theodor
viewed: 2594
title: The Dog and the WolfA Bohemian Folk-Tale

abstract: Folk-tale from the Czech lands about a dog and a wolf
From: http://www.fordham.edu/halsall/mod/bohemia-dogwolf.html

url: http://hdl.handle.net/1813/629
date: 2005-03-04
creator: The Ottoman Sultan
viewed: 3116
title: The Firman of Investiture of Prince Charles of Hohenzollern-Sigmaringen as Prince of the United Principalities of Moldavia and Wallachia, October 23, 1866
abstract:

url: http://hdl.handle.net/1813/633
date: 2005-03-07
creator: Principe, Nicholas
viewed: 3080
title: The feeding dynamics of out-migrated age-0 chinook salmon (Oncorhynchus tshawytscha) in Lake Ontario
abstract: The purpose of this study was to examine gastric evacuation, feeding chronology, daily ration, growth, diet, and prey selectivity of recently out-migrated young-of-the-year (YOY) chinook salmon (Oncorhynchus tshawytscha) in Lake Ontario.
To determine gastric evacuation rates, chinook salmon ranging from 40-80 mm in total length, were fed to satiation and maintained at 10, 13, 16, or 19oC in the laboratory for 24 hours. Five fish were sampled randomly every four hours from each temperature treatment and the complete digestive tract (CDT) contents were removed. The CDT contents and the remainder of each fish were subsequently dried and weighed. Results show that evacuation rate (R) was dependent on temperature, with estimates of R ranging from 0.214?h-1 to 0.352?h-1, at 10oC and 19oC, respectively.
Field sampling for daily ration estimates was conducted on five dates from May 21 ? June 25, 2001. Sub-yearling chinook salmon were captured using a seine near the mouth of the Salmon River, beginning 30-60 minutes after sunrise and continuing at approximately 4-hour intervals for 24 hours. Estimates of mean daily ration ( ) were derived using the Eggers (1977) model. Results showed that gut fullness varied significantly ($p < 0.05$) with both date and time of day, but there was no indication of synchronous diel variability in gut fullness between dates. Because did not vary as a function of date ($p > 0.05$), an overall (28.3 g dry wt?100 g dry wt-1?d-1) was calculated using the grand mean for all five sampling dates.
Daily ring counts of sagittal otoliths revealed that in 2001, YOY chinook hatched between February 21 and April 2, and exhibited a mean growth rate of 0.65 mm?day-1. The early spring hatch dates indicated that the captured chinook salmon were naturally produced, as 2001 hatchery chinook hatched in November. For diet analyses, out-migrated YOY chinook salmon, along with potential prey items, were sampled biweekly, at dusk, at two near-shore sites (i.e., Sandy Creek and the Salmon River) in Lake Ontario from April ? July of 2000. In 2001, weekly diet and prey sampling was conducted from April ? July at the Salmon River site only. On five dates from mid-May to late-June 2001, prey and fish samples were collected throughout the day to assess diel shifts in prey availability and selection.
Mid-water and surface prey sampling was conducted using a 1000 ?m neuston net pulled across the surface and parallel to the shoreline in water about one meter deep. Out-migrated, age-0 chinook salmon were captured using a seine concurrent with prey samples in both 2000 and 2001. Results showed that YOY chinook salmon in Lake Ontario were primarily diurnal feeders as indicated by both a decrease in gut content wet weight and the lack of identifiable prey in stomach samples examined after midnight. Sub-yearling chinook sampled at dusk at both sites in 2000 and 2001 fed heavily on aquatic taxa, with mature chironomids constituting the bulk of the diet. Similarly, chinook salmon sampled during the day at the Salmon River site in 2001

consumed at least 71% aquatic taxa.
Moreover, there was little evidence of a diel diet shift. Although amphipods, homopterans, and developing chironomidae often dominated the prey samples, daytime diet data collected at the Salmon River site in 2001 revealed that mature chironomidae remained the most frequently consumed prey. Strauss's (1979) index of prey selection (L) revealed that in general, YOY chinook actively selected (L = 0.3-0.5) for chironomidae, while negatively selecting for non-chironomids.
This study shows that naturally produced chinook salmon are thriving in the near-shore areas of Lake Ontario and consequently have an excellent chance to recruit to the lake?s Pacific salmon fishery.Funding for this study was provided by New York Sea Grant as part of project no. R/FBF-12, 'Factors affecting early survival and management of Lake Ontario salmonine populations.'

url: http://hdl.handle.net/1813/634
date: 2005-03-09
creator: Spencer, Captain
viewed: 2916
title: The Perils of Travel Through Moldavia, 1854
abstract:

url: http://hdl.handle.net/1813/635
date: 2005-03-09
creator: Crosse, Andrew F.
viewed: 3246
title: The Transylvanian Germans, 1878
abstract:

url: http://hdl.handle.net/1813/636
date: 2005-03-11
creator: Archdeacon of Aleppo, Paul
viewed: 5091
title: Wallachia in 1657
abstract:

url: http://hdl.handle.net/1813/637
date: 2005-03-14
creator: Levinson, David A.;Likins, Peter W.;Kane, Thomas R.
viewed: 4141
title: Spacecraft Dynamics
abstract: A print on demand of these books and articles can be obtained from Cornell Business Services (CBS) Digital Services by sending e-mail to digital@cornell.edu or calling 607.255.2524. In the body of the message include the identifier.uri for the book or article, and ask to be contacted regarding payment.This book is an outgrowth of courses taught at Stanford University and at UCLA, and of the author's professional activities in the field of spacecraft dynamics. It is intended for use as a textbook in courses of instruction at the graduate level and as a reference work for engineers engaged in research, design, and development in this field.

url: http://hdl.handle.net/1813/638
date: 2005-03-14
creator: Levinson, David A.;Kane, Thomas R.
viewed: 4483

title: Dynamics, Theory and Applications
abstract: A print on demand of these books and articles can be obtained from Cornell Business Services (CBS) Digital Services by sending e-mail to digital@cornell.edu or calling 607.255.2524. In the body of the message include the identifier.uri for the book or article, and ask to be contacted regarding payment.This textbook is intended to provide a basis for instruction in dynamics. Its purpose is not only to equip students with the skills they need to deal effectively with present-day dynamics problems, but also to bring them into position to interact smoothly with those trained more conventionally.

url: http://hdl.handle.net/1813/640
date: 2005-03-14
creator: Kane, Thomas R.
viewed: 3658
title: Analytical Elements of Mechanics, Volume 1
abstract: A print on demand of these books and articles can be obtained from Cornell Business Services (CBS) Digital Services by sending e-mail to digital@cornell.edu or calling 607.255.2524. In the body of the message include the identifier.uri for the book or article, and ask to be contacted regarding payment.This book is the first of two volumes for use in courses in classical mechanics in which students are taught to solve physically meaningful problems arising in a variety of fields. The content and format are based on the author's approach to teaching mechanics.

url: http://hdl.handle.net/1813/641
date: 2005-03-14
creator: Kane, Thomas R.
viewed: 3041
title: Analytical Elements of Mechanics, Volume 2: Dynamics
abstract: A print on demand of these books and articles can be obtained from Cornell Business Services (CBS) Digital Services by sending e-mail to digital@cornell.edu or calling 607.255.2524. In the body of the message include the identifier.uri for the book or article, and ask to be contacted regarding payment.This book is the second of two volumes intended for use in courses in classical mechanics. This volume deals with dynamics. The symbolic language used is vector analysis. More than 100 illustrative examples and problems are presented, and practice problems are provided as problem sets.

url: http://hdl.handle.net/1813/642
date: 2005-03-14
creator: Vanek, Jaroslav
viewed: 5308
title: Unified Theory of Social Systems: A Radical Christian Analysis
abstract: For our purposes a Social System is defined as a human community whose members interact, depend on each other and are affected jointly by actions of or physical characteristics within the community. Decisions concerning actions or characteristics can be of any kind, on a broad scale ranging from absolute dictatorship to an open-ended state of most perfect democratic principles. It is precisely this notion of "perfection" that will concern us in this study; but hopefully in a more explicit, precise and less superficial and pride-loaded manner.
Next, because we want to develop a unified theory of social systems, it is imperative to include all systems in all their dimensionality -- not only in the political sphere. The major spheres or dimensions, in addition to the political (from which we have started our analysis), are social, educational, economic, health-related, family-related, affective and spiritual -- and in fact any sphere involving a social system of more than one person where some or all of the members of the system function in the sense stated above. We want to refer

to this as the ALL-INCLUSIVENESS of all SPHERES or DIMENSIONS of human society.

url: http://hdl.handle.net/1813/643
date: 2005-03-15
creator: Stephen, Shaw
viewed: 3370
title: A Simple, Physical Model of Particulate Wash-off from Impervious Urban Surfaces
abstract: Particulate matter "washed-off" of impervious surfaces constitutes a large portion of urban nonpoint source pollution. However, current water quality models rely on empirical functions of particulate wash-off that do not meaningfully describe the physical mechanisms involved. In this paper, we investigate the physical mechanisms of rain-flow transportation (Moss et al. 1979), raindrop induced particle ejection that occurs in shallow flows on moderate slope. Rain-flow transport involves the interaction of both rainfall impact and overland flow, in contrast to the overland flow-dominated, shear-driven particle entrainment that may occur on steep slopes.

We propose a saltation model in which particles are ejected from an impervious surface by raindrop impacts and are translated laterally while settling-out of overland flow. Particles are assumed to be ejected in proportion to rain intensity and the spatial density of particles on the surface. Once ejected, we propose that particles move laterally at the flow velocity and settle according to Stoke's Law. We tested our conceptual model against laboratory flume experiments (10.5 cm wide, 80 cm long) in which rain intensity and upslope overland flow could be independently controlled. The surface of the flume was rough (~1 mm roughness element height) and the particles were 545 mm diameter sand grains. Rainfall rates were between 4.5 and 12.1 cm/hr and overland flow rates were between 150 and 420 mL/min. The conceptual model agreed well with observed data, R2 > 0.85 and was best at the higher overland flows. At low flows the particles spread-out across the surface more than the model predicted. We hypothesize that at low flows lateral movement arising during raindrop impact may be greater than the translation due to overland flow; more research is needed to develop a way to simulate this process. These model results provide a basis for developing a mechanistic wash-off model for spatially distributed urban water quality models.

url: http://hdl.handle.net/1813/645
date: 2005-03-22
creator: Osburn, Charles B.
viewed: 3493
title: Some Practical Observations on the Writing, Implementation, and Revision of Collection Development Policy.
abstract: This paper was conceived in the context of the "RTSD Guidelines for the Formulation of Collection Development Policies." It describes fundamental qualities of policy applicable to all kinds of libraries and recommends a step-by-step process leading to the the successful realization of policy planning. Placing an emphasis on the values of the process itself, the paper also suggests implications for collection development personnel and for the library as an organization, when a working policy is adapted.

url: http://hdl.handle.net/1813/645
date: 2005-03-22
creator: Osburn, Charles B.
viewed: 3493
title: Some Practical Observations on the Writing, Implementation, and Revision of Collection Development Policy.
abstract: This paper was conceived in the context of the "RTSD Guidelines for the Formulation of Collection Development Policies." It describes fundamental qualities of policy applicable to all kinds of libraries and

recommends a step-by-step process leading to the the successful realization of policy planning. Placing an emphasis on the values of the process itself, the paper also suggests implications for collection development personnel and for the library as an organization, when a working policy is adapted.

url: http://hdl.handle.net/1813/646
date: 2005-03-22
creator: Edelman, Hendrik
viewed: 3921
title: Selection Methodology in Academic Libraries.
abstract: An attempt is made to describe the elements of a selection decision model. Definitions are provided and an outline for a classification of library materials by source of origin is developed. There are descriptions of short- and long-term goals for collection development as well as an outline of macro- and microselection decision making.

url: http://hdl.handle.net/1813/646
date: 2005-03-22
creator: Edelman, Hendrik
viewed: 3921
title: Selection Methodology in Academic Libraries.
abstract: An attempt is made to describe the elements of a selection decision model. Definitions are provided and an outline for a classification of library materials by source of origin is developed. There are descriptions of short- and long-term goals for collection development as well as an outline of macro- and microselection decision making.

url: http://hdl.handle.net/1813/647
date: 2005-03-22
creator: Mosher, Paul H.
viewed: 2250
title: Collection Evaluation in Research Libraries: The Search for Quality, Consistency, and System in Collection Development
abstract: The history, literature, and methodology of collection evaluation or assessment in American research libraries are reviewed, current problems, tools, and methodology of evaluation are discussed; and an ongoing collection evaluation program at Stanford University Libraries is described.

url: http://hdl.handle.net/1813/647
date: 2005-03-22
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abstract: The history, literature, and methodology of collection evaluation or assessment in American research libraries are reviewed, current problems, tools, and methodology of evaluation are discussed; and an ongoing collection evaluation program at Stanford University Libraries is described.

url: http://hdl.handle.net/1813/648
date: 2005-03-22
creator: Hazen, Dan C.;Edelman, Hendrik
viewed: 3891

title: Collection development and management at Cornell : an interim report on activities of the Cornell University Libraries' project for collection development and management, July 1977-June 1979 ; prepared under a grant from the Andrew W. Mellon Foundation
abstract: This document covers the first year-and-a-half of the Cornell University Libraries' Project for Collection Development and Management and as such is primarily a statement of the issues that the the Library faced and the investigative design that Edelman proposed to address them. The issues-- decline in acquisitions rates, concern over methodology for funds allocation, library space-- will seem remarkably contemporary. Twenty-five years on, readers will be struck by the writers' confidence that all research library activity derived from the collections and that their description, evaluation and planning would, necessarily, improve services.

url: http://hdl.handle.net/1813/648
date: 2005-03-22
creator: Hazen, Dan C.;Edelman, Hendrik
viewed: 3891
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url: http://hdl.handle.net/1813/649
date: 2005-03-22
creator: Miller, J. Gormly
viewed: 3300
title: Collection development and management at Cornell : a concluding report on activities of the Cornell University Libraries' project for collection development and management, July 1979-June 1980, with proposals for future planning
abstract: Miller's work addresses two primary audiences, the Andrew W. Mellon Foundation, which funded the two-year study at Cornell, and the University's administrators, who would assess the extent to which they would underwrite the report's recommendations. It lays out a series of activities that the library conducted to measure the Project's research design and makes specific recommendations for the organization, selection policy, budget control and planning of collection development at Cornell. The report's scope and tone-- whose principal leitmotifs are limits, controls and bounds-- contrasts sharply with the optimism of the interim report, written two years earlier.

url: http://hdl.handle.net/1813/649
date: 2005-03-22
creator: Miller, J. Gormly
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title: Collection development and management at Cornell : a concluding report on activities of the Cornell University Libraries' project for collection development and management, July 1979-June 1980, with proposals for future planning

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url: http://hdl.handle.net/1813/651
date: 2005-03-23
creator: Dicey, Edward
viewed: 2977
title: Bulgarian Political Attitudes, 1894
abstract:

url: http://hdl.handle.net/1813/652
date: 2005-03-23
creator: Pears, Sir Edwin
viewed: 3793
title: The Massacre of Bulgarians, 1876
abstract:

url: http://hdl.handle.net/1813/653
date: 2005-03-23
creator: Stoyanoff, Zachary
viewed: 1057
title: The Stara Zagora Uprising, 1875
abstract:

url: http://hdl.handle.net/1813/654
date: 2005-03-24
creator: Catherine II of Russia;Maria Theresa of Austria;Frederick II of Prussia
viewed: 2937
title: The Division of Poland, 1772, 1793, 1795
abstract: Selections from the writings of Frederick II of Prussia, Maria Theresa of Austria and Catherine II of Russia regarding the partitions of Poland

url: http://hdl.handle.net/1813/655
date: 2005-03-25
creator: Feng, Y. T.
viewed: 3507
title: The Necessity for a Collection Development Policy Statement
abstract: The heart of the library lies in its collection, and collections have to be built continuously. Budgetary constraints perforce stress the need for better defined collection development policy, although the ultimate goal should be an improvement of library service rather than any reduction of library cost. A written collection development policy facilitates a consistent and balanced growth of library resources, and a dynamic policy is one that evolves as the institution grows. Such as policy is based on the understanding of the needs of the community it serves and seeks to define and limit the goals and objectives of the institution. A collection

development statement is not a substitute for books selection; it charts the forest but does not plant the trees. It should be used as a guidepost, not a crutch. Book selection requires judgement and the courage to choose. A sound collection development policy, on the other hand, provides the necessary rationale without which a collection may grow amoebalike, by means of pseudopodia.

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date: 2005-03-25
creator: Feng, Y. T.
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url: http://hdl.handle.net/1813/656
date: 2005-03-25
creator: Bender, Ann
viewed: 4009
title: Allocation of Funds in Support of Collection Development in Public Libraries
abstract: A discussion of allocation of funds in support of colleciton development in public libraries based primarily on interviews held with administrative officers of the Brooklyn Pulic Library and Tompkins County (New York) Public Library is presented. The author concludes that no materials budget, however strong, can be used effectively without quality service at the level where the individual librarian brings material and patron together.

url: http://hdl.handle.net/1813/656
date: 2005-03-25
creator: Bender, Ann
viewed: 4009
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url: http://hdl.handle.net/1813/657
date: 2005-03-25
creator: Dudley, Norman
viewed: 2539
title: Collection Development: A Summary of Workshop Discussions

abstract: The author presents a summary of the five workshop discussions held at the Preconference Institute on Collection Development sponsored by the Collection Development Committee, Resources Section , RTSD, Detroit, MI June 1977.

url: http://hdl.handle.net/1813/657
date: 2005-03-25
creator: Dudley, Norman
viewed: 2539
title: Collection Development: A Summary of Workshop Discussions
abstract: The author presents a summary of the five workshop discussions held at the Preconference Institute on Collection Development sponsored by the Collection Development Committee, Resources Section , RTSD, Detroit, MI June 1977.

url: http://hdl.handle.net/1813/658
date: 2005-03-25
creator:
viewed: 2852
title: Sixteen Political, Economic, and Ideological Points, Budapest, October 22, 1956
abstract: RESOLUTION ADOPTED AT PLENARY MEETING OF THE BUILDING INDUSTRY TECHNOLOGY UNIVERSITY

url: http://hdl.handle.net/1813/659
date: 2005-03-25
creator: Taylor, Bayard
viewed: 4200
title: The Salt Mines of Wieliczka, 1850
abstract:

url: http://hdl.handle.net/1813/660
date: 2005-03-25
creator: Soviet Government;Nagy, Imre
viewed: 4035
title: Hungary, 1956
abstract: Statement of the Soviet Government, October 30, 1956
Imre Nagy: Last Message, November 4, 1956

url: http://hdl.handle.net/1813/661
date: 2005-03-25
creator: Trybuna Ludu
viewed: 1781
title: Clear Current and Scum, 1956
abstract: Editorial of the Polish Newspaper Trybuna Ludu on the Events of 1956 in Poland, October 25, 1956

url: http://hdl.handle.net/1813/662
date: 2005-03-25
creator:
viewed: 3252

title: The Treaty of London for Greek Independence, July 6, 1827, excerpts
abstract: TREATY BETMEEN GREAT BRITAIN, FRANCE, AND RUSSIA, FOR THE PACIFICATION OF GREECE (LONDON) JULY 6, 1827

url: http://hdl.handle.net/1813/663
date: 2005-03-25
creator: Gottsched, Luise
viewed: 1747
title: Description of the Empress Maria Theresa, 1749
abstract:

url: http://hdl.handle.net/1813/664
date: 2005-03-25
creator: MacMichael, William
viewed: 4203
title: The Court at Bucharest, 1819
abstract: Travel memoir

url: http://hdl.handle.net/1813/665
date: 2005-03-25
creator: Slomka, Jan
viewed: 1531
title: The Life of a Polish Peasant, c. 1900
abstract:

url: http://hdl.handle.net/1813/666
date: 2005-03-25
creator:
viewed: 1604
title: Friendship and Co-operation Between the Soviet Union and Other Socialist States, October 30, 1956
abstract:

url: http://hdl.handle.net/1813/667
date: 2005-03-25
creator: Garay, Jan
viewed: 3390
title: The Pilgrim, A Magyar Tale
abstract:

url: http://hdl.handle.net/1813/668
date: 2005-03-25
creator: Hus, Jan
viewed: 3257
title: Final Declaration, July 1, 1415
abstract:

url: http://hdl.handle.net/1813/669
date: 2005-03-25

creator:
viewed: 2786
title: The Poor Man and the King of the Crows
abstract:

url: http://hdl.handle.net/1813/670
date: 2005-03-27
creator: Neale, Adam
viewed: 3646
title: The Romanian Principalities, 1818
abstract: Travel Narrative

url: http://hdl.handle.net/1813/671
date: 2005-03-27
creator: Eastern Patriarchs
viewed: 4558
title: Encyclical of the Eastern Patriarchs, 1848 A Reply to the Epistle of Pope Pius IX, "to the Easterns"
abstract:

url: http://hdl.handle.net/1813/672
date: 2005-03-27
creator: Quin, Michael J.
viewed: 3162
title: A Voyage Down the Danube, 1836
abstract: Travel Narrative

url: http://hdl.handle.net/1813/673
date: 2005-03-27
creator: Thorton, Thomas
viewed: 3797
title: The Phanariots of Moldavia, 1809
abstract: Travel Narrative

url: http://hdl.handle.net/1813/674
date: 2005-03-27
creator: Michael, Metropolitain of Kiev, et al.
viewed: 2734
title: The Treaty of Brest, 1595
abstract:

url: http://hdl.handle.net/1813/676
date: 2005-04-04
creator: Foote, Robert H.
viewed: 3803
title: A Connecticut Yankee in Nisei King Company's Court: With the Japanese American 442nd RCT in World War II
abstract: A print on demand of this book can be obtained by sending e-mail to digital@cornell.edu. In the body of the message include the identifier.uri listed above, and ask to be contacted regarding payment.This is

the story of a country boy raised on a dairy farm in Gilead, CT who, like many others, was caught up in the struggle to stop the onslaught led by the tyrannical dictators who started World War II. It is a story of how the horrors of war and the experience with the brave, bright, loyal Americans of Japanese ancestry taught me a great deal about the meaning of life -- a meaning that I will seek forever to appreciate more fully.
Many of these young men and their families were literally torn from their homes, loaded into trucks and shipped off to concentration camps. Can you imagine what it was like to be an innocent American deprived of your rights of citizenship? Yet they volunteered and formed the most distinguished, most decorated army unit in the history of the United States. These young Nisei men had three objects in mind: 1) work together as a team, 2) get the damn war over, and 3) go home and take care of their families. Unfortunately, many gave their last full measure of devotion on the blood-stained battlefields of World War II. I know. I was there.

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title: A Connecticut Yankee in Nisei King Company's Court: With the Japanese American 442nd RCT in World War II
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url: http://hdl.handle.net/1813/677
date: 2005-04-06
creator: Ream, Geoffrey
viewed: 2127
title: Contextual Mediators between Adolescent Sexuality and Negative Outcomes
abstract: These three papers form an argument that youths? sexual behavior and sexual-minority orientation are associated with negative outcomes of alcohol use, depression, and suicide via negative changes in perceived contextual support. They employ data from the first two waves of the National Longitudinal Survey of Adolescent Health (collected 1995 & 1996, Wave I N = 18,924, Wave II N = 13,570, http://www.cpc.unc.edu/projects/addhealth).
The first paper demonstrates reciprocal effects over one year between adolescent sexual activity and shared activities with opposite-sex parents, closeness with same-sex parents, and more problem-focused interactions with both parents. The second paper finds that initiating or continuing sexual activity predicts reduced integration with the school environment, increased number of close friends who use alcohol, and increased problem-focused interactions with parents. It is additionally associated with lower personal religiousness for young women only. The second paper finds further that ceasing sexual activity did not forestall negative changes in contextual supports, as the first paper?s results implied, but rather that negative changes continued. The second paper also finds that levels of context factors significantly mediate the relationship between sexual

activity and each of depression, suicidality, and alcohol use.
The third paper, using only Wave I data, applies the first two papers? contextual mediation concept to explain mental health risks associated with same-sex, both sex, and opposite-sex romantic attraction, dating, and sexual behavior. After testing every combination of subject?s gender, object?s gender, and domain of expression for associations with depression and suicidality, the third paper finds several patterns ? sexually/romantically active female, sexual-minority, and non-virgin ? consistently associated with depression and suicidality. These patterns are suggested to be associated with risk because they impart stigmatized status to youth that impedes their access to needed social supports.
A theoretical model is advanced asserting that stigmatization of youth sexuality leads to both mental health risk and greater likelihood of risk behavior, the latter of which leads to even greater stigmatization and even greater likelihood of risk behavior. This model suggests that increasing support for non-virgin and sexual-minority youth and decreasing stigmatization of them would be most helpful approach for their health.

url: http://hdl.handle.net/1813/679
date: 2005-04-06
creator: Smith, Steven D.
viewed: 2806
title: Information quantity, information consistency, and the confidence of unsophisticated investors
abstract: Special committee members include Mark W. Nelson (chair), Robert Bloomfield (Accounting), David Dunning (Social Psychology), and Martin Wells (Statistics).Advances in technology, as well as regulatory and legislative actions (e.g., Regulation Fair Disclosure, Sarbanes-Oxley, new NYSE and NASDAQ requirements) have led to an increase in the quantity of information available to the public. In this dissertation, I describe two experiments that examine the effects of information quantity and consistency (holding information quality constant) on the judgments and trading behavior of unsophisticated investors. I find that increasing the quantity and the consistency of information causes unsophisticated investors to show greater confidence and trading aggressiveness. This relation is not explained by an increase in cognitive effort, suggesting a direct effect of information quantity on confidence. The effect of increased quantity reduces investors' expected and actual wealth in simulated experimental markets, while the effect of consistency on wealth depends on whether the additional, low-quality signals are consistent or inconsistent with the high-quality signal investors receive. Results highlight possible negative consequences of increased disclosure, and suggest directions for future experimental and archival research.Johnson Graduate School of Management at Cornell University, Deloitte & Touche Foundation

url: http://hdl.handle.net/1813/681
date: 2005-04-06
creator:
viewed: 2078
title: 01-083*A Lamium maculatum 'Anne Greenaway'
abstract:

url: http://hdl.handle.net/1813/682
date: 2005-04-06
creator:
viewed: 1548
title: 02-049*A Syneilesis aconitifolia
abstract:

url: http://hdl.handle.net/1813/683

date: 2005-04-06
creator:
viewed: 848
title: 02-227*A Epimedium xversicolor 'Versicolor'
abstract:

url: http://hdl.handle.net/1813/684
date: 2005-04-07
creator:
viewed: 924
title: 02-463*A Helleborus Foetidus 'Red Silver'
abstract:

url: http://hdl.handle.net/1813/685
date: 2005-04-07
creator:
viewed: 694
title: 74-187*B Waldsteinia ternata
abstract:

url: http://hdl.handle.net/1813/686
date: 2005-04-07
creator:
viewed: 1132
title: 86-425*A Epimedium xperralchicum 'Frohnleiten'
abstract:

url: http://hdl.handle.net/1813/687
date: 2005-04-07
creator:
viewed: 1428
title: 87-386*A Rhododendron 'Dolly Madison'
abstract:

url: http://hdl.handle.net/1813/688
date: 2005-04-07
creator:
viewed: 1905
title: 87-448*D Rhododendron 'Montchanin'
abstract:

url: http://hdl.handle.net/1813/689
date: 2005-04-07
creator:
viewed: 1900
title: 87-460*C Rhododendron 'Caronella'
abstract:

url: http://hdl.handle.net/1813/690
date: 2005-04-07
creator:
viewed: 1490
title: 94-134*A Rhododendron 'Hudson Bay'
abstract:

url: http://hdl.handle.net/1813/692
date: 2005-04-07
creator: Wendling, Robert;Bezdek, Roget;Hirsch, Robert L.
viewed: 5023
title: Peaking of Oil Production: Impacts, Mitigation, & Risk Management
abstract: The peaking of world oil production presents the U.S. and the world with an unprecedented risk management problem. As peaking is approached, liquid fuel prices and price volatility will increase dramatically, and, without timely mitigation, the economic, social, and political costs will be unprecedented. Viable mitigation options exist on both the supply and demand sides, but to have substantial impact, they must be initiated more than a decade in advance of peaking. This U.S. Department of Energy funded paper reports the problem of the peaking of world conventional oil production is unlike any yet faced by modern industrial society. The challenges and uncertainties need to be much better understood. Technologies exist to mitigate the problem. Timely, aggressive risk management will be essential.United States. Department of Energy

url: http://hdl.handle.net/1813/693
date: 2005-04-07
creator:
viewed: 616
title: 96-128*A Cardamine pratensis 'Flore Pleno'
abstract:

url: http://hdl.handle.net/1813/694
date: 2005-04-07
creator:
viewed: 627
title: 96-413*B Viburnum carlesii 'Aurora'
abstract:

url: http://hdl.handle.net/1813/695
date: 2005-04-07
creator:
viewed: 455
title: 97-342*A Epimedium grandiflorum 'Crimson Beauty'
abstract:

url: http://hdl.handle.net/1813/696
date: 2005-04-07
creator:
viewed: 434
title: 98-364*A Darmera peltata

abstract:

url: http://hdl.handle.net/1813/698
date: 2005-04-07
creator:
viewed: 696
title: 99-061*A Darmera peltata 'Dwarf Form'
abstract:

url: http://hdl.handle.net/1813/699
date: 2005-04-07
creator: Silterra, Rick;Nehler, Greg;Kurth, Martin
viewed: 2953
title: Using Controlled Vocabularies to Manage Resource Relationships: The KMODDL Experience
abstract: The Kinematic Models for Design Digital Library (KMODDL) exemplifies digital collections in which groups of objects are versions of the same resource and which resources are related to one another taxonomically. Other objects in the collection are supplementary materials that explicitly cite the primary KMODDL resources. To manage the complex relationships among KMODDL objects while maintaining the DC one-to-one principle, metadata developers established controlled vocabulary encoding schemes that linked related objects. The solution implemented enables users to find all versions of a resource and all supplementary materials that cite the resource in a single search.

url: http://hdl.handle.net/1813/701
date: 2005-04-07
creator:
viewed: 2190
title: 99-362*A Astrantia major 'Sunningdale Variegated'
abstract:

url: http://hdl.handle.net/1813/702
date: 2005-04-07
creator:
viewed: 629
title: 82-262*A Pieris 'Brouwer's Beauty'
abstract:

url: http://hdl.handle.net/1813/703
date: 2005-04-07
creator:
viewed: 694
title: 84-240*A Veratrum nigrum
abstract:

url: http://hdl.handle.net/1813/704
date: 2005-04-08
creator: Seroka, Mihail
viewed: 1202
title: The 42 Month War: Bayou Steel and the USWA's Coordinated Campaign

abstract: Dr. Lowell Turner - Committee Chairperson
Dr. Ileen Devault - Committee MemberThis thesis examines how coordinated campaigns, conducted by labor organizations, affect strike outcomes. Recent changes in the industrial relations environment have forced unions to find new ways to exert pressure on employers beyond tradition collective bargaining and, in the event of impasse, withholding their labor. Many believe that corporate campaigns have the potential to change the ways labor struggles are waged and their results. These campaigns are characterized by diversity, but past ones have included actions targeted at the company?s owners, creditors, customers, and suppliers. Others have focused on the firm?s health, safety, or environmental record with the hope of compelling them to sign a favorable contract.
This thesis examines the literature available on bargaining and strikes, includes brief case studies of several corporate campaigns and the USWA?s experiences with them, and forms an argument based on the evidence. It is proposed that a well-planned corporate campaign will lead to union victories in strikes or lockouts.
The evidence used to test this statement is a detailed case study of the Steelworkers? 42 month coordinated campaign at Bayou Steel. This thesis finds that although the union waged an almost ideal campaign, they did not win the strike. Instead, it was only a partial victory. This is attributed to the fact that the USWA?s campaign, while extensive, was unable to influence the company's ability to make money to the necessary degree.United Steelworkers of America

url: http://hdl.handle.net/1813/705
date: 2005-04-08
creator:
viewed: 1694
title: 87-053*B Trachystemon orientalis
abstract:

url: http://hdl.handle.net/1813/706
date: 2005-04-08
creator:
viewed: 798
title: 96-483*A Corylopsis pauciflora
abstract:

url: http://hdl.handle.net/1813/707
date: 2005-04-08
creator:
viewed: 463
title: 96-578*A Pulmonaria saccharata 'Leopard' Award of Garden Merit
abstract:

url: http://hdl.handle.net/1813/708
date: 2005-04-08
creator:
viewed: 381
title: 97-340*A Epimedium Asiatic Hybrids
abstract:

url: http://hdl.handle.net/1813/709
date: 2005-04-08

creator:
viewed: 989
title: 98-536*A Fritillaria imperialis 'Maxima Lutea'
abstract:

url: http://hdl.handle.net/1813/710
date: 2005-04-08
creator:
viewed: 686
title: 99-063*A Epimedium pinnatum ssp. colchicum 'Black Sea'
abstract:

url: http://hdl.handle.net/1813/711
date: 2005-04-08
creator:
viewed: 1339
title: 99-217*A Pulmonaria 'Majeste'
abstract:

url: http://hdl.handle.net/1813/712
date: 2005-04-08
creator:
viewed: 2184
title: 99-473*A Muscari armeniacum 'Valerie Finnis'
abstract:

url: http://hdl.handle.net/1813/713
date: 2005-04-08
creator:
viewed: 887
title: 65-126*A Magnolia xsoulangiana
abstract:

url: http://hdl.handle.net/1813/714
date: 2005-04-08
creator:
viewed: 687
title: 68-058*B Magnolia 'Ricki'
abstract:

url: http://hdl.handle.net/1813/715
date: 2005-04-08
creator:
viewed: 1048
title: 68-059*A Magnolia 'Betty'
abstract:

url: http://hdl.handle.net/1813/716

date: 2005-04-08
creator:
viewed: 694
title: 68-061*A Magnolia 'Jane'
abstract:

url: http://hdl.handle.net/1813/717
date: 2005-04-08
creator:
viewed: 715
title: 68-062*A Magnolia 'Pinkie'
abstract:

url: http://hdl.handle.net/1813/718
date: 2005-04-08
creator:
viewed: 644
title: 75-172*A Magnolia xsoulangiana 'Verbanica'
abstract:

url: http://hdl.handle.net/1813/719
date: 2005-04-08
creator:
viewed: 511
title: 75-173*B Magnolia xloebneri 'Merrill'
abstract:

url: http://hdl.handle.net/1813/720
date: 2005-04-08
creator:
viewed: 489
title: 76-299*A Vinca minor 'Gertrude Jekyll'
abstract:

url: http://hdl.handle.net/1813/721
date: 2005-04-08
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url: http://hdl.handle.net/1813/722
date: 2005-04-08
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title: 85-359*A Viburnum carlesii
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url: http://hdl.handle.net/1813/723
date: 2005-04-08
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title: 87-240*A Magnolia xloebneri 'Ballerina'
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date: 2005-04-08
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title: 87-356*C Magnolia kobus var. stellata 'Waterlily'
abstract:

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date: 2005-04-08
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title: 91-196*A Magnolia Kobus Var. Stellata 'Royal Star'
abstract:

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date: 2005-04-08
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title: 92-095*A Cercis canadensis 'Royal White'
abstract:

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date: 2005-04-08
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title: 93-072*B Magnolia 'Ivory Chalice'
abstract:

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title: 95-168*A Magnolia 'Ann'
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title: 96-298*A Mukdenia rossii
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title: 96-380*A Pulsatilla vulgaris 'Papageno'
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title: 97-127*A Magnolia kobus var. stellata 'Two Stones'
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title: 00-293*A Lamium maculatum 'Brocade'
abstract:

url: http://hdl.handle.net/1813/736
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title: 03-441*L Kerria japonica 'Pleniflora'

abstract:

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title: 03-466*E Kerria japonica 'Golden Guinea'
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title: 03-467*A Iris cristata 'Eco Blue Bird'
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title: 88-207*A Paeonia 'Nova'
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date: 2005-04-08

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title: 82-121*A Trollius ledebourii 'Golden Queen'
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abstract:

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title: 86-540*A Tetraneuris herbacea
abstract:

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abstract:

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abstract:

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title: 86-467*A Brunnera macrophylla 'Langtrees'
abstract:

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date: 2005-04-11
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title: 87-038*D Malus 'Candied Apple'
abstract:

url: http://hdl.handle.net/1813/771
date: 2005-04-11
creator:
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title: 87-066*B Malus 'Ormiston Roy'
abstract:

url: http://hdl.handle.net/1813/772
date: 2005-04-11
creator:
viewed: 1919
title: 87-094*A Actaea rubra
abstract:

url: http://hdl.handle.net/1813/773
date: 2005-04-11
creator: Sathyanarayanan, Kalambur
viewed: 3197
title: Starch-Polycaprolactone Nanocomposites From Reactive Extrusion: Synthesis, Characterization, Properties And Scale-up Considerations
abstract: Biodegradable starch-polyester polymer composites are useful in many applications ranging from numerous packaging end-uses to tissue engineering. However the amount of starch that can form composites with polyesters without significant property deterioration is typically less than 25% because of thermodynamic incompatibility between the two polymers. A reactive extrusion process was developed in which approximately 60% by weight of plasticized starch was blended with a biodegradable polyester (polycaprolactone, PCL) resulting in tough nanocomposite blends with elongational properties approaching that of 100% PCL. During the extrusion process, starch was cross-linked with polycaprolactone in the presence of hydrogen peroxide and montmorillonite (MMT) organoclay, thus compatibilizing the two polymers.
The objectives of this study were to evaluate the mechanical properties of reactively extruded starch-PCL nanocomposite blends, study changes in the morphology of polymer-polymer interface, monitor dispersion of organoclay in the polymer matrix, quantify the effects of reactive extrusion on polymer glass transition, develop a rheological model and scale up the reactive extrusion process from a batch type micro-extruder to continuous twin-screw extruder.
Starch and PCL (36-39 wt% each), glycerol (18-19 wt%), MMT organoclay (3-9 wt%), hydrogen peroxide (0.067 ml/g starch) and ferrous sulfate catalyst (0.0025 g/g starch) were extruded in a co-rotating twin-screw extruder at 120 C and injection molded at 150 C. Elongational properties of reactively extruded starch-PCL nanocomposite blends approached that of 100% PCL at 3 and 6 wt% organoclay. Strength and modulus remained the same as starch-PCL composites prepared from simple physical mixing (non-reactive extrusion). X-ray diffraction results showed mainly intercalated flocculated behavior of clay at 3, 6, and 9 wt% organoclay. Scanning electron microscopy (SEM) showed that there was improved starch-PCL interfacial adhesion in reactively extruded blends than in non-reactive starch-PCL composites. Dynamic mechanical analysis showed changes in primary alpha- transition temperatures for both the starch and PCL fractions, reflecting cross-linking changes in the nanocomposite blends at different organoclay content. Starch-PCL reactive blends were more pseudoplastic than 100% PCL and showed typical shear-thinning behavior and lower shear viscosities than non-reactive starch-PCL composites. Results from scale-up studies indicated that screw configuration, screw speed and feed rates were important process variables that affected material properties. These were optimized to obtain mechanical properties equivalent to those from the micro-extruder.
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url: http://hdl.handle.net/1813/774
date: 2005-04-11
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title: 87-279*B Malus toringo
abstract:

url: http://hdl.handle.net/1813/775
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title: 90-083*A Malus hupehensis
abstract:

url: http://hdl.handle.net/1813/776
date: 2005-04-11
creator: Da Costa, Alexandre Emboaba
viewed: 3078
title: ONSTRUCTING THE NEW CITIZENSHIP THROUGH THE MUNICIPAL COUNCIL FOR THE DEVELOPMENT AND PARTICIPATION OF THE BLACK COMMUNITY IN CAMPINAS, BRAZIL
abstract: This thesis examines contemporary racial politics and constructions of citizenship in the Municipal Council for the Development and Participation of the Black Community in Campinas, S?o Paulo, Brazil. The central questions of the study are: (1) in relation to citizenship, how have Afro-Brazilian organizations, social movements, and other institutions framed the issues that are affecting the Black community, and what solutions/processes are they suggesting to deal with them? (2) What kind of dialogue/interaction have Council efforts produced between groups in society and the municipal government and how has this contributed to a discourse of ?new citizenship? for Afro-Brazilians? And (3) how can analyzing Afro-Brazilian politics of identity through a framework of citizenship help interpret struggles over identity in relation to the Councils?

A study of the Council illuminates what types of organizations are involved in the process of redefining representation in an urban context and the difficulties being negotiated in constituting both Afro-Brazilian political identity and institutionalizing new state spaces for citizenship in municipal administrations. The process of deliberation is constituted by historical formations of race relations as well as by both present power relations within the Council between representatives, and those between the Black movement and the local government more broadly. The case of the Council allows the tension filled terrain and negotiation of these hegemonic relations to be understood through political practices intended to increase citizen participation and voice. The experiences and impressions of Council processes provide insight into how individual participants situate themselves and how they understand democratic participation and identity formation in relation to the Black community.

The main goal of the Council is to advance racial equality through the valorization, affirmation, and development of Black community. They orchestrate activities in the areas of education, health, culture, and preservation of patrimony, as well as creating channels for public expression of Afro-Brazilian culture and public protests to bring attention to issues they confront. An examination of the Council indicates both the difficulty of creating an understanding of the racial theme as it affects individuals in varied and complex ways, as well as the complexity of constructing a unified identity politics based on race in a context where race has not constituted a primary form of identification and where Black culture and community are diverse.

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abstract:

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date: 2005-04-11
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abstract:

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url: http://hdl.handle.net/1813/782
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url: http://hdl.handle.net/1813/783
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title: 97-297*C Malus 'Robinson'
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abstract:

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abstract:

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abstract:

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date: 2005-04-11
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title: 00-110*B Malus ‘Guinzam’ GUINEVERE
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abstract:

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title: 00-456*D Viburnum ‘Mohawk’ GOLD MEDAL AWARF OF MERIT
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title: 01-274*A Caltha palustris
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title: 60-190*A Syringa vulgaris
abstract:

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title: 77-743*A Fothergilla major
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title: 86-228*B Bergenia 'Bressingham White'
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title: 95-293 Viburnum Veitchii
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title: 96-297*A Lysichiton camtschatcensis
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title: 02-021*A Berberis thunbergii 'Bailgreen' JADE CAROUSEL
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date: 2005-04-12
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title: 02-058*B Chaenomeles japonica 'Sargentii'
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title: 02-451*A Syringa xchinensis 'Lilac Sunday'
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title: 85-395*A Fothergilla gardenii
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title: 85-434*A Syringa vulgaris 'Dwight Eisenhower'
abstract:

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title: 97-102*B Rhodotypos scandens
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title: 97-133*A Berberis thunbergii 'Sparkle'
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title: 97-289*B Malus 'Adirondack' GOLD MEDAL
abstract:

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title: 97-290*C Malus 'Centzam' CENTURION
abstract:

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url: http://hdl.handle.net/1813/845
date: 2005-04-12
creator:
viewed: 749
title: 97-295*A Malus 'Red Barron'
abstract:

url: http://hdl.handle.net/1813/846
date: 2005-04-12
creator:
viewed: 769
title: 97-360*A Malus 'Red Peacock'

abstract:

url: http://hdl.handle.net/1813/847
date: 2005-04-12
creator:
viewed: 752
title: 97-425*B Viburnum 'Emerald Triumph'
abstract:

url: http://hdl.handle.net/1813/848
date: 2005-04-12
creator:
viewed: 834
title: 98-128*A Berberis thunbergii 'Golden Ring'
abstract:

url: http://hdl.handle.net/1813/849
date: 2005-04-12
creator:
viewed: 471
title: 98-136*B Salix repens ssp. arenaria
abstract:

url: http://hdl.handle.net/1813/850
date: 2005-04-13
creator: Tao, Li;Rothman, Jami d.;Regelmann, Carl F.;Radin, Joanna M.;Groppe, Jessica S.;Granka, Laura Ann;Concra, Meghan M.;Cohen, Susan E.;Rapp, Ryan A.;Pootakham, Wirulda;Herforth, Anna W.;Ackerman, Megan E.;Ruane, Alexander C.;Perkins, Tasi B.;Pearson, Alexander T.;Eisenhauer, Lisa D.;Spier, Travis C.;Richie, Celeste J.;McSherry, Lauren;Kessler, Will R.;Carlson, Jane E.;Sicherman, Heidi;Taylor, Alani N.;Svenson, Gavin J.;McNeil, James R.;Huang, Ming Hua;Zordan, Rebecca E.;Wilson, Susan F.;Waase, Marc P.;VanderSal, Nicole D.;Uschold, Timothy D.;Stucker, Karla M.;Roberts, Victoria L.;Oliver, Molly Ann;Nead, Jennifer A.;Kull, Erin E.;Kubera, Cathryn L.;Hood, Christopher T.;Gartner, Gabriel E. A.;Falcone, John L.;Daigle, Bernie J., Jr.;Cohn, Heather I.;Camp, Brendan J.;Brusie, Melissa A.;Brecher, Matthew B.;Bowlin, Melissa S.;Bovee, Alissa M.;Weissman, Brenda L.;Vyhnal, Kristin K.;VerMilyea, Matthew D.;Stevenson, Kyle Ann;Smith, Stevie Elizabeth;Lenkaitis, Victoria E.;Lauffer, Benjamin E. L.;Kelsey, Julie A.;Green, Alice S.;Bischoff, Melissa A.
viewed: 3892
title: 2002 Research Honors Program Abstracts
abstract: Faculty in the College of Agriculture and Life Sciences at Cornell University mentor and guide undergraduate students who have chosen to pursue a research project and graduate with honors. These abstracts reflect the depth of their scholarship and intellectual ability. The research projects encompass work in animal science, biological science, entomology, natural resources, physical science, plant science, and social science.

url: http://hdl.handle.net/1813/851
date: 2005-04-13
creator: SCOTT, MINDY E.;SCHWARTZ, ADAM L.;NEROULIAS, NICOLE M.;LEE, TRINA KAY;GILMORE, ALISON A.;FOUCAULT, BROOKE E.;CZARNICK, JACOB J.;BIRINCI, DENIZ;SCOTT, REBECCA

L.;PRICE, ANDREW D.;LAM, DENEY;KATZ, RICHARD M.;TOSCHIK, PAMELA C.;MILGROOM, JESSICA;MARKOW, DIANE M.;LAWRENCE, BETH A.;GRANT, EVAN H.;CHEN, JOY S.;BUSHNOE, TARA M.;SVENSON, GAVIN J.;KAWAHARA, AKITO Y.;FUCHSBERG, JEFFREY R.;WEISS, MARISSA S.;SUNDBERG, KRISTY A.;STORCK, KARA I.;STEUER, KRISTIE;RAMAN, RAJNI V.;PEREZ, LUISA;MORSE, DARCY L;MIRANI, GAYATRI;MAK, RAYMOND H.;FRIDMAN, VLADIMIR;BIALOWAS, CHRISTIE M.;SAVIDGE, CHRISTINE;MILLER, ANDREW D.;MARGALIT, KATE A.;LINTAULT, LAURA M.;HENDRICKS, MELINA M.;ALCORN, HEATHER L.
viewed: 4878
title: 2001 Research Honors Program Abstracts
abstract: Faculty in the College of Agriculture and Life Sciences at Cornell University mentor and guide undergraduate students who have chosen to pursue a research project and graduate with honors. These abstracts reflect the depth of their scholarship and intellectual ability. The research projects encompass work in animal science, biological science, entomology, natural resources, physical science, plant science, and social science.

url: http://hdl.handle.net/1813/852
date: 2005-04-13
creator:
viewed: 4210
title: 00-043*A Malus xzumi var. calocarpa
abstract:

url: http://hdl.handle.net/1813/853
date: 2005-04-13
creator:
viewed: 4672
title: 00-268*A Malus 'Purple Prince'
abstract:

url: http://hdl.handle.net/1813/854
date: 2005-04-13
creator:
viewed: 2758
title: 00-269*A Malus 'Mazam' MADONNA
abstract:

url: http://hdl.handle.net/1813/855
date: 2005-04-13
creator:
viewed: 4867
title: 00-421*B Malus 'Sinai Fire'
abstract:

url: http://hdl.handle.net/1813/856
date: 2005-04-13
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viewed: 625
title: 01-459*A Quercus palustris

abstract:

url: http://hdl.handle.net/1813/857
date: 2005-04-13
creator:
viewed: 874
title: 02-127*A Pyrus calleryana 'Gladzam' GLADIATOR
abstract:

url: http://hdl.handle.net/1813/858
date: 2005-04-13
creator:
viewed: 1021
title: 02-131*A Pyrus calleryana 'Valzam' VALIANT
abstract:

url: http://hdl.handle.net/1813/859
date: 2005-04-13
creator:
viewed: 749
title: 02-286*A Iris pseudacorus 'Variegata'
abstract:

url: http://hdl.handle.net/1813/860
date: 2005-04-13
creator:
viewed: 600
title: 78-009*A Magnolia xloebneri 'Ballerina'
abstract:

url: http://hdl.handle.net/1813/861
date: 2005-04-13
creator:
viewed: 415
title: 82-263*A Malus 'Red Jade'
abstract:

url: http://hdl.handle.net/1813/862
date: 2005-04-13
creator:
viewed: 630
title: 83-204*A Malus 'Beverly'
abstract:

url: http://hdl.handle.net/1813/863
date: 2005-04-13
creator:
viewed: 1070

title: 83-504*A Halesia tetraptera var. monticola
abstract:

url: http://hdl.handle.net/1813/864
date: 2005-04-13
creator:
viewed: 515
title: 84-138*B Sorbus alnifolia
abstract:

url: http://hdl.handle.net/1813/865
date: 2005-04-13
creator:
viewed: 1429
title: 94-038*A Aesculus xwoerlitzensis
abstract:

url: http://hdl.handle.net/1813/866
date: 2005-04-13
creator:
viewed: 1864
title: 96-078*A Aesculus sylvatica 'Autumn Splendor'
abstract:

url: http://hdl.handle.net/1813/867
date: 2005-04-14
creator:
viewed: 707
title: 96-348*A Aesculus glabra 'Fall Red'
abstract:

url: http://hdl.handle.net/1813/868
date: 2005-04-14
creator:
viewed: 337
title: 96-373*A Viburnum xrhytidophylloides 'Dart's Duke'
abstract:

url: http://hdl.handle.net/1813/869
date: 2005-04-14
creator:
viewed: 490
title: 96-598*A Aesculus xbushii
abstract:

url: http://hdl.handle.net/1813/870
date: 2005-04-14
creator:

viewed: 850
title: 97-112*A Malus 'Birdland'
abstract:

url: http://hdl.handle.net/1813/871
date: 2005-04-14
creator:
viewed: 399
title: 97-115*A Malus 'Pink Satin'
abstract:

url: http://hdl.handle.net/1813/872
date: 2005-04-14
creator:
viewed: 334
title: 96-407 Prunus Fruticosa
abstract:

url: http://hdl.handle.net/1813/873
date: 2005-04-14
creator:
viewed: 528
title: 96-409 Prunus Japonica
abstract:

url: http://hdl.handle.net/1813/874
date: 2005-04-14
creator:
viewed: 548
title: 97-189*B Malus baccata 'Walters'
abstract:

url: http://hdl.handle.net/1813/875
date: 2005-04-14
creator:
viewed: 406
title: 97-189*C Malus baccata 'Walters'
abstract:

url: http://hdl.handle.net/1813/876
date: 2005-04-14
creator:
viewed: 399
title: 97-316*A Caltha palustris var. alba
abstract:

url: http://hdl.handle.net/1813/877
date: 2005-04-14

creator:
viewed: 1313
title: 97-359*A Malus 'Orange Crush'
abstract:

url: http://hdl.handle.net/1813/878
date: 2005-04-14
creator:
viewed: 362
title: 98-034*B Malus 'Gibb's Golden Gage'
abstract:

url: http://hdl.handle.net/1813/879
date: 2005-04-14
creator:
viewed: 590
title: 98-039*A Malus 'Jewelcole' RED JEWEL
abstract:

url: http://hdl.handle.net/1813/880
date: 2005-04-14
creator:
viewed: 823
title: 98-039*B Malus 'Jewelcole' RED JEWEL
abstract:

url: http://hdl.handle.net/1813/881
date: 2005-04-14
creator:
viewed: 436
title: 98-185*A Malus 'Molazam' MOLTEN LAVA
abstract:

url: http://hdl.handle.net/1813/882
date: 2005-04-14
creator:
viewed: 390
title: 98-186*C Malus 'Prairie Maid'
abstract:

url: http://hdl.handle.net/1813/883
date: 2005-04-14
creator:
viewed: 425
title: 98-187*B Malus 'Ralph Shay'
abstract:

url: http://hdl.handle.net/1813/884

date: 2005-04-14
creator:
viewed: 400
title: 98-188*B Malus 'Silver Drift'
abstract:

url: http://hdl.handle.net/1813/885
date: 2005-04-14
creator:
viewed: 603
title: 98-189*A Malus 'White Candle'
abstract:

url: http://hdl.handle.net/1813/886
date: 2005-04-14
creator:
viewed: 832
title: 98-200*B Malus 'Cardinal'
abstract:

url: http://hdl.handle.net/1813/887
date: 2005-04-14
creator:
viewed: 849
title: 98-382*A Malus 'Donald Wyman' Gold Medal
abstract:

url: http://hdl.handle.net/1813/888
date: 2005-04-14
creator:
viewed: 1357
title: 99-031*A Prunus padus 'Colorata'
abstract:

url: http://hdl.handle.net/1813/889
date: 2005-04-14
creator:
viewed: 1211
title: 99-140*A Pyrus calleryana [Aristocrat] = 'Aristocrat'
abstract:

url: http://hdl.handle.net/1813/890
date: 2005-04-14
creator:
viewed: 1972
title: 99-356*C Malus 'Louisa'
abstract:

url: http://hdl.handle.net/1813/891
date: 2005-04-14
creator:
viewed: 1505
title: 99-293*B Malus 'Tomiko'
abstract:

url: http://hdl.handle.net/1813/892
date: 2005-04-14
creator:
viewed: 1312
title: 99-295*C Malus 'Zumarang'
abstract:

url: http://hdl.handle.net/1813/893
date: 2005-04-14
creator:
viewed: 1810
title: 99-300*B Malus 'Manbeck Weeper' ANNE E.
abstract:

url: http://hdl.handle.net/1813/894
date: 2005-04-14
creator:
viewed: 1841
title: 99-330*A Malus 'Golden Hornet'
abstract:

url: http://hdl.handle.net/1813/895
date: 2005-04-14
creator:
viewed: 2508
title: 99-353*A Malus 'Golden Raindrops'
abstract:

url: http://hdl.handle.net/1813/896
date: 2005-04-15
creator: van Wagenberg, A.;van Straten, G.;Zoebisch, M.;Zhang, Q.;Yuwono, A.;Yuan, Y.;Xin, H.;West, J.;Verma, S.;Vejasit, A.;Valles, J.;Valera, D.;Umar, B.;Toshiaki, I.;Tomaselli, G.;Thapar, V.;Tang, L.;Takai, H.;Sun, H.;Sousa, P.;Singh, G.;Sica, C.;Setiawan, B.;Seber, N.;Scrimshaw, M.;Schafer, A.;Saptomo, S.;Santamarina, M.;Sangha, M.;Sambou, S.;Salokhe, V.;Sakhamuri, S.;Russo, P.;Rosentrater, K.;Ranamukhaarachchi, S.;Ramon, H.;Picuno, P.;Perez, J.;Pena, A.;Pedersen, S.;Pathak, B.;Pappalardo, G.;Orange, D.;Opara, L.;Oloso, A.;Okemwa, P.;Oberti, R.;Noeme, C.;Nielsen, O. Frosig;Neumeister, C.;Neira, X.;Nakano, Y.;Mutaf, S.;Musy, A.;Munoz-Hernandez, G.;Moshou, D.;Morsing, S.;Montero, J.;Monteny, G.;Michel Jr., F.;McCartney, A.;Massoud, M.;Marks, B.;Mao, Z.;Mann, D.;Lin, Y.;Li, Y.;Li, S.;Lester, J.;Lance, J.;Lammers, P. Schulze;Kumar, P.;Korir, J.;Korfali, S.;Kithyo, I.;Kipkurui, L.;Khazaei, J.;Keener, H.;Kazama, F.;Kalbasi-Ashtari, A.;Kai, P.;Jacobsen, L.;Islam, M.;Irudayaraj, J.;Hermiyanto, B.;Have, H.;Harms, H.;Haque, M.;Hansen, A.;Gupta, P.;Gonzalez-Valadez, M.;Gieling, Th.;Galletero, P.;Fragoso, R.;Fountas, S.;Fadel, M.;El-Fadel, M.;Eko, R. Medjo;Dorvlo,

A.;Dominguez-Dominguez, J.;Diaz, J.;Di Marco, M.;Dewangan, K.;Deng, W.;Demirci, A.;De Montis, S.;De Montis, A.;Davies, B.;Dasylva, S.;Cui, Y.;Cuesta, T.;Crecente, R.;Cosandey, C.;Clemente, R.;Carreno, A.;Cancela, J.;Bravo, C.;Bot, G.;Bodria, L.;Bober, J.;Blackmore, B.;Bjorn, G.;Bjerg, B.;Bennedsen, B.;Bakker-Arkema, F.;Aviara, N.;Audu, I.;Atiku, A.;Ampratwum, D.;Alvarez, C.;Alkan, S.;Agus, F.;Abu-Khalaf, N.
viewed: 5581
title: CIGR E-Journal Volume 6
abstract: (1.) P. Kumar and K. Dewangan. Deflection and Contact Characteristics of a Power Tiller Tyre. (January 2004). ...(2.) S. Li and Y. Lin. Modeling a Single-stage Hydrocyclone for Potato Starch Separation. (February 2004). ...(3.) Y. Cui, Y. Li, Z. Mao, J. Lance and A. Musy. Strategies for Improving the Water Supply System in HCID, Upper Reaches of the Yellow River Basin, China . (March 2004). ...(4.) S. Mutaf, S. Alkan and N. Seber. The Effects of Natural Ventilation Air Exchange on Psychrometric Results in Poultry Houses in Hot Environment - Design Characteristics. (March 2004). ...(5.) N. Abu-Khalaf, B. Bennedsen and G. Bjorn. Distinguishing Carrot???s Characteristics by Near Infrared (NIR) Reflectance and Multivariate Data Analysis. (March 2004). ...(6.) S. Sakhamuri, J. Bober, J. Irudayaraj and A. Demirci. Simultaneous Determination of Multiple Components in Nisin Fermentation Using FTIR Spectroscopy. (March 2004). ...(7.) A. van Wagenberg, B. Bjerg and G. Bot. Measurement and Simulation of Climatic Conditions in the Animal Occupied Zone in a Door Ventilated Room for Piglets. (April 2004)....(8.) P. Picuno and C. Sica. Mechanical and Spectroradiometrical Characteristics of Agricultural Plastic Films. (April 2004). ...(9.) R. Medjo Eko. Use of Isotropic Stress State Framework to Evaluate the Effect of Suction on Some Mechanical Parameters of Sainte-Rosalie Clay Submitted to Confined Compression. (April 2004). ...(10.) J. Khazaei and D. Mann. Effects of Temperature and Loading Characteristics on Mechanical and Stress-Relaxation Properties of Sea Buckthorn Berries. Part 1. Compression Tests. (April 2004). ...(11.) J. Khazaei and D. Mann. Effects of Temperature and Loading Characteristics on Mechanical and Stress-Relaxation Properties of Sea Buckthorn Berries. Part 2. Puncture Tests. (April 2004). ...(12.) K. Rosentrater. Laboratory Analysis of an Electrostatic Dust Collection System. (April 2004). ...(13.) A. Yuwono and P. Schulze Lammers. Performance Test of a Sensor Array-Based Odor Detection Instrument. (May 2004). ...(14.) M. Massoud, M. El-Fadel, M. Scrimshaw, and J. Lester. Land Use Impact on the Spatial and Seasonal Variation of the Contaminant Loads to Abou Ali River and Its Coastal Zone in North Lebanon. (May 2004). ...(15.) J. Bober and A. Demirci. Nisin Fermentation by Lactoccocus lactis subsp. lactis Using Plastic Composite Supports in Biofilm Reactors.(June 2004). ...(16.) A. Vejasit and V. Salokhe. Studies on Machine-Crop Parameters of an Axial Flow Thresher for Threshing Soybean. (July 2004). ...(17.) G. van Straten and Th. Gieling. Ion Control in Closed Growing Systems with Inert Media: Controller Settings and Modes of Operation. (July 2004). ...(18.) A. Kalbasi-Ashtari. Effects of Post-harvest Pre-cooling Processes and Cyclical Heat Treatment on the Physico-chemical Properties of ???Red Haven Peaches??? and ???Shahmiveh Pears??? During Cold Storage. (July 2004). ...(19.) B. Blackmore, S. Fountas, L. Tang, and H. Have. Systems Requirements for a Small Autonomous Tractor. (July 2004). ...(20.) J. Cancela, X. Neira, T. Cuesta, C. Alvarez, and R. Crecente. Socio-Economic Evaluation of the Terra Cha Irrigators Community by using a Geographic Information System - Spain. (July 2004). ...(21.) A. Atiku, N. Aviara, and M. Haque. Performance Evaluation of a Bambara Ground Nut Sheller. (July 2004). ...(22.) I. Audu, A. Oloso, and B. Umar. Development of a Concentric Cylinder Locust Bean Dehuller. (August 2004). ...(23.) B. Bjerg, P. Kai, S. Morsing, and H. Takai. CFD Analysis to Predict Close Range Spreading of Ventilation Air from Livestock Buildings. (August 2004). ...(24.) G. Munoz-Hernandez, M. Gonzalez-Valadez, and J. Dominguez-Dominguez. An Easy Way to Determine the Working Parameters of the Mechanical Densification Process. (August 2004). ...(25.) J. Montero, P. Galletero, C. Neumeister, and J. Diaz. Comparative Study Between Rigid Frames and Truss Steel Structures. (August 2004). ...(26.) B. Hermiyanto, M. Zoebisch, G. Singh, S. Ranamukhaarachchi, R. Clemente and F. Agus. Comparing Runoff, Soil and Nutrient Losses from Three Small Watersheds in Indonesia. (September 2004). ...(27.) G. Tomaselli, G. Pappalardo, M. Di Marco, and P. Russo. Building Design Solutions for Sheep and Goat Breeding in the Protected Areas of Sicily. (September 2004). ...(28.) Y. Yuan, A. Hansen, and Q. Zhang. The Specific Gravity of Biodiesel Fuels and their Blends with Diesel Fuel.

(September 2004). ...(29.) A. De Montis and S. De Montis. Mandatory and Spontaneous Processes of Impact Assessment: A Comparative Study Referred to Sardinia, Italy. (October 2004). ...(30.) S. Dasylva, C. Cosandey, D. Orange, and S. Sambou. Rainwater Infiltration Rate and Groundwater Sustainable Management in the Dakar Region. (October 2004). ...(31.) C. Bravo, D. Moshou, R. Oberti, J. West, A. McCartney, L. Bodria and H. Ramon. Foliar Disease Detection in the Field Using Optical Sensor Fusion. (December 2004). ...(32.) S. Korfali and B. Davies. The Relationships of Metals in River Sediments (Nahr-Ibrahim, Lebanon) and Adjacent Floodplain Soils. (Dec 2004). ...(33.) H. Sun, H. Keener, W. Deng and F. Michel, Jr. Development and Validation of 3-D CFD Models to Simulate Airflow and Ammonia Distribution in a High-Rise Hog Building during Summer and Winter Conditions. (December 2004). ...(34.) P. Kai and A. Schafer. Identification of Key Odour Components in Pig House Air using Hyphenated Gas Chromatography Olfactometry. (December 2004). ...(35.) L. Jacobsen and O. Frosig Nielsen. Modelling Airflow Rate through Perforated Benches in Greenhouses. (December 2004). ...(36.) J. Khazaei and D. Mann. Effects of Temperature and Loading Characteristics on Mechanical and Stress-Relaxation Behavior of Sea Buckthorn Berries. Part 3. Relaxation Behavior. (December 2004). (37.) M.Sangha, P. Gupta, V. Thapar, and S. Verma. Storage Studies on Plant Oils and Their Methyl Esters. (December 2004). ...(38.) M. Islam, B. Marks, and F. Bakker-Arkema. Optimization of Commercial Ear-Corn Dryers. (December 2004). ...(39.) B. Pathak, F. Kazama, and I. Toshiaki. Monitoring of Nitrogen Leaching from a Tropical Paddy in Thailand. (December 2004). ...(40.) C. Noeme and R. Fragoso. Evaluation of Alternative Policies of Irrigation Water Price. Application to Large Farms in Alentejo Region. (December 2004). ...(41.) P. Sousa and S. Pedersen. Ammonia Emission from Fattening Pig Houses in Relation to Animal Activity and Carbon Dioxide Production. (December 2004). ...(42.) M. Fadel. Performance Assessment of VRT-based Granular Fertilizer Broadcasting Systems. (December 2004). ...(43.) S. Saptomo, B. Setiawan, and Y. Nakano. Water Regulation in Tidal Peatland Agriculture using Wetland Water level Control Simulator. (December 2004). ...(44.) J. Perez, M. Santamarina, J. Valles, A. Pena, D. Valera, and A. Carreno. Optimal Layout for Milk Goats Livestock Farms Using Genetic Algorithms. (December 2004). ---Invited Articles---(1.) H. Harms. Possibilities to Reduce Manufacturing and Management Costs of Tractors and Agricultural Equipment. (April 2004). ...(2.) A. Yuwono and P. Schulze Lammers. Odor Pollution in the Environment and the Detection Instrumentation. (July 2004). ...(3.) D. Ampratwum, A. Dorvlo, and L. Opara. Usage of Tractors and Field Machinery in Oman. (July 2004). ...(4.) L. Opara. Emerging Technological Innovation Triad for Smart Agriculture in the 21st Century. Part I. Prospects and Impacts of Nanotechnology in Agriculture. (July 2004). ...(5.) L. Kipkurui, I. Kithyo, P. Okemwa, and J. Korir. Modernisation in Automotive Technology and performance of Informal Sector Mechanics in Kenya. (August 2004). ...(6.) S. Pedersen, G. Monteny, H. Xin, and H. Takai. Progress in Research into Ammonia and Greenhouse Gas Emissions from Animal Production Facilities. (August 2004).

url: http://hdl.handle.net/1813/898
date: 2005-04-18
creator:
viewed: 4504
title: 00-108*A Malus 'Amaszam' AMERICAN MASTERPIECE
abstract:

url: http://hdl.handle.net/1813/899
date: 2005-04-18
creator:
viewed: 480
title: 65-126*C Magnolia xsoulangiana
abstract:

url: http://hdl.handle.net/1813/900
date: 2005-04-18
creator:
viewed: 702
title: 68-058*B Magnolia 'Ricki'
abstract:

url: http://hdl.handle.net/1813/901
date: 2005-04-18
creator:
viewed: 818
title: 68-062*A Magnolia 'Pinkie'
abstract:

url: http://hdl.handle.net/1813/902
date: 2005-04-18
creator:
viewed: 390
title: 85-364*C Cornus florida
abstract:

url: http://hdl.handle.net/1813/903
date: 2005-04-18
creator:
viewed: 341
title: 88-123*I Betula papyrifera
abstract:

url: http://hdl.handle.net/1813/904
date: 2005-04-18
creator:
viewed: 704
title: 96-419*A Berberis 'Tara' EMERALD CAROUSEL
abstract:

url: http://hdl.handle.net/1813/905
date: 2005-04-18
creator:
viewed: 574
title: 97-291*B Malus 'Doubloons'
abstract:

url: http://hdl.handle.net/1813/906
date: 2005-04-18
creator:
viewed: 582
title: 97-297*A Malus 'Robinson'
abstract:

url: http://hdl.handle.net/1813/907
date: 2005-04-18
creator:
viewed: 787
title: 97-299*A Malus 'Spring Snow'
abstract:

url: http://hdl.handle.net/1813/908
date: 2005-04-18
creator:
viewed: 899
title: 98-204*B Pyrus fauriei 'Westwood' KOREAN SUN
abstract:

url: http://hdl.handle.net/1813/909
date: 2005-04-18
creator:
viewed: 1031
title: 99-287*C Malus 'Amberina'
abstract:

url: http://hdl.handle.net/1813/910
date: 2005-04-18
creator:
viewed: 2112
title: 99-292*C Malus 'Tolsteme'
abstract:

url: http://hdl.handle.net/1813/911
date: 2005-04-18
creator:
viewed: 1704
title: 00-476*A Brunnera macrophylla 'Variegata'
abstract:

url: http://hdl.handle.net/1813/912
date: 2005-04-18
creator:
viewed: 2225
title: 01-069*A Berberis julianae
abstract:

url: http://hdl.handle.net/1813/913
date: 2005-04-18
creator:
viewed: 1031
title: 01-263*B Rhododendron 'Rosy Lights'

abstract:

url: http://hdl.handle.net/1813/914
date: 2005-04-18
creator:
viewed: 1974
title: 01-265*C Rhododendron 'White Lights'
abstract:

url: http://hdl.handle.net/1813/915
date: 2005-04-18
creator:
viewed: 879
title: 02-392*A Geranium cinereum ssp. subcaulescens var. subcaulescens 'Guiseppi'
abstract:

url: http://hdl.handle.net/1813/916
date: 2005-04-18
creator:
viewed: 693
title: 02-400*A Geranium cinereum 'Purple Pillow'
abstract:

url: http://hdl.handle.net/1813/917
date: 2005-04-18
creator:
viewed: 408
title: 80-256*A Epimedium xyoungianum 'Niveum Yenomoto Form'
abstract:

url: http://hdl.handle.net/1813/918
date: 2005-04-18
creator:
viewed: 1204
title: 85-164*B Halesia tetraptera var. tetraptera
abstract:

url: http://hdl.handle.net/1813/919
date: 2005-04-18
creator:
viewed: 926
title: 86-034*A Brunnera macrophylla
abstract:

url: http://hdl.handle.net/1813/920
date: 2005-04-18
creator:
viewed: 972

title: 86-324 Viburnum carlesii
abstract:

url: http://hdl.handle.net/1813/921
date: 2005-04-18
creator:
viewed: 564
title: 86-390*C Diphylleia cymosa
abstract:

url: http://hdl.handle.net/1813/923
date: 2005-04-18
creator:
viewed: 912
title: 87-552*A Viburnum xrhytidophylloides 'Alleghany'
abstract:

url: http://hdl.handle.net/1813/924
date: 2005-04-20
creator:
viewed: 936
title: 88-299*C Fothergilla gardenii 'Blue Mist' Gold Medal
abstract:

url: http://hdl.handle.net/1813/925
date: 2005-04-20
creator:
viewed: 1243
title: 95-013*A Clematis montana var. rubens
abstract:

url: http://hdl.handle.net/1813/926
date: 2005-04-20
creator:
viewed: 1655
title: 95-040*B Fothergilla 'Mount Airy'
abstract:

url: http://hdl.handle.net/1813/927
date: 2005-04-20
creator:
viewed: 2290
title: 95-161*C Viburnum plicatum f. tomentosum 'Shoshoni'
abstract:

url: http://hdl.handle.net/1813/928
date: 2005-04-20
creator:

viewed: 924
title: 75-197*B Rhododendron 'Dora Amateis' AWARD OF EXCELLENCE AWARD OF MERIT
abstract:

url: http://hdl.handle.net/1813/929
date: 2005-04-20
creator:
viewed: 434
title: 75-200*C Rhododendron vaseyi 'White Find'
abstract:

url: http://hdl.handle.net/1813/930
date: 2005-04-20
creator:
viewed: 1585
title: 76-192*A Rhododendron 'Professor Amateis'Comstock Knoll
abstract:

url: http://hdl.handle.net/1813/931
date: 2005-04-20
creator:
viewed: 473
title: 76-195*A Rhododendron 'Scintillation'
abstract:

url: http://hdl.handle.net/1813/932
date: 2005-04-20
creator:
viewed: 418
title: 76-209*A Rhododendron 'Windbeam' AWARD OF EXCELLENCE
abstract:

url: http://hdl.handle.net/1813/933
date: 2005-04-20
creator:
viewed: 621
title: 78-074*A Rhododendron 'Spring Frolic'
abstract:

url: http://hdl.handle.net/1813/934
date: 2005-04-20
creator:
viewed: 587
title: 80-049*A Rhododendron 'Pink Flair'
abstract:

url: http://hdl.handle.net/1813/935
date: 2005-04-20

creator:
viewed: 678
title: 80-174*A Rhododendron 'Olga Mezitt'
abstract:

url: http://hdl.handle.net/1813/939
date: 2005-04-20
creator: Larson, Martha
viewed: 2856
title: The Empty Object Construction and related phenomena
abstract: This thesis treats a series of constructions containing unexpressed arguments that exhibit traits of null pronouns, but that resist analysis as standard null pronouns. The Norwegian Empty Object Construction (EOC) combines a complete clause with a conjunct that contains an unexpressed object. The fact that this object receives an E-type reading when associated with a quantified NP forces the conclusion that it is indeed a null pronoun. It cannot be considered a standard null pronoun, however, since it cannot occur outside of a non-initial conjunct and is constrained in its reference. The Baule Empty Subject Construction (ESC), elsewhere called a Serial Verb Construction, is shown to be a covert clausal coordination involving a non-initial conjunct containing unexpressed arguments demonstrating these same characteristics. Additionally, in both EOC and ESC the conjuncts must match in polarity and in Tense/Aspect/Mode marking. Adverbial modification of the non-initial conjunct is limited. Unexpressed arguments are barred from sentential complements and from conjuncts with overt subjects. The characteristics of EOC/ESC are shown to be captured by an account under which the unexpressed arguments are null pronouns licensed by reference recovery via an interpretational procedure, the Coupling Mechanism. The Coupling Mechanism uses an antecedent clause to derive a definite description constrained to pick out a unique discourse referent. A null pronoun must occupy a maximal position in its clause in order to access the necessary antecedent clause. The account is shown, with slight modification, to apply to the Dutch/German SLF construction, a construction in which a nominal that is not sentence initial serves as the subject of two clausal conjuncts. It is argued that, alongside the more standardly assumed adjunction structure, SLF can be based on a coordination structure in which the unexpressed subject of the second conjunct is a null pronoun licensed by the Coupling Mechanism. The account is also extended to a case of an unexpressed argument in an adjunct, the Dutch/German Adjunct Object Gap (AOG), commonly analyzed in the literature as a parasitic gap. Under the alternate account proposed here, the AOG is a bound null pronoun licensed by the Coupling Mechanism.

url: http://hdl.handle.net/1813/940
date: 2005-04-20
creator: Henick-Kling, Thomas
viewed: 2627
title: Introduction to the 34th Annual New York Wine Industry Workshop 2005
abstract: Introduction to the Wine Industry Workshop 2005, held in Geneva, New York

url: http://hdl.handle.net/1813/941
date: 2005-04-20
creator: Wess, Ranier
viewed: 3511
title: Austria as a vine growing country in general
abstract: Describes the vine growing environment in Austria.

url: http://hdl.handle.net/1813/942

date: 2005-04-20
creator:
viewed: 541
title: 85-155*A Rhododendron ‘Luxor’
abstract:

url: http://hdl.handle.net/1813/943
date: 2005-04-20
creator:
viewed: 362
title: 85-156*A Rhododendron ‘Madrid’
abstract:

url: http://hdl.handle.net/1813/944
date: 2005-04-20
creator:
viewed: 352
title: 85-157*A Rhododendron ‘Snow’
abstract:

url: http://hdl.handle.net/1813/945
date: 2005-04-20
creator:
viewed: 584
title: 85-232*C Rhododendron yedoense var. poukhanense ‘Compactum’
abstract:

url: http://hdl.handle.net/1813/946
date: 2005-04-20
creator:
viewed: 504
title: 85-329*A Rhododendron ‘Wyanokie’
abstract:

url: http://hdl.handle.net/1813/947
date: 2005-04-20
creator:
viewed: 507
title: 86-042*G Rhododendron yakushimanum ssp. yakushimanum ‘Ken Janeck’ AWARD OF EXCELLENCE AWARD OF GARDEN MERIT
abstract:

url: http://hdl.handle.net/1813/948
date: 2005-04-20
creator:
viewed: 731
title: 86-203*E Rhododendron yakushimanum ssp. yakushimanum ‘Yaku Angel’
abstract:

url: http://hdl.handle.net/1813/949
date: 2005-04-20
creator:
viewed: 714
title: 86-224*A Polygonatum commutatum
abstract:

url: http://hdl.handle.net/1813/950
date: 2005-04-20
creator:
viewed: 541
title: 86-267*A Disporum sessile spp. flavins
abstract:

url: http://hdl.handle.net/1813/951
date: 2005-04-20
creator:
viewed: 673
title: 86-366*A Rhododendron 'Rocket'
abstract:

url: http://hdl.handle.net/1813/952
date: 2005-04-20
creator:
viewed: 367
title: 86-369*C Rhododendron 'Solidarity'
abstract:

url: http://hdl.handle.net/1813/953
date: 2005-04-20
creator:
viewed: 578
title: 87-305*A Rhododendron yakushimanum ssp. yakushimanum 'Pink Parasol'
abstract:

url: http://hdl.handle.net/1813/954
date: 2005-04-20
creator:
viewed: 1223
title: 89-103*A Iberis 'Sayana'
abstract:

url: http://hdl.handle.net/1813/955
date: 2005-04-20
creator:
viewed: 1617
title: 90-173*A Rhododendron yakushimanum ssp. yakushimanum 'Koichiro Wada'

abstract:

url: http://hdl.handle.net/1813/956
date: 2005-04-20
creator:
viewed: 606
title: 96-163*B Fothergilla gardenii 'Suzanne'
abstract:

url: http://hdl.handle.net/1813/957
date: 2005-04-20
creator:
viewed: 945
title: 96-336*A Viburnum plicatum f. tomentosum 'Popcorn'
abstract:

url: http://hdl.handle.net/1813/958
date: 2005-04-20
creator:
viewed: 1082
title: 97-319*A Rhododendron 'The General'
abstract:

url: http://hdl.handle.net/1813/959
date: 2005-04-21
creator:
viewed: 1024
title: 02-019*A Berberis 'Tara' EMERALD CAROUSEL
abstract:

url: http://hdl.handle.net/1813/960
date: 2005-04-21
creator:
viewed: 565
title: 78-267*A Paeonia 'Athena'
abstract:

url: http://hdl.handle.net/1813/961
date: 2005-04-21
creator:
viewed: 690
title: 82-121*A Trollius ledebourii 'Golden Queen'
abstract:

url: http://hdl.handle.net/1813/962
date: 2005-04-21
creator:
viewed: 617

title: 85-395*F Fothergilla gardenii
abstract:

url: http://hdl.handle.net/1813/963
date: 2005-04-21
creator:
viewed: 534
title: 86-225*A Polygonum bistorta 'Superbum'
abstract:

url: http://hdl.handle.net/1813/964
date: 2005-04-21
creator:
viewed: 543
title: 86-267*A Disporum sessile spp. flavins
abstract:

url: http://hdl.handle.net/1813/965
date: 2005-04-21
creator:
viewed: 596
title: 86-528*A Iris 'Gay Lassie'
abstract:

url: http://hdl.handle.net/1813/966
date: 2005-04-21
creator:
viewed: 1618
title: 87-023*B Pulmonaria 'Sissinghurst White' Award of Garden Merit
abstract:

url: http://hdl.handle.net/1813/967
date: 2005-04-21
creator:
viewed: 1271
title: 87-107*A Magnolia tripetala
abstract:

url: http://hdl.handle.net/1813/968
date: 2005-04-21
creator:
viewed: 698
title: 89-062*A Malus sargentii 'Tina'
abstract:

url: http://hdl.handle.net/1813/969
date: 2005-04-21
creator:

viewed: 873
title: 91-190*G Malus 'Parrsi' PINK PRINCESS
abstract:

url: http://hdl.handle.net/1813/970
date: 2005-04-21
creator:
viewed: 2056
title: 92-150*A Geranium sanguineum 'Max Frei'
abstract:

url: http://hdl.handle.net/1813/971
date: 2005-04-21
creator:
viewed: 2487
title: 95-121*A Dodecatheon meadia 'Album'
abstract:

url: http://hdl.handle.net/1813/972
date: 2005-04-21
creator:
viewed: 2957
title: 95-214*A Silene 'Longwood'
abstract:

url: http://hdl.handle.net/1813/973
date: 2005-04-21
creator:
viewed: 834
title: 97-111*A Malus 'Robinson'
abstract:

url: http://hdl.handle.net/1813/974
date: 2005-04-21
creator:
viewed: 406
title: 97-115*D Malus 'Pink Satin'
abstract:

url: http://hdl.handle.net/1813/975
date: 2005-04-21
creator:
viewed: 617
title: 97-250*A Geranium cinereum var. subacaulescens
abstract:

url: http://hdl.handle.net/1813/976
date: 2005-04-21

creator:
viewed: 795
title: 97-429*A Magnolia 'Yellow Lantern'
abstract:

url: http://hdl.handle.net/1813/977
date: 2005-04-21
creator:
viewed: 952
title: 98-153*A Geranium phaeum 'Samobor'
abstract:

url: http://hdl.handle.net/1813/978
date: 2005-04-21
creator:
viewed: 992
title: 98-385*A Salix integra 'Hakuro Nishiki'
abstract:

url: http://hdl.handle.net/1813/979
date: 2005-04-21
creator:
viewed: 596
title: 98-524*B Allium aflatunense 'Purple Sensation'
abstract:

url: http://hdl.handle.net/1813/980
date: 2005-04-21
creator:
viewed: 3122
title: 99-468*A Asphodeline lutea
abstract:

url: http://hdl.handle.net/1813/981
date: 2005-04-21
creator:
viewed: 2160
title: 00-477*A Polygonatum xhybridum 'Valerie's Song'
abstract:

url: http://hdl.handle.net/1813/982
date: 2005-04-21
creator:
viewed: 2216
title: 01-242*E Cornus sericea 'Cardinal'
abstract:

url: http://hdl.handle.net/1813/983

date: 2005-04-21
creator:
viewed: 1909
title: 01-271*B Sambucus racemosa 'Sutherland Gold'
abstract:

url: http://hdl.handle.net/1813/984
date: 2005-04-21
creator:
viewed: 814
title: 67-128*A Malus 'Winter Gold'
abstract:

url: http://hdl.handle.net/1813/985
date: 2005-04-21
creator:
viewed: 671
title: 77-407*A Viburnum plicatum f. tomentosum 'Lanarth'
abstract:

url: http://hdl.handle.net/1813/986
date: 2005-04-21
creator:
viewed: 608
title: 77-748*A Sorbus aucuparia
abstract:

url: http://hdl.handle.net/1813/987
date: 2005-04-21
creator:
viewed: 385
title: 83-315*A Geranium macrorrhizum 'Album'
abstract:

url: http://hdl.handle.net/1813/988
date: 2005-04-21
creator:
viewed: 750
title: 83-360*A Aronia melanocarpa
abstract:

url: http://hdl.handle.net/1813/989
date: 2005-04-21
creator:
viewed: 581
title: 83-504*A Halesia tetraptera var. monticola
abstract:

url: http://hdl.handle.net/1813/990
date: 2005-04-21
creator:
viewed: 719
title: 84-186*A Asimina triloba 'Davis'
abstract:

url: http://hdl.handle.net/1813/991
date: 2005-04-21
creator:
viewed: 548
title: 85-294*A Galium odoratum
abstract:

url: http://hdl.handle.net/1813/992
date: 2005-04-21
creator:
viewed: 679
title: 85-364*A Cornus florida
abstract:

url: http://hdl.handle.net/1813/993
date: 2005-04-21
creator:
viewed: 741
title: 86-171*A Viburnum plicatum f. tomentosum 'Mariesii'
abstract:

url: http://hdl.handle.net/1813/995
date: 2005-04-21
creator:
viewed: 1492
title: 87-013*C Polystichum setiferum
abstract:

url: http://hdl.handle.net/1813/996
date: 2005-04-21
creator:
viewed: 1301
title: 89-042*B Amsonia tabernaemontana
abstract:

url: http://hdl.handle.net/1813/998
date: 2005-04-21
creator:
viewed: 776
title: 91-125*E Weigela florida 'Pink Princess'
abstract:

url: http://hdl.handle.net/1813/999
date: 2005-04-21
creator:
viewed: 678
title: 96-093*A Sorbus xhybrida
abstract:

url: http://hdl.handle.net/1813/1000
date: 2005-04-21
creator:
viewed: 751
title: 97-097*G Aronia melanocarpa var. elata
abstract:

url: http://hdl.handle.net/1813/1001
date: 2005-04-21
creator:
viewed: 686
title: 97-110*C Sorbus intermedia
abstract:

url: http://hdl.handle.net/1813/1002
date: 2005-04-21
creator:
viewed: 810
title: 97-130*A Viburnum prunifolium 'Early Red'
abstract:

url: http://hdl.handle.net/1813/1003
date: 2005-04-21
creator:
viewed: 792
title: 97-430*C Syringa vulgaris 'Little Boy Blue'
abstract:

url: http://hdl.handle.net/1813/1004
date: 2005-04-21
creator:
viewed: 760
title: 98-151*A Geranium xmonacense 'Muldoon'
abstract:

url: http://hdl.handle.net/1813/1005
date: 2005-04-21
creator:
viewed: 1578
title: 99-331*A Malus 'Prairifire'

abstract:

url: http://hdl.handle.net/1813/1006
date: 2005-04-22
creator: Young, Lily;Whitehouse, Harry;Masters, Gil;Leckie, Jim
viewed: 3588
title: More Other Homes and Garbage: Designs for Self-sufficient Living
abstract: A print on demand of these books and articles can be obtained from Cornell Business Services (CBS) Digital Services by sending e-mail to digital@cornell.edu or calling 607.255.2524. In the body of the message include the identifier.uri for the book or article, and ask to be contacted regarding payment. Population growth, resource depletion, unstable ecosystems, and economic strains are some of the interlinked and uncertain hazards that deteriorate the life experiences of people. Conservation of resources and greater reliance on renewable energy systems sized to the home and perhaps even constructed by the homeowner can provide part of the solution. This book, written by engineers but accessible to anyone with a good calculator, shows how to design and manage technologies that are small-scale, decentralized, conservative, and environmentally gentle.

url: http://hdl.handle.net/1813/1007
date: 2005-04-22
creator: Chong, Mark
viewed: 2832
title: Risk perception and communication about agricultural biotechnology in developing countries: The case of Bt eggplant in India
abstract: Several researchers - most notably Lennart Sjoberg and his colleagues - have proposed that the moral aspects of risk provide a better explanation and prediction of risk perception than the psychometric or cultural model, neither of which accounts for moral concerns. This study is possibly the first to empirically assess if the moral, psychometric and cultural models can explain risk perception of agricultural biotechnology by end users in a developing country. To answer the research question, a scenario was used to elicit perceptions of transgenic Bt (Bacillus thuringiensis) eggplant among 100 eggplant farmers in Maharashtra and 30 eggplant farmers in Tamil Nadu in India. The data suggest that economic benefits, safety concerns, and accountability are most salient to the risk perception of farmer end-users in India. None of the farmers objected to Bt eggplant on moral grounds. Nonetheless, their responses revealed a small number of alternative conceptualizations of morality. This study concludes by suggesting that the psychometric, cultural, and moral models do not account for the risk perception of farmers in India. It proposes that any theory or model that purports to explain and predict risk perception of agricultural biotechnology in the developing world may need to include economic benefits, safety concerns and accountability as key variables.Agricultural Biotechnology Support Project 2 (United States Agency for International Development)

url: http://hdl.handle.net/1813/1008
date: 2005-04-22
creator: Butterfield, Rex M.;Berg, Roy T.
viewed: 10237
title: New Concepts of Cattle Growth
abstract: A print on demand of these books and articles can be obtained from Cornell Business Services (CBS) Digital Services by sending e-mail to digital@cornell.edu or calling 607.255.2524. In the body of the message include the identifier.uri for the book or article, and ask to be contacted regarding payment.The concepts in this book about growth and development of cattle are as new now to most cattle producers and even to many animal scientists as they were when it was first published in 1976. Genetic effects - represented

by breed and sex differences - on patterns of growth of muscle, fat, and bone are graphically presented to provide a vivid elucidation of the effect of mature size on changes in body composition with increasing weight. A comprehensive analysis of muscle dissection data shows that historical attempts to select animals for improved muscle distribution, at least as represented by differences among breeds as diverse as Holstein and Hereford, have been futile. Other effects, such as nutrition, on growth of muscle, bone, and fat are covered, and the effectiveness of indirect methods of predicting carcass composition are summarized. This book is an essential component of the reference collections of agricultural scientists and livestock farmers who rely on data to make decisions about the value of animals for meat.

url: http://hdl.handle.net/1813/1009
date: 2005-04-22
creator: Kammen, Michael
viewed: 3216
title: Contested Values: Democracy and Diversity in American Culture
abstract: A print on demand of these books and articles can be obtained from Cornell Business Services (CBS) Digital Services by sending e-mail to digital@cornell.edu or calling 607.255.2524. In the body of the message include the identifier.uri for the book or article, and ask to be contacted regarding payment.Because of their diversity, Americans have differed historically about the optimal way to achieve democratic goals in their society and culture. How can the reform impulse best be realized, for example. Temperance? Birth control? Teaching evolution? The merits of internationalism versus isolation? Environmentalism? Improving race relations and the role of women in the workplace? Disagreements have been overcome even as new ones emerge. What results is an on-going dialogue about the quality and character of American culture itself. Ultimately, that dialogue has been about conflicting and competing values.

url: http://hdl.handle.net/1813/1010
date: 2005-04-25
creator:
viewed: 4309
title: 00-090*B Geranium sanguineum ‘Shepherd’s Warning’
abstract:

url: http://hdl.handle.net/1813/1011
date: 2005-04-25
creator:
viewed: 1758
title: 01-327*B Sempervivum ‘Ohio Burgundy’
abstract:

url: http://hdl.handle.net/1813/1012
date: 2005-04-25
creator:
viewed: 639
title: 75-160*A Rhododendron ‘Katherine Dalton’
abstract:

url: http://hdl.handle.net/1813/1013
date: 2005-04-25
creator:

viewed: 615
title: 76-190*A Rhododendron 'Boule de Rose'
abstract:

url: http://hdl.handle.net/1813/1014
date: 2005-04-25
creator:
viewed: 858
title: 76-255*B Rhododendron 'Bosley Hybrid'
abstract:

url: http://hdl.handle.net/1813/1015
date: 2005-04-25
creator:
viewed: 756
title: 76-256*A Rhododendron carolinianum
abstract:

url: http://hdl.handle.net/1813/1016
date: 2005-04-25
creator:
viewed: 791
title: 76-641*A Paeonia 'Chalice'
abstract:

url: http://hdl.handle.net/1813/1017
date: 2005-04-25
creator:
viewed: 544
title: 78-250*A Paeonia 'Echo'
abstract:

url: http://hdl.handle.net/1813/1018
date: 2005-04-25
creator:
viewed: 582
title: 78-386*A Paeonia 'Mermaid'
abstract:

url: http://hdl.handle.net/1813/1019
date: 2005-04-25
creator:
viewed: 603
title: 78-420*A Paeonia 'Heaven of the Orient'
abstract:

url: http://hdl.handle.net/1813/1020
date: 2005-04-25

creator:
viewed: 730
title: 79-208*A Hyacinthoides non-scripta
abstract:

url: http://hdl.handle.net/1813/1021
date: 2005-04-25
creator:
viewed: 711
title: 82-123*B Geranium sanguineum var. striatum
abstract:

url: http://hdl.handle.net/1813/1022
date: 2005-04-25
creator:
viewed: 569
title: 86-095*A Rhododendron 'Pink Cameo'
abstract:

url: http://hdl.handle.net/1813/1023
date: 2005-04-25
creator:
viewed: 719
title: 86-225*A Polygonum bistorta 'Superbum'
abstract:

url: http://hdl.handle.net/1813/1024
date: 2005-04-25
creator:
viewed: 1594
title: 87-394*A Rhododendron 'Parker's Pink' AWARD OF EXCELLENCE
abstract:

url: http://hdl.handle.net/1813/1025
date: 2005-04-25
creator:
viewed: 2370
title: 88-208*A Paeonia 'Lotus Bloom'
abstract:

url: http://hdl.handle.net/1813/1026
date: 2005-04-25
creator:
viewed: 613
title: 90-003*A Geranium sanguineum 'Cedric Morris'
abstract:

url: http://hdl.handle.net/1813/1027

date: 2005-04-26
creator:
viewed: 516
title: 90-203*A Myrrhis odorata
abstract:

url: http://hdl.handle.net/1813/1028
date: 2005-04-26
creator:
viewed: 600
title: 91-086*A Geranium sanguineum 'John Elsley'
abstract:

url: http://hdl.handle.net/1813/1029
date: 2005-04-26
creator:
viewed: 856
title: 92-150*B Geranium sanguineum 'Max Frei'
abstract:

url: http://hdl.handle.net/1813/1030
date: 2005-04-26
creator:
viewed: 756
title: 94-115*A Anthriscus sylvestris 'Ravenswing'
abstract:

url: http://hdl.handle.net/1813/1031
date: 2005-04-26
creator:
viewed: 827
title: 97-233*A Vinca minor 'Ralph Shugert'
abstract:

url: http://hdl.handle.net/1813/1032
date: 2005-04-26
creator:
viewed: 708
title: 97-390*A Malus 'Lollizam' LOLLIPOP
abstract:

url: http://hdl.handle.net/1813/1033
date: 2005-04-26
creator:
viewed: 639
title: 97-541*A Nepeta xfaassenii 'Snowflake'
abstract:

url: http://hdl.handle.net/1813/1034
date: 2005-04-26
creator:
viewed: 855
title: 98-294*A Corydalis cheilanthifolia
abstract:

url: http://hdl.handle.net/1813/1035
date: 2005-04-26
creator:
viewed: 589
title: 98-504*A Dicentra spectabilis
abstract:

url: http://hdl.handle.net/1813/1036
date: 2005-04-26
creator:
viewed: 491
title: 98-532*A Narcissus 'Hawera'
abstract:

url: http://hdl.handle.net/1813/1037
date: 2005-04-26
creator:
viewed: 2992
title: 99-446*B Viola labradorica
abstract:

url: http://hdl.handle.net/1813/1038
date: 2005-04-26
creator:
viewed: 1720
title: 99-476*A Narcissus 'Tripartite'
abstract:

url: http://hdl.handle.net/1813/1039
date: 2005-04-26
creator:
viewed: 4397
title: 00-117*C Potentilla fruticosa 'Fargo' DAKOTA SUNSPOT
abstract:

url: http://hdl.handle.net/1813/1040
date: 2005-04-26
creator:
viewed: 4053
title: 00-248*A Campanula poscharskyana 'Blue Gown'
abstract:

url: http://hdl.handle.net/1813/1041
date: 2005-04-26
creator:
viewed: 2059
title: 01-157*A Clematis xjackmanii
abstract:

url: http://hdl.handle.net/1813/1042
date: 2005-04-26
creator:
viewed: 2300
title: 01-178*A Baptisia australis 'Caspian Blue'
abstract:

url: http://hdl.handle.net/1813/1043
date: 2005-04-27
creator:
viewed: 1631
title: 01-185*A Deutzia 'Strawberry Fields'
abstract:

url: http://hdl.handle.net/1813/1044
date: 2005-04-27
creator:
viewed: 1225
title: 01-330*A Sempervivum arachnoideum ssp. tomentosum 'Stansfeldii'
abstract:

url: http://hdl.handle.net/1813/1045
date: 2005-04-27
creator:
viewed: 862
title: 01-332*A Achillea anthea 'Anblo'
abstract:

url: http://hdl.handle.net/1813/1046
date: 2005-04-27
creator:
viewed: 575
title: 02-216*B Spiraea fritschiana 'Wilma' PINK PARASOLS
abstract:

url: http://hdl.handle.net/1813/1047
date: 2005-04-27
creator:
viewed: 679
title: 82-007*A Clematis apiifolia

abstract:

url: http://hdl.handle.net/1813/1048
date: 2005-04-27
creator:
viewed: 1222
title: 95-009*A Syringa reticulata ssp. pekinensis
abstract:

url: http://hdl.handle.net/1813/1049
date: 2005-04-27
creator:
viewed: 2277
title: 96-096*A Physocarpus opulifolius 'Snowfall'
abstract:

url: http://hdl.handle.net/1813/1050
date: 2005-04-27
creator:
viewed: 1381
title: 96-266*A Cornus mas 'Flava'
abstract:

url: http://hdl.handle.net/1813/1051
date: 2005-04-27
creator:
viewed: 534
title: 97-089*D Spiraea japonica 'Norman'
abstract:

url: http://hdl.handle.net/1813/1052
date: 2005-04-27
creator:
viewed: 706
title: 97-104*E Spiraea fritschiana
abstract:

url: http://hdl.handle.net/1813/1053
date: 2005-04-27
creator:
viewed: 414
title: 97-346*A Lysimachia punctata 'Alexander's'
abstract:

url: http://hdl.handle.net/1813/1054
date: 2005-04-27
creator:
viewed: 337

title: 97-396*A Rosa 'Ballerina'
abstract:

url: http://hdl.handle.net/1813/1055
date: 2005-04-27
creator:
viewed: 586
title: 97-406*A Rosa (Explorer Series) 'Henry Kelsey'
abstract:

url: http://hdl.handle.net/1813/1056
date: 2005-04-27
creator:
viewed: 634
title: 97-464*A Spiraea japonica 'Little Princess'
abstract:

url: http://hdl.handle.net/1813/1057
date: 2005-04-27
creator:
viewed: 460
title: 97-470*F Spiraea 'Goldmound'
abstract:

url: http://hdl.handle.net/1813/1058
date: 2005-04-27
creator:
viewed: 532
title: 97-484*E Spiraea japonica 'Alpina'
abstract:

url: http://hdl.handle.net/1813/1059
date: 2005-04-27
creator:
viewed: 430
title: 97-545*A Spiraea japonica 'Magic Carpet'
abstract:

url: http://hdl.handle.net/1813/1060
date: 2005-04-27
creator:
viewed: 412
title: 98-266*A Rosa (Explorer Series) A. MacKenzie
abstract:

url: http://hdl.handle.net/1813/1061
date: 2005-04-28
creator:

viewed: 427
title: 98-272*A Rosa 'Hawkeye Belle'
abstract:

url: http://hdl.handle.net/1813/1062
date: 2005-04-28
creator:
viewed: 460
title: 98-306*A Lamium maculatum 'Shell Pink'
abstract:

url: http://hdl.handle.net/1813/1063
date: 2005-04-28
creator:
viewed: 819
title: 98-470*A Campanula takesimana 'Elizabeth'
abstract:

url: http://hdl.handle.net/1813/1065
date: 2005-04-28
creator:
viewed: 1735
title: 99-165*A Amelanchier laevis 'Snowcloud'
abstract:

url: http://hdl.handle.net/1813/1066
date: 2005-04-28
creator:
viewed: 584
title: 99-198*A Geranium psilostemon 'Ivan'
abstract:

url: http://hdl.handle.net/1813/1067
date: 2005-04-28
creator:
viewed: 539
title: 99-199*B Geranium 'Patricia'
abstract:

url: http://hdl.handle.net/1813/1068
date: 2005-04-28
creator:
viewed: 2002
title: 99-235*A Geranium xoxonianum 'Phoebe Noble'
abstract:

url: http://hdl.handle.net/1813/1069
date: 2005-04-28

creator:
viewed: 1423
title: 99-249*A Digitalis lutea 'Grimes Dwarf'
abstract:

url: http://hdl.handle.net/1813/1070
date: 2005-04-28
creator:
viewed: 4081
title: 00-059*D Viburnum opulus var. americanum 'Wentworth'
abstract:

url: http://hdl.handle.net/1813/1071
date: 2005-04-28
creator:
viewed: 3311
title: 00-200*A Rhododendron 'Ingrid Mehlquist'
abstract:

url: http://hdl.handle.net/1813/1072
date: 2005-04-28
creator:
viewed: 2716
title: 01-178*A Baptisia australis 'Caspian Blue'
abstract:

url: http://hdl.handle.net/1813/1073
date: 2005-04-28
creator:
viewed: 1188
title: 01-433*A Armeria alpina
abstract:

url: http://hdl.handle.net/1813/1074
date: 2005-04-28
creator:
viewed: 719
title: 59-085*A Paeonia 'Gessekai'
abstract:

url: http://hdl.handle.net/1813/1075
date: 2005-04-28
creator:
viewed: 460
title: 65-206*A Paeonia 'Pastoral'
abstract:

url: http://hdl.handle.net/1813/1076

date: 2005-04-28
creator:
viewed: 768
title: 74-029*A Rhododendron 'Narcissiflora'
abstract:

url: http://hdl.handle.net/1813/1077
date: 2005-04-28
creator:
viewed: 396
title: 76-203*A Rhododendron 'Anna H. Hall'
abstract:

url: http://hdl.handle.net/1813/1078
date: 2005-04-28
creator:
viewed: 445
title: 76-636*A Paeonia 'Requiem'
abstract:

url: http://hdl.handle.net/1813/1079
date: 2005-04-28
creator:
viewed: 569
title: 78-270*A Paeonia 'Friendship'
abstract:

url: http://hdl.handle.net/1813/1080
date: 2005-04-28
creator:
viewed: 645
title: 78-302*A Paeonia 'Scarlet O'Hara'
abstract:

url: http://hdl.handle.net/1813/1081
date: 2005-04-28
creator:
viewed: 705
title: 78-390*A Paeonia 'Moonrise'
abstract:

url: http://hdl.handle.net/1813/1082
date: 2005-04-28
creator:
viewed: 574
title: 79-251*A Paeonia 'Renkaku'
abstract:

url: http://hdl.handle.net/1813/1083
date: 2005-04-28
creator:
viewed: 543
title: 79-252*A Paeonia 'Haru-no-akebono'
abstract:

url: http://hdl.handle.net/1813/1084
date: 2005-04-28
creator:
viewed: 397
title: 84-196*B Geranium endressii 'A.T. Johnson'
abstract:

url: http://hdl.handle.net/1813/1085
date: 2005-04-28
creator: Kehoe, William R
viewed: 2177
title: LOCKSS at Cornell
abstract: A 15-minute presentation on the experience of hosting a LOCKSS cache (Lots of Copies Keep Stuff Safe) at Cornell University Library during 2003-2005, from the technical point of view.

url: http://hdl.handle.net/1813/1086
date: 2005-04-28
creator:
viewed: 611
title: 85-233*A Rhododendron 'Lavender Queen'
abstract:

url: http://hdl.handle.net/1813/1087
date: 2005-04-28
creator:
viewed: 487
title: 85-238*A Enkianthus campanulatus
abstract:

url: http://hdl.handle.net/1813/1088
date: 2005-04-28
creator:
viewed: 537
title: 86-043*C Rhododendron yakushimanum ssp. yakushimanum 'Mist Maiden'
abstract:

url: http://hdl.handle.net/1813/1089
date: 2005-04-28
creator:
viewed: 1101
title: 86-381*B Rhododendron 'Katherine Dalton'

abstract:

url: http://hdl.handle.net/1813/1090
date: 2005-04-28
creator:
viewed: 1268
title: 87-078*A Geranium 'Claridge Druce'
abstract:

url: http://hdl.handle.net/1813/1091
date: 2005-04-28
creator:
viewed: 1009
title: 87-384*B Rhododendron 'Bravo!'
abstract:

url: http://hdl.handle.net/1813/1092
date: 2005-04-28
creator:
viewed: 1996
title: 87-465*C Rhododendron kiusianum 'Album'
abstract:

url: http://hdl.handle.net/1813/1093
date: 2005-04-28
creator:
viewed: 1459
title: 87-476*A Rhododendron 'Smir-yak Compact Strain'
abstract:

url: http://hdl.handle.net/1813/1094
date: 2005-04-28
creator:
viewed: 2818
title: 88-016*A Rhododendron 'Party Pink' CONDITIONAL AWARD AWARD OF EXCELLENCE SUPERIOR PLANT AWARD
abstract:

url: http://hdl.handle.net/1813/1095
date: 2005-04-28
creator:
viewed: 1669
title: 88-017*A Rhododendron 'Pink Flourish'
abstract:

url: http://hdl.handle.net/1813/1096
date: 2005-04-28
creator:

viewed: 1524
title: 88-208*A Paeonia 'Lotus Bloom'
abstract:

url: http://hdl.handle.net/1813/1097
date: 2005-04-28
creator:
viewed: 1590
title: 88-217*G Rhododendron yedoense var. poukhanense
abstract:

url: http://hdl.handle.net/1813/1098
date: 2005-04-28
creator:
viewed: 1546
title: 96-535*A Trillium viride var. luteum
abstract:

url: http://hdl.handle.net/1813/1099
date: 2005-04-28
creator:
viewed: 1035
title: 97-356*A Paeonia 'Leda'
abstract:

url: http://hdl.handle.net/1813/1100
date: 2005-04-28
creator:
viewed: 3443
title: 00-202*A Rhododendron 'White Peter'
abstract:

url: http://hdl.handle.net/1813/1101
date: 2005-04-28
creator:
viewed: 1852
title: 01-081*A Dicentra 'King of Hearts'
abstract:

url: http://hdl.handle.net/1813/1102
date: 2005-04-28
creator:
viewed: 921
title: 02-041*A Amsonia 'Seaford Skies'
abstract:

url: http://hdl.handle.net/1813/1103
date: 2005-04-28

creator:
viewed: 1119
title: 75-405*B Rhododendron 'Paul R. Bosley'
abstract:

url: http://hdl.handle.net/1813/1104
date: 2005-04-29
creator: Duffany, Matthew
viewed: 3556
title: Simulated Mean Annual and Extreme Event Runoff Loads of Herbicides Commonly Used in Urban Areas Throughout the United States
abstract: The runoff of thirty turf herbicides commonly used on lawns, parks, and golf course fairways and greens throughout the United States was simulated using the TurfPQ model. The model was used to obtain ninety nine years of daily water input, water runoff, and herbicide runoff for ten locations: Boston, MA, Charlotte, NC, Denver, CO, Houston, TX, Indianapolis, IN, Jacksonville, FL, Los Angeles, CA, Minneapolis, MN, Portland, OR, and Wichita, KS. Results were summarized as mean annual herbicide runoff loads (g/ha), extreme event herbicide runoff loads corresponding to a 20 year return period (g/ha), mean herbicide runoff as a percentage of annual application, extreme event herbicide runoff as a percentage of annual application, mean annual water input (mm), and mean annual water runoff (mm). Urban areas that produced the highest herbicide runoff loads based on surface runoff were Boston, Charlotte, Houston, Indianapolis, and Jacksonville. Mean annual runoff loads did not surpass 3.4% of the annual herbicide application with most instances considerably less than 1%. Extreme event runoff loads did not surpass 9% of the annual herbicide application but were highly variable and appear to have been very dependent on both location and herbicide. The runoff loads of atrazine, bensulide, DSMA, ethofumesate, napropamide, pendimethalin, and siduron were the largest per hectare. Siduron has the most massive runoff load, which is mainly due to the large amount of the herbicide that is applied annually. Herbicides whose runoff loads contained 3.5% or more of the applied annual amount in one or more simulated event include 2,4-D, atrazine, bentazon, dicamba, ethofumesate, halosulfuron, imazaquin, MCPA, MCPP, quinclorac, siduron, simazine, and triclopyr. These herbicides have the most potential for surface runoff in extreme events. A common factor for these herbicides was low organic carbon partition coefficient values.

url: http://hdl.handle.net/1813/1105
date: 2005-04-29
creator:
viewed: 422
title: 76-166*B Rhododendron yakushimanum
abstract:

url: http://hdl.handle.net/1813/1106
date: 2005-04-29
creator:
viewed: 579
title: 76-187*A Rhododendron 'Lodestar'
abstract:

url: http://hdl.handle.net/1813/1107
date: 2005-04-29
creator:

viewed: 600
title: 76-218*A Rhododendron 'Janet Blair'
abstract:

url: http://hdl.handle.net/1813/1108
date: 2005-04-29
creator:
viewed: 589
title: 77-318*A Rhododendron cv. Normandy
abstract:

url: http://hdl.handle.net/1813/1109
date: 2005-04-29
creator:
viewed: 732
title: 78-251*A Paeonia 'Early Daybreak'
abstract:

url: http://hdl.handle.net/1813/1110
date: 2005-04-29
creator:
viewed: 395
title: 78-256*A Paeonia 'Age of Gold'
abstract:

url: http://hdl.handle.net/1813/1111
date: 2005-04-29
creator:
viewed: 387
title: 78-377*A Paeonia 'Janice'
abstract:

url: http://hdl.handle.net/1813/1112
date: 2005-04-29
creator:
viewed: 671
title: 80-060*A Rhododendron prinophyllum
abstract:

url: http://hdl.handle.net/1813/1113
date: 2005-04-29
creator:
viewed: 550
title: 80-065*A Rhododendron catawbiense 'Compactum'
abstract:

url: http://hdl.handle.net/1813/1114
date: 2005-04-29

creator:
viewed: 522
title: 81-061*A Rhododendron 'Powell Glass'
abstract:

url: http://hdl.handle.net/1813/1115
date: 2005-04-29
creator:
viewed: 451
title: 85-197*A Dicentra formosa 'Sweetheart'
abstract:

url: http://hdl.handle.net/1813/1116
date: 2005-04-29
creator:
viewed: 360
title: 85-231*B Rhododendron 'Waltham'
abstract:

url: http://hdl.handle.net/1813/1117
date: 2005-04-29
creator:
viewed: 688
title: 86-102*C Rhododendron yakushimanum 'Murphy's Big Leaf'
abstract:

url: http://hdl.handle.net/1813/1118
date: 2005-04-29
creator:
viewed: 500
title: 86-138*A Rhododendron 'Album Elegans'
abstract:

url: http://hdl.handle.net/1813/1119
date: 2005-04-29
creator:
viewed: 1061
title: 87-382*E Rhododendron 'Besse Howells'
abstract:

url: http://hdl.handle.net/1813/1120
date: 2005-04-29
creator:
viewed: 1279
title: 87-399*G Rhododendron smirnowii
abstract:

url: http://hdl.handle.net/1813/1121

date: 2005-04-29
creator:
viewed: 1825
title: 91-174*A Geranium maculatum 'Hazel Gallagher'
abstract:

url: http://hdl.handle.net/1813/1122
date: 2005-04-29
creator:
viewed: 1649
title: 91-184*A Amsonia hubrichtii
abstract:

url: http://hdl.handle.net/1813/1123
date: 2005-04-29
creator:
viewed: 1791
title: 95-038*A Cypripedium calceolus var. pubescens
abstract:

url: http://hdl.handle.net/1813/1124
date: 2005-04-29
creator:
viewed: 2095
title: 95-287*D Rhododendron carolinianum 'White Perfection'
abstract:

url: http://hdl.handle.net/1813/1125
date: 2005-04-29
creator:
viewed: 916
title: 96-171*B Viburnum plicatum f. tomentosum 'Summer Snowflake'
abstract:

url: http://hdl.handle.net/1813/1126
date: 2005-04-29
creator:
viewed: 334
title: 96-374*A Viburnum plicatum f. tomentosum 'Pink Beauty'
abstract:

url: http://hdl.handle.net/1813/1127
date: 2005-04-29
creator:
viewed: 484
title: 96-551*D Rhododendron 'Nova Zembla'
abstract:

url: http://hdl.handle.net/1813/1128
date: 2005-04-29
creator:
viewed: 1228
title: 97-352*A Rhododendron 'Wheatley' AWARD OF EXCELLENCE
abstract:

url: http://hdl.handle.net/1813/1129
date: 2005-04-29
creator:
viewed: 614
title: 98-334*A Rhododendron 'Haaga'
abstract:

url: http://hdl.handle.net/1813/1130
date: 2005-04-29
creator:
viewed: 1084
title: 98-336*B Rhododendron 'Wojnar's Purple'
abstract:

url: http://hdl.handle.net/1813/1131
date: 2005-04-29
creator:
viewed: 587
title: 98-364*A Darmera peltata
abstract:

url: http://hdl.handle.net/1813/1132
date: 2005-04-29
creator:
viewed: 677
title: 99-061*A Darmera peltata 'Dwarf Form'
abstract:

url: http://hdl.handle.net/1813/1133
date: 2005-04-29
creator:
viewed: 3453
title: 00-124*A Syringa pubescens ssp. julianae 'Hers'
abstract:

url: http://hdl.handle.net/1813/1134
date: 2005-04-29
creator:
viewed: 2674
title: 00-461*A Berberis thunbergii 'Gentry' ROYAL BURGUNDY
abstract:

url: http://hdl.handle.net/1813/1135
date: 2005-04-29
creator:
viewed: 2503
title: 00-501*E Berberis thunbergii 'Golden Nugget'
abstract:

url: http://hdl.handle.net/1813/1136
date: 2005-04-29
creator:
viewed: 3350
title: 00-511*A Berberis thunbergii 'Rose Glow' AGM
abstract:

url: http://hdl.handle.net/1813/1137
date: 2005-04-29
creator:
viewed: 2319
title: 00-631*C Ajuga 'Valfredda' CHOCOLATE CHIP
abstract:

url: http://hdl.handle.net/1813/1138
date: 2005-04-29
creator:
viewed: 1033
title: 02-473*A Sorbus rufo-ferruginea 'Longwood Sunset'
abstract:

url: http://hdl.handle.net/1813/1139
date: 2005-05-02
creator:
viewed: 507
title: 73-209*A Hosta ventricosa 'Aureo-maculata'
abstract:

url: http://hdl.handle.net/1813/1140
date: 2005-05-02
creator:
viewed: 409
title: 76-858*B Viburnum sieboldii
abstract:

url: http://hdl.handle.net/1813/1141
date: 2005-05-02
creator:
viewed: 368
title: 82-108*A Tellima grandiflora

abstract:

url: http://hdl.handle.net/1813/1142
date: 2005-05-02
creator:
viewed: 603
title: 85-056*C Syringa meyeri 'Palibin' GOLD MEDAL
abstract:

url: http://hdl.handle.net/1813/1143
date: 2005-05-02
creator:
viewed: 512
title: 85-093*B Vancouveria hexandra
abstract:

url: http://hdl.handle.net/1813/1144
date: 2005-05-02
creator:
viewed: 1262
title: 86-275*A Polygonatum falcatum
abstract:

url: http://hdl.handle.net/1813/1145
date: 2005-05-02
creator:
viewed: 1104
title: 87-032*A Prunus serotina
abstract:

url: http://hdl.handle.net/1813/1146
date: 2005-05-02
creator:
viewed: 2252
title: 88-232*D Aesculus pavia Gold Medal
abstract:

url: http://hdl.handle.net/1813/1147
date: 2005-05-02
creator:
viewed: 1530
title: 91-212*A Wisteria floribunda 'Royal Purple'
abstract:

url: http://hdl.handle.net/1813/1148
date: 2005-05-02
creator:
viewed: 1703

title: 92-135*B Viburnum sieboldii 'Seneca'
abstract:

url: http://hdl.handle.net/1813/1149
date: 2005-05-02
creator:
viewed: 1060
title: 95-006*B Syringa wolfii
abstract:

url: http://hdl.handle.net/1813/1150
date: 2005-05-02
creator:
viewed: 506
title: 95-061*A Halesia diptera var. magniflora Gold Medal
abstract:

url: http://hdl.handle.net/1813/1151
date: 2005-05-02
creator:
viewed: 1177
title: 95-196*A Cornus 'Rutcan' CONSTELLATION (Stellar Series)
abstract:

url: http://hdl.handle.net/1813/1152
date: 2005-05-02
creator:
viewed: 512
title: 96-092*A Crataegus ambigua
abstract:

url: http://hdl.handle.net/1813/1153
date: 2005-05-02
creator:
viewed: 518
title: 97-158*C Viburnum sargentii var. calvescens
abstract:

url: http://hdl.handle.net/1813/1154
date: 2005-05-02
creator:
viewed: 569
title: 98-050*A Viburnum lantana 'Aureum'
abstract:

url: http://hdl.handle.net/1813/1155
date: 2005-05-02
creator:

viewed: 546
title: 98-140*A Staphylea bumalda
abstract:

url: http://hdl.handle.net/1813/1156
date: 2005-05-02
creator:
viewed: 704
title: 99-018*A Berberis thunbergii 'Silver Mile'
abstract:

url: http://hdl.handle.net/1813/1157
date: 2005-05-02
creator:
viewed: 4264
title: 00-102*C Euonymus europaeus 'Red Cap'
abstract:

url: http://hdl.handle.net/1813/1158
date: 2005-05-02
creator:
viewed: 2463
title: 00-514*A Cornus alba 'Argenteo-marginata'
abstract:

url: http://hdl.handle.net/1813/1159
date: 2005-05-02
creator:
viewed: 2119
title: 01-053*A Forsythia giraldiana 'Golden Times'
abstract:

url: http://hdl.handle.net/1813/1160
date: 2005-05-02
creator:
viewed: 863
title: 02-064*A Lonicera tatarica 'Honey Rose'
abstract:

url: http://hdl.handle.net/1813/1161
date: 2005-05-02
creator:
viewed: 628
title: 03-215*A Syringa pubescens ssp. patula 'Klmone' MISS SUSIE
abstract:

url: http://hdl.handle.net/1813/1162
date: 2005-05-03

creator: Hirakawa, Keigo
viewed: 2972
title: Image Processing Using Sensor Noise and Human Visual System Models
abstract: Because digital images are subject to noise in the device that captured them and the human visual system (HVS) that observes them, it is important to consider accurate models for noise and the HVS in the design of image processing methods. In this thesis, CMOS image sensor noise is characterized, the chromatic adaptation theories are reviewed, and new image processing algorithms that address these noise and HVS models are presented.
First, a method for removing additive, multiplicative, and mixed noise from an image is developed. An image patch from an ideal image is modeled as a linear combination of image patches from the noisy image. This image model is fit to the image data in the total least square (TLS) sense, because it allows uncertainties in the measured data. The image quality of the output image demonstrates the effectiveness of the TLS algorithms and improvement over existing methods.
Second, we develop a novel technique to combine demosaicing and denoising procedures systematically into a single operation. We first design a filter as optimally estimating a pixel value from a noisy single-color image. With additional constraints, we show that the same filter coefficients are appropriate for demosaicing noisy sensor data. The proposed technique can combine many existing denoising algorithms with the demosaicing operation. The algorithm is tested with pseudo-random noise and noisy raw sensor data from a real digital camera, and the proposed method suppresses CMOS image sensor noise while effectively interpolating the missing pixel components better than when treating demosaicing and denoising problems independently.
Third, the problem of adjusting the color to match the digital camera output with the scene observed by the photographer?s eye is called white-balance. While most existing white-balance algorithms combine the von Kries coefficient law and an illuminant estimation techniques, the coefficient law has been shown to be an inaccurate model. We instead formulate the problem using induced opponent response theory, the solution to which reduces to a single matrix multiplication. The experimental results verify that this approach yields more natural images than traditional methods. The computational cost of the proposed method is virtually zero.Texas Instruments, Agilent Technologies, Center for Electronic Imaging Systems

url: http://hdl.handle.net/1813/1163
date: 2005-05-03
creator: Hay, Jordan O.
viewed: 4454
title: Growth, Architecture, Cell Separation, Electrophysiology and Sucrose Transport of Ripening Rice Caryopses
abstract: Roger M. Spanswick, Susan R. McCouch, Larry P. WalkerRice (Oryza sativa L.) life cycle and yield depend on the partitioning of assimilated carbon to ripening caryopses. Structural and functional aspects of this important process were investigated. First, spatiotemporal dynamics of ripening were assessed. Panicle fresh weight accumulation was maximum after three weeks and had a maximum rate after twelve days. Panicle architecture and ripening asynchrony were reduced to the form of an annotated panicle array. This format permitted a quantitative, computational approach to panicle consensus generation, data analysis and graphical display. Next, the separability of caryopsis tissues was assessed. The caryopsis coat was mechanically isolated from most of the embryonic tissues and facially separated into outer and inner coats from within the tube cell layer. Pectolyase Y-23 compromised adhesion between the maternal nucellus and embryonic aleurone and between endosperm cells. Viable protoplasts were prepared from approximately 10% of the isolated endosperm cells. Low protoplast yield was correlated with low viability of the isolated cells. Third, the mechanism of sucrose uptake by the aleurone was studied. The sucrose concentration-dependence of uptake rate had a nonsaturable component and a relatively small saturable component. Finally, electrophysiology of the caryopsis coat was assessed. Membrane potentials of the aleurone and nucellus were approximately -60

mV and -80 mV, respectively, and invariable over a range of bath conditions. Sucrose negligibly depolarized the aleurone membrane potential. Thus, it was not possible to confirm that the saturable sucrose influx was mediated by a cotransport system. Overall, the work has increased the experimental accessibility of ripening panicles and caryopses for research on the control of carbon partitioning.Department of Biomedical Sciences, Department of Plant Biology

url: http://hdl.handle.net/1813/1164
date: 2005-05-03
creator:
viewed: 1167
title: 87-259*A Spiraea trilobata 'Swan Lake'
abstract:

url: http://hdl.handle.net/1813/1165
date: 2005-05-04
creator:
viewed: 1058
title: 87-330*D Aesculus pavia 'Humilis'
abstract:

url: http://hdl.handle.net/1813/1166
date: 2005-05-06
creator: Kumar, Tulika;Tevet, Dan;Cho, Thummim;Ko, Rosy;Cheng, Samson;Wang, Ray;Goldman, Jarett;Wong, Vincent;Ghassabeh, Ali John;Shih, Jerry;Toor, Neelu;Sasiadek, Adam;Bhattacharyay, Madhurima;DeWitt, Katherine;Liang, Olivia;Pedersen, Linda
viewed: 3582
title: The Visible Hand, Volume 12, Issue 2
abstract: The Visible Hand, Spring 2005, is a publication of the Cornell Economics Society. In this issue the following Economic Trends and Policies are explored: (1) "The Recent Surge in Mergers and Acquisitions" by Linda Pedersen ... (2) "New Luxury: Like It or Spike It?" by Olivia Liang ... (3) "The Common Agricultural Policy and Struggling International Agricultural Economies" by Katherine DeWitt ... (4) "Financial Integration: A Road Towards Growth or to Increased Vulnerability and Poverty?" by Madhurima Bhattacharyay ... (5) "The Role of Economics in the Origins of the Civil War" by Adam Sasiadek ... (6) "Economic Interstate Conflict: The World Trade Organization and Dispute Settlement - Evaluating Schools of Thought" by Neelu Toor ... (7) "Privitization of Social Security" by Jerry Shih ... (8) "Capital Punishment as a Deterent to Murder" by Ali John Ghassabeh ... (9) "The Good Samaritan Law and the Duty to Rescue: A Cost-Benefit Analysis" by Vincent Wong ... (10) "NO! to Internet Taxes" by Jarett Goldman ... (11) "Exchange Rate and Current Account Imbalances in China and ASEAN: Are They A Problem?" by Ray Wang ... (12) "The Development of the Chinese Auto Industry" by Samson Cheng ... (13) "The Investment Landscape for Foreign Acquisition in the Chinese Banking Industry" by Rosy Ko ... (14) "The Future of ASEAN?s Economy: Growth through Foreign Direct Investment" by Thummim Cho ... (15) "Online Auctions: Changing the Face of Game Theory" by Dan Tevet ... (16) "Behavioral Economics: A Look into this New Course and Professor O'Donoghue" by Tulika Kumar.Editor-in-Chief: Michael Tang; Managing Editors: Liza Lee, Linda R. Pedersen; Associate Editors: Seraphina Kuah, Tal Manor, Jerry Shih; Design Editor: Meredith Shull; Marketing Director: Olivia Liang; Contributing Editors: Samson Cheng, Gregory Clother, Katherine DeWitt, Hanoch Feit, Allen Li, Liza Lee, Tianai Lin, Neal Miniyar, Marie Schell, Ariel Tan, Thomas Wei; Cornell Economics Society President: Jason Roth; Faculty Liason: Prof. Jennifer Wissink

url: http://hdl.handle.net/1813/1167
date: 2005-05-08
creator:
viewed: 913
title: 89-186*A Spiraea trilobata 'Fairy Queen'
abstract:

url: http://hdl.handle.net/1813/1168
date: 2005-05-09
creator: Peraki, Christina
viewed: 1558
title: Throughput Stability and Flows in Large-Scale Random Networks
abstract: Sergio D. Servetto, Eva TardosThe rate of growth of the maximum stable throughput in large-scale random networks as a function of network size is studied in this thesis. The problem is formulated as one of determining the value of the maximum multicommodity flow on the corresponding random unit-disk graph and shown to be equivalent. In this way, using simple flow techniques and probability tools, a tight bound is derived on the rate of growth of the maximum stable throughput with a fairness constraint. As an application of these techniques, similar bounds are computed for different cases of highly dense wireless networks when directional antennas are being used and the results are compared to the omnidirectional case.National Science Foundation

url: http://hdl.handle.net/1813/1170
date: 2005-05-09
creator:
viewed: 1354
title: 91-125*A Weigela florida 'Pink Princess'
abstract:

url: http://hdl.handle.net/1813/1171
date: 2005-05-09
creator:
viewed: 1461
title: 93-095A Viburnum opulus 'Xanthocarpum'
abstract:

url: http://hdl.handle.net/1813/1172
date: 2005-05-09
creator:
viewed: 283
title: 96-226*A Syringa 'Triste Barbaro'
abstract:

url: http://hdl.handle.net/1813/1173
date: 2005-05-09
creator:
viewed: 805
title: 97-091*A Syringa 'Red Pixie'
abstract:

url: http://hdl.handle.net/1813/1174
date: 2005-05-09
creator:
viewed: 351
title: 98-096*B Weigela florida 'Victoria'
abstract:

url: http://hdl.handle.net/1813/1175
date: 2005-05-09
creator:
viewed: 395
title: 98-110*A Lonicera syringantha
abstract:

url: http://hdl.handle.net/1813/1176
date: 2005-05-09
creator:
viewed: 826
title: 98-122*A Weigela florida 'Rumba'
abstract:

url: http://hdl.handle.net/1813/1177
date: 2005-05-09
creator:
viewed: 660
title: 98-182*A Indigofera kirilowii
abstract:

url: http://hdl.handle.net/1813/1178
date: 2005-05-09
creator:
viewed: 858
title: 98-385*A Salix integra 'Hakuro Nishiki'
abstract:

url: http://hdl.handle.net/1813/1179
date: 2005-05-09
creator:
viewed: 638
title: 98-390*D Viburnum plicatum f. tomentosum 'Shoshoni'
abstract:

url: http://hdl.handle.net/1813/1180
date: 2005-05-09
creator:
viewed: 1327
title: 99-040*B Berberis thunbergii 'Aurea'

abstract:

url: http://hdl.handle.net/1813/1181
date: 2005-05-09
creator:
viewed: 1958
title: 99-437*A Syringa vulgaris 'Aucubaefolia'
abstract:

url: http://hdl.handle.net/1813/1182
date: 2005-05-09
creator: Becker, Kathryn
viewed: 2405
title: Courting Serendipity: The Search for Transient Radio Signals
abstract: The transient radio sky remains a frontier of observational astronomy, not for lack of scientific promise, but for practical obstacles: terrestrial radio frequency interference (RFI) and limited computing power. Today, a confluence of new RFI mitigation techniques and computing power makes a thorough census of the radio sky a realistic goal. A complete transient survey could uncover, in addition to entirely new classes of sources, radio sources that have been predicted but never observed. These sources include pulses from primordial black hole explosions and prompt emission associated with gamma ray bursts. A search could also reveal extreme-period pulsars or giant-pulsing extragalactic pulsars. Here we present three transient-seeking algorithms suitable for processing large data sets. General statistics regarding the algorithms' performance on simulated data are presented, as well their performance on data from the Crab Pulsar and the galaxy UGC 2339.
We also present results of a search for cyclotron maser emission from extrasolar planets. Extrasolar planets are likely emitters of non-thermal radio emission analogous to the bursting radio emission observed from all five of our solar system's magnetized planets. Four planetary systems were observed at the Arecibo Observatory. In 15 hours of 327 MHz observations made over the course of nine days in July, 2004, no detections were made.National Science Foundation

url: http://hdl.handle.net/1813/1183
date: 2005-05-09
creator: Helmle, Chad S.
viewed: 3882
title: A QUANTITATIVE THERMAL IMAGING TECHNIQUE TO EXTRACT A CROSS-STREAM SURFACE VELOCITY PROFILE FROM A FLOWING BODY OF WATER
abstract: Committee Chairperson: Prof. Edwin A. Cowen
Committee Member: Prof. Tammo SteenhuisThe United States Geological Survey (USGS) is responsible for monitoring river flow rates at over 7,000 locations across the United States. This operation is expensive, inefficient, and often dangerous, as USGS personnel must deploy direct in-the-field measurement equipment to obtain the required flow data during storm events. An affordable, remote, non-contact sensor that is capable of determining river flow rates under a variety of flow environments is, therefore, highly desired by the USGS and other agencies worldwide charged with the task of water flow monitoring and management.
A technique is presented in which a cross-stream surface velocity profile is extracted from a series of thermal infrared images of a flowing water surface. Analytical methods and algorithms are borrowed from Quantitative Imaging (QI) fields such as Particle Image Velocimetry (PIV) and Particle Tracking Velocimetry (PTV), and are adapted for use on the thermographic image set. Monte Carlo Simulations are used to compare several iterative improvements to the initial correlation-based displacement algorithm. Particular emphasis

is placed upon extracting reliable results from images with a very low signal-to-noise ratio (SNR) typical of the image type recorded by an inexpensive thermal imaging system in the nearly uniform temperature environment of interest.

Laboratory experiments are used to verify the capacity of the altered displacement algorithm to extract cross-stream velocity profiles from thermal images recorded from above an open-channel flume. Several cases ranging from high to low SNR are studied. The displacement algorithm's analysis of the high SNR data sets provides a velocity profile that agrees with the profile measured by an Acoustic Doppler Velocimeter (ADV). Displacement results for the medium and low SNR cases required further processing after the initial displacement algorithm analysis. A qualitative analysis of the post-processed data reveals that a deterministic signal can be extracted from such noisy image sets, and further refinements of the displacement algorithms to accomplish these tasks are possible.National Science Foundation?s Small Grant for Exploratory Research (SGER) program (grant no. CTS-341911)

url: http://hdl.handle.net/1813/1184
date: 2005-05-09
creator:
viewed: 3077
title: 00-502*B Cornus alba 'Bailhalo' Ivory Halo
abstract:

url: http://hdl.handle.net/1813/1185
date: 2005-05-09
creator:
viewed: 3466
title: 86-300*A Geranium renardii
abstract:

url: http://hdl.handle.net/1813/1186
date: 2005-05-09
creator:
viewed: 1348
title: 86-383*A Viburnum plicatum f. tomentosum 'Shasta' Gold Medal
abstract:

url: http://hdl.handle.net/1813/1187
date: 2005-05-09
creator:
viewed: 2265
title: 94-201*A Cotoneaster dammeri 'Streib's Findling'
abstract:

url: http://hdl.handle.net/1813/1188
date: 2005-05-09
creator:
viewed: 2960
title: 95-214*A Silene 'Longwood'
abstract:

url: http://hdl.handle.net/1813/1189
date: 2005-05-09
creator:
viewed: 590
title: 97-102*B Rhodotypos scandens
abstract:

url: http://hdl.handle.net/1813/1190
date: 2005-05-09
creator:
viewed: 2380
title: 99-431*B Cotoneaster racemiflorus var. songoricus
abstract:

url: http://hdl.handle.net/1813/1191
date: 2005-05-11
creator:
viewed: 4138
title: 00-082*A Rhododendron 'Pennsylvania'
abstract:

url: http://hdl.handle.net/1813/1192
date: 2005-05-11
creator:
viewed: 2593
title: 94-142*A Viburnum plicatum f. tomentosum 'Shasta' Gold Medal
abstract:

url: http://hdl.handle.net/1813/1193
date: 2005-05-11
creator:
viewed: 3975
title: 95-037*B Aesculus parviflora
abstract:

url: http://hdl.handle.net/1813/1194
date: 2005-05-11
creator:
viewed: 3243
title: 95-161*A Viburnum plicatum f. tomentosum 'Shoshoni'
abstract:

url: http://hdl.handle.net/1813/1195
date: 2005-05-11
creator:
viewed: 2336
title: 98-106*C Hydrangea quercifolia 'Sike's Dwarf'
abstract:

url: http://hdl.handle.net/1813/1196
date: 2005-05-11
creator:
viewed: 4080
title: 99-128*A Hydrangea paniculata 'White Moth'
abstract:

url: http://hdl.handle.net/1813/1197
date: 2005-05-11
creator:
viewed: 2498
title: 93-085*A Campanula poscharskyana
abstract:

url: http://hdl.handle.net/1813/1198
date: 2005-05-11
creator:
viewed: 962
title: 85-437*B Hosta nakaiana 'Golden Tiara'
abstract:

url: http://hdl.handle.net/1813/1199
date: 2005-05-11
creator:
viewed: 535
title: 86-030*A Osmunda regalis var. spectabilis
abstract:

url: http://hdl.handle.net/1813/1200
date: 2005-05-11
creator:
viewed: 3179
title: 86-048*B Aruncus Dioicus
abstract:

url: http://hdl.handle.net/1813/1201
date: 2005-05-11
creator:
viewed: 3872
title: 89-051*A Astrantia carniolica 'Rubra'
abstract:

url: http://hdl.handle.net/1813/1202
date: 2005-05-11
creator:
viewed: 3470
title: 95-146*A Dryopteris xcomplexa 'Robust'

abstract:

url: http://hdl.handle.net/1813/1203
date: 2005-05-11
creator:
viewed: 3384
title: 96-297*A Lysichiton camtschatcensis
abstract:

url: http://hdl.handle.net/1813/1204
date: 2005-05-11
creator:
viewed: 2179
title: 99-131*A Luzula sylvatica 'Marginata'
abstract:

url: http://hdl.handle.net/1813/1205
date: 2005-05-11
creator:
viewed: 3113
title: 96-098*D Sambucus nigra ssp. canadensis 'Adams'
abstract:

url: http://hdl.handle.net/1813/1206
date: 2005-05-11
creator:
viewed: 3227
title: 96-420*A Sambucus nigra ssp. candensis 'Acutiloba'
abstract:

url: http://hdl.handle.net/1813/1207
date: 2005-05-11
creator:
viewed: 4005
title: 96-594*A Sambucus nigra ssp. canadensis 'York'
abstract:

url: http://hdl.handle.net/1813/1208
date: 2005-05-11
creator:
viewed: 5481
title: 00-468*A Stewartia pseudocamellia
abstract:

url: http://hdl.handle.net/1813/1209
date: 2005-05-11
creator:
viewed: 3879

title: 00-526*A Heuchera 'Black Bird'
abstract:

url: http://hdl.handle.net/1813/1210
date: 2005-05-13
creator:
viewed: 4403
title: 00-417*A Coreopsis auriculata 'Nana'
abstract:

url: http://hdl.handle.net/1813/1211
date: 2005-05-13
creator:
viewed: 2295
title: 00-478*A Athyrium 'Branford Beauty'
abstract:

url: http://hdl.handle.net/1813/1212
date: 2005-05-13
creator:
viewed: 1991
title: 01-361*A Hydrangea serrata 'Komachi' PRETTY MAIDEN
abstract:

url: http://hdl.handle.net/1813/1213
date: 2005-05-13
creator:
viewed: 610
title: 02-380*C Buddleia davidii 'Monum' NANHOE PURPLE
abstract:

url: http://hdl.handle.net/1813/1214
date: 2005-05-13
creator:
viewed: 439
title: 02-386*A Hosta 'Austin Dickinson'
abstract:

url: http://hdl.handle.net/1813/1215
date: 2005-05-13
creator:
viewed: 588
title: 02-389*A Physostegia virginiana 'Miss Manners'
abstract:

url: http://hdl.handle.net/1813/1216
date: 2005-05-13
creator:

viewed: 598
title: 02-389*B Physostegia virginiana 'Miss Manners'
abstract:

url: http://hdl.handle.net/1813/1217
date: 2005-05-13
creator:
viewed: 438
title: 02-394*A Nepeta longipes
abstract:

url: http://hdl.handle.net/1813/1218
date: 2005-05-13
creator:
viewed: 844
title: 02-396*A Nepeta yunnanensis
abstract:

url: http://hdl.handle.net/1813/1219
date: 2005-05-13
creator:
viewed: 779
title: 02-410*A Hosta 'Grand Tiara'
abstract:

url: http://hdl.handle.net/1813/1220
date: 2005-05-13
creator:
viewed: 440
title: 02-411*A Hosta 'Lemon Delight'
abstract:

url: http://hdl.handle.net/1813/1221
date: 2005-05-13
creator:
viewed: 412
title: 02-419*A Athyrium felix-femina Victoriae Tall Selection
abstract:

url: http://hdl.handle.net/1813/1222
date: 2005-05-13
creator:
viewed: 990
title: 02-422*A Euphorbia 'Froeup' EXCALIBUR
abstract:

url: http://hdl.handle.net/1813/1223
date: 2005-05-13

creator:
viewed: 564
title: 03-305*A Hydrangea macrophylla 'Lemon Wave'
abstract:

url: http://hdl.handle.net/1813/1224
date: 2005-05-13
creator:
viewed: 502
title: 03-520*A Hosta 'Revolution'
abstract:

url: http://hdl.handle.net/1813/1225
date: 2005-05-13
creator:
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title: 85-035*B Astilbe taquetii 'Superba'
abstract:

url: http://hdl.handle.net/1813/1226
date: 2005-05-13
creator:
viewed: 482
title: 85-093*B Vancouveria hexandra
abstract:

url: http://hdl.handle.net/1813/1227
date: 2005-05-13
creator:
viewed: 812
title: 85-185*B Stephanandra incisa 'Crispa'
abstract:

url: http://hdl.handle.net/1813/1228
date: 2005-05-13
creator:
viewed: 308
title: 87-564*A Hosta 'Shade Fanfare'
abstract:

url: http://hdl.handle.net/1813/1229
date: 2005-05-13
creator:
viewed: 738
title: 92-087*A Dryopteris affinis 'Crispa'
abstract:

url: http://hdl.handle.net/1813/1230

date: 2005-05-13
creator:
viewed: 368
title: 92-167*A Hosta 'Great Expectations'
abstract:

url: http://hdl.handle.net/1813/1231
date: 2005-05-13
creator:
viewed: 1460
title: 92-168*A Hosta 'Buckshaw Blue'
abstract:

url: http://hdl.handle.net/1813/1232
date: 2005-05-13
creator: Urbanowicz, Ryan
viewed: 1746
title: REASSESSMENT OF A GANGLIOSIDE-LIPOSOME BIOSENSOR
abstract: Botulism, the disease caused by the introduction of botulinum toxin (BT) into the body, is a rare but severe ailment that frequently results in death from respiratory failure. Cholera, the disease caused by the introduction of cholera toxin (CT) into the body, is a much more common problem in third world countries, causing severe diarrhea and dehydration.
In this study, the design of previously developed sensitive biosensors for the detection of BT and CT has been scrutinized, with the intention of improving upon the detection limit the BT assay. This biosensor is a test strip assay which utilizes ganglioside-incorporated liposomes, and toxin antibodies which are immobilized on an analytical zone of a plastic-backed nitrocellulose membrane strip to form a sandwich-type detection mechanism. The intensity of the band could be visually estimated or measured by densitometry, using computer software. Previous studies with this design obtained a limit of detection (LoD) of 15 pg/mL and 10 fg/mL in 20 minutes for BT and CT, respectively. Difficulties in obtaining any concentration gradient in the detection of BT, converted this study into a reassessment of this prior design. All attempts to obtain a BT biosensor similar to that developed in the previous study failed to obtain a LoD greater than 10 ?g/mL, and took at least 35 minutes to complete. A similar attempt to recreate the CT biosensor design yielded a LoD no greater than 0.64 ng/mL, but took only 15-20 minutes to complete. The results from this study suggest that the design of the bioassay developed for BT should be reconsidered, and that further studies should be undertaken to consider alternative approaches to this assay.

url: http://hdl.handle.net/1813/1233
date: 2005-05-13
creator:
viewed: 1735
title: 92-172*A Hosta 'Golden Bullion'
abstract:

url: http://hdl.handle.net/1813/1234
date: 2005-05-13
creator:
viewed: 607
title: 92-175*A Hosta 'Color Glory'

abstract:

url: http://hdl.handle.net/1813/1235
date: 2005-05-13
creator:
viewed: 1643
title: 92-186*A Hosta 'Frosted Jade'
abstract:

url: http://hdl.handle.net/1813/1236
date: 2005-05-13
creator:
viewed: 2350
title: 92-187*B Hosta 'Neat Splash Rim'
abstract:

url: http://hdl.handle.net/1813/1237
date: 2005-05-13
creator:
viewed: 1456
title: 94-034*A Hypericum frondosum
abstract:

url: http://hdl.handle.net/1813/1238
date: 2005-05-13
creator:
viewed: 1361
title: 94-179*A Hosta 'Mildred Seaver'
abstract:

url: http://hdl.handle.net/1813/1239
date: 2005-05-13
creator:
viewed: 482
title: 96-126*A Astilbe koreana
abstract:

url: http://hdl.handle.net/1813/1240
date: 2005-05-13
creator:
viewed: 802
title: 97-376*A Hemerocallis 'Siloam Bo Peep' Award of Merit Honorable Mention
abstract:

url: http://hdl.handle.net/1813/1241
date: 2005-05-13
creator:
viewed: 1844

title: 97-378*A Hemerocallis 'Velvet Shadows'
abstract:

url: http://hdl.handle.net/1813/1242
date: 2005-05-13
creator:
viewed: 2023
title: 98-362*A Hemerocallis 'Pookie Bear'
abstract:

url: http://hdl.handle.net/1813/1243
date: 2005-05-13
creator:
viewed: 2788
title: 99-150*A Dryopteris filix-mas 'Cristata Jackson'
abstract:

url: http://hdl.handle.net/1813/1244
date: 2005-05-13
creator:
viewed: 3512
title: 99-154*C Hydrangea serrata 'Blue Deckle'
abstract:

url: http://hdl.handle.net/1813/1245
date: 2005-05-13
creator:
viewed: 2055
title: 99-382*A Hosta 'Hirao Supreme'
abstract:

url: http://hdl.handle.net/1813/1246
date: 2005-05-13
creator:
viewed: 2587
title: 00-413*A Coreopsis 'Tequila Sunrise'
abstract:

url: http://hdl.handle.net/1813/1247
date: 2005-05-13
creator:
viewed: 2699
title: 00-432*A Campanula 'Kent Belle'
abstract:

url: http://hdl.handle.net/1813/1248
date: 2005-05-13
creator:

viewed: 1411
title: 01-288*A Salvia nemorosa 'Caradonna' ISU DIPLOMA
abstract:

url: http://hdl.handle.net/1813/1249
date: 2005-05-13
creator:
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title: 76-785*A Paeonia 'Minnie Shaylor'
abstract:

url: http://hdl.handle.net/1813/1250
date: 2005-05-13
creator:
viewed: 697
title: 77-188*A Clematis viticella
abstract:

url: http://hdl.handle.net/1813/1251
date: 2005-05-13
creator:
viewed: 446
title: 78-262*A Paeonia 'Imperial Divinity'
abstract:

url: http://hdl.handle.net/1813/1252
date: 2005-05-13
creator:
viewed: 843
title: 78-291*A Paeonia 'Moonstone'
abstract:

url: http://hdl.handle.net/1813/1253
date: 2005-05-13
creator:
viewed: 929
title: 78-297*A Paeonia 'Pink Lemonade'
abstract:

url: http://hdl.handle.net/1813/1254
date: 2005-05-13
creator:
viewed: 809
title: 78-312*A Paeonia 'Carrara'
abstract:

url: http://hdl.handle.net/1813/1255
date: 2005-05-13

creator:
viewed: 575
title: 78-438*A Paeonia 'Yellow Dream'
abstract:

url: http://hdl.handle.net/1813/1256
date: 2005-05-13
creator:
viewed: 623
title: 81-046*A Hemerocallis 'Patricia'
abstract:

url: http://hdl.handle.net/1813/1257
date: 2005-05-13
creator:
viewed: 579
title: 81-100*B Coreopsis verticillata
abstract:

url: http://hdl.handle.net/1813/1258
date: 2005-05-13
creator:
viewed: 359
title: 82-123*B Geranium sanguineum var. striatum
abstract:

url: http://hdl.handle.net/1813/1259
date: 2005-05-13
creator:
viewed: 545
title: 83-136*A Geranium clarkei 'Kashmir White'
abstract:

url: http://hdl.handle.net/1813/1260
date: 2005-05-13
creator:
viewed: 691
title: 86-086*A Filipendula palmata 'Elegantissima'
abstract:

url: http://hdl.handle.net/1813/1261
date: 2005-05-13
creator:
viewed: 686
title: 86-087*A Gypsophila paniculata 'Pink Fairy'
abstract:

url: http://hdl.handle.net/1813/1262

date: 2005-05-13
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title: 90-155*A Alstroemeria aurea
abstract:

url: http://hdl.handle.net/1813/1263
date: 2005-05-13
creator:
viewed: 1094
title: 91-170*A Baptisia alba var. alba
abstract:

url: http://hdl.handle.net/1813/1264
date: 2005-05-13
creator:
viewed: 1528
title: 92-010*A Anthericum ramosum
abstract:

url: http://hdl.handle.net/1813/1265
date: 2005-05-13
creator:
viewed: 2706
title: 95-198*A Hosta 'Fall Bouquet'
abstract:

url: http://hdl.handle.net/1813/1266
date: 2005-05-13
creator:
viewed: 982
title: 95-225*A Calamintha nepeta ssp. glandulosa 'White Cloud'
abstract:

url: http://hdl.handle.net/1813/1267
date: 2005-05-13
creator:
viewed: 1089
title: 95-298*A Actinidia polygama
abstract:

url: http://hdl.handle.net/1813/1268
date: 2005-05-13
creator:
viewed: 694
title: 96-133*A Iris xrobusta 'Gerald Darby'
abstract:

url: http://hdl.handle.net/1813/1269
date: 2005-05-13
creator:
viewed: 506
title: 96-249*A Aster integrifolius
abstract:

url: http://hdl.handle.net/1813/1270
date: 2005-05-13
creator:
viewed: 683
title: 96-485*A Hemerocallis 'Raspberry Pixie'
abstract:

url: http://hdl.handle.net/1813/1271
date: 2005-05-13
creator:
viewed: 618
title: 96-585*A Hemerocallis 'Opera Elegance'
abstract:

url: http://hdl.handle.net/1813/1272
date: 2005-05-13
creator:
viewed: 418
title: 97-381*A Iris ensata 'Royal Banner'
abstract:

url: http://hdl.handle.net/1813/1273
date: 2005-05-13
creator:
viewed: 530
title: 97-458*A Hemerocallis 'Heart's Glee'
abstract:

url: http://hdl.handle.net/1813/1274
date: 2005-05-13
creator:
viewed: 560
title: 97-459*A Hemerocallis 'Look at Me'
abstract:

url: http://hdl.handle.net/1813/1275
date: 2005-05-13
creator:
viewed: 631
title: 97-469*A Spiraea xbumalda 'Candle Light'
abstract:

url: http://hdl.handle.net/1813/1276
date: 2005-05-13
creator:
viewed: 533
title: 97-550*A Hemerocallis 'Amy Louise'
abstract:

url: http://hdl.handle.net/1813/1277
date: 2005-05-13
creator:
viewed: 356
title: 97-551*A Hemerocallis 'Attribution'
abstract:

url: http://hdl.handle.net/1813/1278
date: 2005-05-13
creator:
viewed: 712
title: 97-553*A Hemerocallis 'Pouf'
abstract:

url: http://hdl.handle.net/1813/1279
date: 2005-05-13
creator:
viewed: 1049
title: 97-557*A Hemerocallis 'Siloam Show Girl'
abstract:

url: http://hdl.handle.net/1813/1280
date: 2005-05-13
creator:
viewed: 956
title: 98-351*A Hosta 'Cherry Berry'
abstract:

url: http://hdl.handle.net/1813/1281
date: 2005-05-13
creator:
viewed: 573
title: 98-445*A Hemerocallis 'White Dish'
abstract:

url: http://hdl.handle.net/1813/1282
date: 2005-05-13
creator:
viewed: 922
title: 99-065*A Geranium xoxonianum 'Katherine Adele'

abstract:

url: http://hdl.handle.net/1813/1283
date: 2005-05-13
creator:
viewed: 1035
title: 99-071*A Nepeta yunnanensis
abstract:

url: http://hdl.handle.net/1813/1284
date: 2005-05-13
creator:
viewed: 4437
title: 99-124*A Eupatorium 'Bartered Bride'
abstract:

url: http://hdl.handle.net/1813/1285
date: 2005-05-13
creator:
viewed: 2966
title: 99-155*A Hypericum forrestii
abstract:

url: http://hdl.handle.net/1813/1286
date: 2005-05-13
creator:
viewed: 2461
title: 99-303*A Tradescantia (Andersoniana Group) 'Osprey'
abstract:

url: http://hdl.handle.net/1813/1287
date: 2005-05-13
creator:
viewed: 4733
title: 99-325*A Monarda didyma 'Jacob Cline'
abstract:

url: http://hdl.handle.net/1813/1288
date: 2005-05-13
creator:
viewed: 4120
title: 99-372*A Tradescantia (Andersoniana Group) 'Blue Stone'
abstract:

url: http://hdl.handle.net/1813/1289
date: 2005-05-14
creator: Lee, Jennifer
viewed: 3184

title: DESIGN AND OPTIMIZATION OF A BIOSENSOR FOR THE DETECTION AND QUANTIFICATION OF T-LYMPHOCYTES
abstract: In health care, cell enumeration by immunophenotyping has been crucial in diagnosing and treating patients with HIV, leukemia, or bone marrow transplantation. One key use of immunophenotyping is for detection of HIV. The increase in the number of HIV in blood leads to a significant drop in one subset of leukocyte, the T helper cells (CD4 cells), in the patient?s blood. Detection and quantification of CD4 cells are thus important measures for the indication of HIV infection. Many immunophenotyping techniques have been developed in the past but the flow cytometry has stood out as the golden standard. Flow cytometric immunophenotyping uses the receptor proteins present on the T-helper cells, CD3, CD4, and CD45 for quantification. This technique, however, is very costly and not affordable to all health care sectors.
This project investigates a design and optimization of a biosensor that quantifies the amount of T-lymphocytes in human blood. Quantification of T lymphocytes is useful as a positive control in the case of HIV detection and as a determinant of immunological status of the patient during immunosuppressive therapy. A microfluidic biosensor based on liposome signal generation and amplification is adapted to the detection of the T-lymphocytes using two specific sets of antibodies recognizing CD3 and CD45 proteins on the surface of the cells.
This microfluidic biosensor utilizes superparamagnetic beads tagged with CD45 antibody as capture probe and sulforhodamine B entrapping immunoliposomes tagged with CD3 antibody as reporter probe. The assay condition is optimized for the running buffer composition and the flow time resulting in assay times of approximately 10 minutes. Non-specific interactions of the liposomes and beads are measured and reduced by approximately 30% using a blocking solution. The non-specific interactions of the red blood cells are reduced by lysing the red blood cell prior to testing. A dose response curve of varying human blood concentrations is created to show the correlation of the signal with respect to different concentrations of cells. The limit of detection is determined to be 80-220 T-lymphocytes.
The micro-biosensor is designed to be a simple and easy to use device that can be manufactured and operated at low cost and was thus applicable for testing in resource-limited settings. It has a great potential as a tool for detection and quantification of T-lymphocytes since it uses the same biological recognition principles as used in flow cytometry, however, its simplicity and low cost make it an attractive alternative .

url: http://hdl.handle.net/1813/1290
date: 2005-05-16
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title: 00-119*B Sambucus nigra 'Guincho Purple'
abstract:

url: http://hdl.handle.net/1813/1291
date: 2005-05-16
creator:
viewed: 1737
title: 00-174*A Geranium 'Blue Cloud'
abstract:

url: http://hdl.handle.net/1813/1292
date: 2005-05-16
creator:
viewed: 3195
title: 00-188*A Baptisia sphaerocarpa

abstract:

url: http://hdl.handle.net/1813/1293
date: 2005-05-16
creator:
viewed: 2406
title: 00-527*A Heuchera 'Silver Maps'
abstract:

url: http://hdl.handle.net/1813/1294
date: 2005-05-16
creator:
viewed: 2025
title: 00-530*A Hosta 'Loyalist'
abstract:

url: http://hdl.handle.net/1813/1295
date: 2005-05-16
creator:
viewed: 1142
title: 01-278*A Geranium 'Nimbus'
abstract:

url: http://hdl.handle.net/1813/1296
date: 2005-05-16
creator:
viewed: 1746
title: 01-309*A Geranium 'Brookside'
abstract:

url: http://hdl.handle.net/1813/1297
date: 2005-05-16
creator:
viewed: 1593
title: 01-328*A Sempervivum 'Rosie'
abstract:

url: http://hdl.handle.net/1813/1298
date: 2005-05-16
creator:
viewed: 3496
title: 99-407*A Hylotelephium telephium 'Arthur Branch'
abstract:

url: http://hdl.handle.net/1813/1299
date: 2005-05-16
creator:
viewed: 3456

title: 99-396*A Hemerocallis ‘Happy Returns’
abstract:

url: http://hdl.handle.net/1813/1300
date: 2005-05-16
creator:
viewed: 1166
title: 01-330*A Sempervivum arachnoideum ssp. tomentosum ‘Stansfeldii’
abstract:

url: http://hdl.handle.net/1813/1301
date: 2005-05-16
creator:
viewed: 840
title: 02-287*A Veronica ‘St. Gaudens’
abstract:

url: http://hdl.handle.net/1813/1303
date: 2005-05-18
creator:
viewed: 800
title: 02-310*A Geranium ‘Gerwat’
abstract:

url: http://hdl.handle.net/1813/1304
date: 2005-05-18
creator:
viewed: 1008
title: 03-386*A Salvia nemorosa ‘Dear Anja’
abstract:

url: http://hdl.handle.net/1813/1305
date: 2005-05-18
creator:
viewed: 608
title: 72-R-025*A Acanthus spinosus
abstract:

url: http://hdl.handle.net/1813/1306
date: 2005-05-18
creator:
viewed: 654
title: 74-284*C Stachys officinalis
abstract:

url: http://hdl.handle.net/1813/1307
date: 2005-05-18
creator:

viewed: 529
title: 77-486*A Allium schoenoprasum var. sibiricum
abstract:

url: http://hdl.handle.net/1813/1308
date: 2005-05-18
creator:
viewed: 393
title: 82-007*A Clematis apiifolia
abstract:

url: http://hdl.handle.net/1813/1309
date: 2005-05-18
creator:
viewed: 573
title: 83-010*A Rosa 'Applejack'
abstract:

url: http://hdl.handle.net/1813/1310
date: 2005-05-18
creator:
viewed: 718
title: 83-300*B Geranium 'Johnson's Blue'
abstract:

url: http://hdl.handle.net/1813/1311
date: 2005-05-18
creator:
viewed: 356
title: 84-196*B Geranium endressii 'A.T. Johnson'
abstract:

url: http://hdl.handle.net/1813/1312
date: 2005-05-18
creator:
viewed: 686
title: 84-339*C Alchemilla mollis
abstract:

url: http://hdl.handle.net/1813/1313
date: 2005-05-18
creator:
viewed: 581
title: 87-002*E Rosa rugosa 'Alba'
abstract:

url: http://hdl.handle.net/1813/1314
date: 2005-05-18

creator:
viewed: 2501
title: 87-440*A Rosa (Explorer Series) 'Jens Munk'
abstract:

url: http://hdl.handle.net/1813/1315
date: 2005-05-18
creator:
viewed: 1082
title: 88-083*A Pycnanthemum montanum
abstract:

url: http://hdl.handle.net/1813/1316
date: 2005-05-18
creator:
viewed: 1721
title: 88-279*A Hemerocallis altissima
abstract:

url: http://hdl.handle.net/1813/1317
date: 2005-05-18
creator:
viewed: 582
title: 89-151*A Baptisia australis
abstract:

url: http://hdl.handle.net/1813/1318
date: 2005-05-18
creator:
viewed: 1404
title: 91-013*A Hemerocallis minor
abstract:

url: http://hdl.handle.net/1813/1319
date: 2005-05-18
creator:
viewed: 2012
title: 95-050*A Salvia verticillata 'Purple Rain'
abstract:

url: http://hdl.handle.net/1813/1320
date: 2005-05-18
creator:
viewed: 1731
title: 95-078*A Hemerocallis 'Yellow Multiflora'
abstract:

url: http://hdl.handle.net/1813/1321

date: 2005-05-18
creator:
viewed: 1127
title: 95-217*A Hemerocallis 'Little Squiz'
abstract:

url: http://hdl.handle.net/1813/1322
date: 2005-05-18
creator:
viewed: 608
title: 95-218*A Hemerocallis 'Siloam Ribbon Candy'
abstract:

url: http://hdl.handle.net/1813/1323
date: 2005-05-18
creator:
viewed: 1689
title: 95-219*B Hemerocallis 'Lavender Tonic'
abstract:

url: http://hdl.handle.net/1813/1324
date: 2005-05-18
creator:
viewed: 1220
title: 96-060*A Foeniculum vulgare 'Purpurascens'
abstract:

url: http://hdl.handle.net/1813/1325
date: 2005-05-18
creator:
viewed: 635
title: 96-063*A Salvia pratensis
abstract:

url: http://hdl.handle.net/1813/1326
date: 2005-05-18
creator:
viewed: 707
title: 96-064*A Agastache foeniculum
abstract:

url: http://hdl.handle.net/1813/1327
date: 2005-05-18
creator:
viewed: 1991
title: 96-065*A Marrubium cylleneum
abstract:

url: http://hdl.handle.net/1813/1328
date: 2005-05-18
creator:
viewed: 635
title: 96-586*A Hemerocallis 'Swirling Water'
abstract:

url: http://hdl.handle.net/1813/1329
date: 2005-05-18
creator:
viewed: 556
title: 97-451*A Hemerocallis 'Benchmark'
abstract:

url: http://hdl.handle.net/1813/1330
date: 2005-05-18
creator:
viewed: 542
title: 97-452*A Hemerocallis 'Bouquet of Ruffles'
abstract:

url: http://hdl.handle.net/1813/1331
date: 2005-05-18
creator:
viewed: 769
title: 97-454*A Hemerocallis 'Lilac Snow'
abstract:

url: http://hdl.handle.net/1813/1332
date: 2005-05-18
creator:
viewed: 3019
title: 97-455*A Hemerocallis 'Yesterday's Memories' Award of Merit
abstract:

url: http://hdl.handle.net/1813/1333
date: 2005-05-18
creator:
viewed: 2069
title: 97-456*A Hemerocallis 'Button Box'
abstract:

url: http://hdl.handle.net/1813/1334
date: 2005-05-18
creator:
viewed: 2310
title: 97-503*A Echinacea purpurea 'Magnus' Perennial Plant of the Year
abstract:

url: http://hdl.handle.net/1813/1335
date: 2005-05-18
creator:
viewed: 4816
title: 98-193*G Diervilla sessilifolia 'Butterfly'
abstract:

url: http://hdl.handle.net/1813/1336
date: 2005-05-19
creator:
viewed: 4266
title: 00-182*A Tradescantia (Andersoniana Group) 'Blue and Gold'
abstract:

url: http://hdl.handle.net/1813/1337
date: 2005-05-19
creator:
viewed: 1038
title: 02-047*A Hosta 'Warwick Essence'
abstract:

url: http://hdl.handle.net/1813/1338
date: 2005-05-19
creator:
viewed: 869
title: 02-222*A Hosta 'Choo Choo Train'
abstract:

url: http://hdl.handle.net/1813/1339
date: 2005-05-19
creator:
viewed: 575
title: 02-256*A Astrantia major 'Ruby Wedding'
abstract:

url: http://hdl.handle.net/1813/1340
date: 2005-05-19
creator:
viewed: 867
title: 02-385*A Astilbe xarendsii 'Zuster Theresa'
abstract:

url: http://hdl.handle.net/1813/1341
date: 2005-05-19
creator:
viewed: 926
title: 02-409*A Dryopteris crassirhizoma

abstract:

url: http://hdl.handle.net/1813/1342
date: 2005-05-20
creator: Linda, Tsang;Robert, Lo;Kumar, Vivek
viewed: 3460
title: An Analysis of the Consumption Demand Data on The DLA's Lead-time Forecast Accuracy
abstract: The Defense Logistics Agency generates forecasts for demand from military service warehouses (wholesale demand) using a double exponential smoothing (DES) forecasting model. However, the Agency will be moving to a Fourier forecasting model, which explicitly accounts for seasonality in demand data. We found that obtaining additional demand data from the military maintenance centers (consumption demand) will improve lead-time forecast accuracy in both forecasting models. In addition, we found that different incorporations of the consumption demand data are needed depending on the accuracy metric utilized. LMI AND THE DLA WEAPON SYSTEM SUSTAINMENT PROGRAM

url: http://hdl.handle.net/1813/1343
date: 2005-05-20
creator: Lee, Daniel Tse Wen
viewed: 2577
title: Studies Involving the Effect of Organic Solvents on Liposome-based Lateral-flow and Silica-coated Magnetic Bead Assays
abstract: The ubiquitous threat of Escherichia coli (E. coli) O157:H7 as an enterohemorrhagic pathogen to humans has challenged scientists worldwide to develop a biosensor that would accurately and efficiently detect the bacteria in the environment. This research involved modifications made to the liposome-based RNA biosensor developed in Baeumner et al., 2003. The goal was to investigate the effect of alcohols on the lateral-flow assay with the ultimate objective of developing a silica-coated magnetic bead biosensor based on integrated RNA isolation and detection. Both isolation and detection are carried out in the presence of 40 % ethanol, which immobilizes RNA onto silica. Detection is done through hybridization between the target RNA, reporter probe and dye-encapsulating liposome. If successful, this biosensor would be able to isolate E. coli O157:H7 mRNA for the heat shock gene and detect for viable bacteria in one step. The project was thus divided into two segments: The effect of ethanol on the lateral-flow biosensor assay was first investigated, after which the principle of bead assay was studied. Interestingly, it was found that 33 % ethanol in the hybridization buffer and 20 % ethanol in the running buffer created conditions in the lateral-flow assay that increased the overall signal to noise ratio from 1.46 to 3.66, or 2.5 times, when 50 fmol target sequence was used. Further investigations with other target analytes and over a broader range of target concentrations are needed, and will likely lead to an improved standard lateral-flow assay with significantly lowered limits of detection. Secondly, the principle of the integrated RNA isolation and detection bead-assay was proven, and the amount of background RNA and silica-coated magnetic beads optimized. However, the signals obtained were affected negatively by very high background noise and high standard deviations. A great deal of research into this type of assay is still needed in order to transform it into a viable assay.

url: http://hdl.handle.net/1813/1344
date: 2005-05-20
creator: Getz, Malcolm
viewed: 3383
title: Open Scholarship and Research Universities
abstract: Compare the cost per article for publication in commercial journals, not-profit journals, and open-access journals. For universities that support open-archives and open-access journal management software

as part of standard university infrastructure, the financial cost of hosting an additional journal is quite low. Scholars who commit to editing and promoting a journal need to focus primarily on the intellectual tasks with little concern for finances.

url: http://hdl.handle.net/1813/1345
date: 2005-05-20
creator: Pfeffer, Max J.;Parra, Pilar A.
viewed: 2049
title: Immigrants and the Community: Farmworkers with Families
abstract: Second in a series based on the research project ?Integrating the Needs of Immigrant Workers and Rural Communities,? which attempts to inform New York communities about the nature and consequences of increasing immigrant settlement.America's hired farm workforce has changed considerably in the last decade. The most apparent change has been its "latinization" during the past two decades. This is largely a consequence of large numbers of Mexicans coming to the United States to work. Although Mexican immigrants work in numerous industries across the American landscape, they are especially important in agriculture. There has been a growing tendency of farmworkers to settle in rural communities together with their immediate family. But how and to what extent does community integration occur? How do foreigners who have little familiarity with American culture become integrated into the community? Answers to these questions have practical importance to farmers interested in retaining their workforce, service providers working to improve farmworker well-being and communities interested in helping the new residents contribute to community development. To help us understand the factors that both promote and limit the integration of immigrants into rural communities, we chose for study five New York agricultural communities in different economic and social contexts that have relied heavily on hired farm labor. Each community has a minority population of some significance and a history of immigrant farmworkers settling there.

url: http://hdl.handle.net/1813/1346
date: 2005-05-23
creator:
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title: 90-201*A Mentha longifolia ssp. himalaensis
abstract:

url: http://hdl.handle.net/1813/1347
date: 2005-05-23
creator:
viewed: 750
title: 97-076*B Cotinus 'Grace' AM Cory Cup FCC
abstract:

url: http://hdl.handle.net/1813/1350
date: 2005-05-24
creator:
viewed: 870
title: 99-017*A Syringa 'Miss Canada'
abstract:

url: http://hdl.handle.net/1813/1351
date: 2005-05-24

creator:
viewed: 4024
title: 99-390*B Hosta 'Spilt Milk' NANCY MINKS AWARD
abstract:

url: http://hdl.handle.net/1813/1352
date: 2005-05-24
creator:
viewed: 2210
title: 00-643*A Lonicera korolkowii 'Floribunda Blue Velvet' PLANT SELECT WINNER
abstract:

url: http://hdl.handle.net/1813/1353
date: 2005-05-24
creator:
viewed: 1756
title: 01-006*A Aquilegia 'Leprechaun Gold'
abstract:

url: http://hdl.handle.net/1813/1354
date: 2005-05-24
creator:
viewed: 2088
title: 01-041*A Viburnum dilatatum 'Asian Beauty'
abstract:

url: http://hdl.handle.net/1813/1355
date: 2005-05-24
creator:
viewed: 1168
title: 01-114*A Heuchera 'Coral Bouquet'
abstract:

url: http://hdl.handle.net/1813/1356
date: 2005-05-24
creator:
viewed: 2600
title: 01-116*A Ligularia japonica
abstract:

url: http://hdl.handle.net/1813/1357
date: 2005-05-24
creator:
viewed: 2116
title: 01-254*A Physocarpus opulifolius 'Monlo' DIABLO
abstract:

url: http://hdl.handle.net/1813/1358

date: 2005-05-24
creator:
viewed: 1775
title: 01-272*C Hypericum frondosum 'Sunburst'
abstract:

url: http://hdl.handle.net/1813/1359
date: 2005-05-24
creator:
viewed: 1526
title: 01-344*A Robinia pseudoacacia 'Purple Robe'
abstract:

url: http://hdl.handle.net/1813/1360
date: 2005-05-24
creator:
viewed: 1735
title: 01-372*A Symphoricarpos xdoorenbosii 'White Hedge'
abstract:

url: http://hdl.handle.net/1813/1361
date: 2005-05-24
creator:
viewed: 766
title: 02-028*C Spiraea albiflora
abstract:

url: http://hdl.handle.net/1813/1362
date: 2005-05-24
creator:
viewed: 1108
title: 02-038*A Philadelphus 'Snowbelle'
abstract:

url: http://hdl.handle.net/1813/1363
date: 2005-05-24
creator:
viewed: 1229
title: 02-048*A Solidago 'Goldkind'
abstract:

url: http://hdl.handle.net/1813/1364
date: 2005-05-24
creator:
viewed: 584
title: 02-063*A Kolkwitzia amabilis 'Rosea'
abstract:

url: http://hdl.handle.net/1813/1365
date: 2005-05-24
creator:
viewed: 1138
title: 02-106*A Philadelphus 'Pekphil' WHITE ROCK
abstract:

url: http://hdl.handle.net/1813/1366
date: 2005-05-24
creator:
viewed: 611
title: 02-122*A Crataegus punctata 'Ohio Pioneer'
abstract:

url: http://hdl.handle.net/1813/1367
date: 2005-05-24
creator:
viewed: 751
title: 02-196*A Sambucus ebulus
abstract:

url: http://hdl.handle.net/1813/1368
date: 2005-05-24
creator:
viewed: 450
title: 02-223*A Hosta 'Wolverine'
abstract:

url: http://hdl.handle.net/1813/1369
date: 2005-05-24
creator:
viewed: 617
title: 02-224*A Hosta 'June'
abstract:

url: http://hdl.handle.net/1813/1370
date: 2005-05-24
creator:
viewed: 715
title: 02-246*B Spiraea densiflora 'Monvis' SUMMER SONG
abstract:

url: http://hdl.handle.net/1813/1371
date: 2005-05-24
creator:
viewed: 968
title: 02-300*A Syringa yunnanensis 'Prophecy'
abstract:

url: http://hdl.handle.net/1813/1372
date: 2005-05-24
creator:
viewed: 616
title: 02-357*A Salix caprea 'Variegata'
abstract:

url: http://hdl.handle.net/1813/1373
date: 2005-05-24
creator:
viewed: 706
title: 02-361*E Hypericum androsaemum 'Albury Purple'
abstract:

url: http://hdl.handle.net/1813/1374
date: 2005-05-24
creator:
viewed: 842
title: 02-382*C Buddleia davidii 'Bonnie'
abstract:

url: http://hdl.handle.net/1813/1375
date: 2005-05-24
creator:
viewed: 473
title: 02-404*A Echinacea purpurea 'Rubinstern'
abstract:

url: http://hdl.handle.net/1813/1376
date: 2005-05-24
creator:
viewed: 743
title: 02-407*A Athyrium filix-femina var. angustum 'Lady in Red'
abstract:

url: http://hdl.handle.net/1813/1377
date: 2005-05-24
creator:
viewed: 838
title: 03-397*A Ligularia dentata 'Othello'
abstract:

url: http://hdl.handle.net/1813/1378
date: 2005-05-24
creator:
viewed: 988
title: 03-401*A Primula xbulleesiana

abstract:

url: http://hdl.handle.net/1813/1379
date: 2005-05-24
creator:
viewed: 1067
title: 03-484*A Monarda didyma 'Jacob Cline'
abstract:

url: http://hdl.handle.net/1813/1380
date: 2005-05-24
creator:
viewed: 616
title: 77-454*A Castanea mollissima
abstract:

url: http://hdl.handle.net/1813/1381
date: 2005-05-24
creator:
viewed: 872
title: 79-114*A Cornus kousa
abstract:

url: http://hdl.handle.net/1813/1382
date: 2005-05-24
creator:
viewed: 520
title: 82-423*B Cladrastis kentukea
abstract:

url: http://hdl.handle.net/1813/1383
date: 2005-05-24
creator:
viewed: 513
title: 83-203*A Fagus sylvatica
abstract:

url: http://hdl.handle.net/1813/1384
date: 2005-05-24
creator:
viewed: 687
title: 83-331*A Fagus sylvatica 'Asplenifolia'
abstract:

url: http://hdl.handle.net/1813/1385
date: 2005-05-24
creator:
viewed: 834

title: 83-438*A Cornus drummondii
abstract:

url: http://hdl.handle.net/1813/1386
date: 2005-05-24
creator:
viewed: 433
title: 84-224*A Robinia pseudoacacia 'Frisia'
abstract:

url: http://hdl.handle.net/1813/1387
date: 2005-05-24
creator:
viewed: 392
title: 84-225*A Robinia pseudoacacia 'Rozynskyana'
abstract:

url: http://hdl.handle.net/1813/1388
date: 2005-05-24
creator:
viewed: 532
title: 84-350*A Fagus sylvatica 'Laciniata'
abstract:

url: http://hdl.handle.net/1813/1389
date: 2005-05-24
creator:
viewed: 352
title: 85-383*A Symplocos paniculata
abstract:

url: http://hdl.handle.net/1813/1390
date: 2005-05-24
creator:
viewed: 1016
title: 86-327*A Fagus sylvatica 'Purpurea Tricolor'
abstract:

url: http://hdl.handle.net/1813/1391
date: 2005-05-24
creator:
viewed: 1909
title: 88-012*A Geranium macrorrhizum 'Bevan's Variety'
abstract:

url: http://hdl.handle.net/1813/1392
date: 2005-05-24
creator:

viewed: 801
title: 88-061*A Lysimachia ephemerum
abstract:

url: http://hdl.handle.net/1813/1393
date: 2005-05-24
creator:
viewed: 1645
title: 88-128*A Pinus strobus
abstract:

url: http://hdl.handle.net/1813/1394
date: 2005-05-24
creator:
viewed: 2356
title: 88-135*C Crataegus crus-galli
abstract:

url: http://hdl.handle.net/1813/1395
date: 2005-05-24
creator:
viewed: 1461
title: 88-137*A Crataegus viridis 'Winter King' Gold Medal
abstract:

url: http://hdl.handle.net/1813/1396
date: 2005-05-24
creator:
viewed: 1372
title: 89-079*A Ostrya virginiana
abstract:

url: http://hdl.handle.net/1813/1397
date: 2005-05-24
creator:
viewed: 838
title: 89-184*A Euphorbia griffithii 'Fireglow'
abstract:

url: http://hdl.handle.net/1813/1398
date: 2005-05-24
creator:
viewed: 1153
title: 91-191*A Fagus sylvatica
abstract:

url: http://hdl.handle.net/1813/1399
date: 2005-05-24

creator:
viewed: 1315
title: 91-219*A Phellodendron amurense
abstract:

url: http://hdl.handle.net/1813/1400
date: 2005-05-24
creator:
viewed: 2820
title: 94-175*A Athyrium otophorum
abstract:

url: http://hdl.handle.net/1813/1401
date: 2005-05-24
creator:
viewed: 1238
title: 95-095*A Fagus sylvatica 'Purple Fountain'
abstract:

url: http://hdl.handle.net/1813/1402
date: 2005-05-24
creator:
viewed: 765
title: 95-220*A Hemerocallis 'Sunday Gloves'
abstract:

url: http://hdl.handle.net/1813/1403
date: 2005-05-24
creator:
viewed: 549
title: 96-096*G Physocarpus opulifolius 'Snowfall'
abstract:

url: http://hdl.handle.net/1813/1404
date: 2005-05-24
creator:
viewed: 793
title: 96-105*A Adiantum pedatum 'Miss Sharples'
abstract:

url: http://hdl.handle.net/1813/1405
date: 2005-05-24
creator:
viewed: 856
title: 96-140*A Koelreuteria paniculata Low Growing Form
abstract:

url: http://hdl.handle.net/1813/1406

date: 2005-05-24
creator:
viewed: 730
title: 96-269*A Cornus xdunbarii
abstract:

url: http://hdl.handle.net/1813/1407
date: 2005-05-24
creator:
viewed: 866
title: 96-270*A Cornus obliqua
abstract:

url: http://hdl.handle.net/1813/1408
date: 2005-05-24
creator:
viewed: 1283
title: 96-275*A Cornus glabrata
abstract:

url: http://hdl.handle.net/1813/1409
date: 2005-05-24
creator:
viewed: 461
title: 96-503*A Heuchera 'Smokey Rose'
abstract:

url: http://hdl.handle.net/1813/1410
date: 2005-05-24
creator:
viewed: 516
title: 97-151*A Penstemon 'Prairie Dusk'
abstract:

url: http://hdl.handle.net/1813/1411
date: 2005-05-24
creator:
viewed: 714
title: 97-163*A Robinia pseudoacacia 'Bessoniana'
abstract:

url: http://hdl.handle.net/1813/1412
date: 2005-05-24
creator:
viewed: 348
title: 97-165*A Robinia xmargaretta 'Pink Cascade'
abstract:

url: http://hdl.handle.net/1813/1413
date: 2005-05-24
creator:
viewed: 530
title: 97-166*A Robinia pseudoacacia 'Unifolia'
abstract:

url: http://hdl.handle.net/1813/1414
date: 2005-05-24
creator:
viewed: 680
title: 97-167*B Robinia xslavinii 'Hillieri'
abstract:

url: http://hdl.handle.net/1813/1415
date: 2005-05-24
creator:
viewed: 622
title: 97-205*A Hemerocallis 'Siloam Bye Lo'
abstract:

url: http://hdl.handle.net/1813/1416
date: 2005-05-24
creator:
viewed: 740
title: 97-297*A Malus 'Robinson'
abstract:

url: http://hdl.handle.net/1813/1417
date: 2005-05-24
creator:
viewed: 830
title: 97-345*A Hemerocallis longituba
abstract:

url: http://hdl.handle.net/1813/1418
date: 2005-05-24
creator:
viewed: 408
title: 97-468*A Spiraea 'Snow White'
abstract:

url: http://hdl.handle.net/1813/1419
date: 2005-05-24
creator:
viewed: 407
title: 97-471*E Spiraea xbumalda 'Crispa'
abstract:

url: http://hdl.handle.net/1813/1420
date: 2005-05-24
creator:
viewed: 577
title: 97-487*F Hydrangea arborescens 'Annabelle' GOLD MEDAL
abstract:

url: http://hdl.handle.net/1813/1421
date: 2005-05-24
creator:
viewed: 669
title: 97-490*C Potentilla fruticosa 'Gold Drop'
abstract:

url: http://hdl.handle.net/1813/1422
date: 2005-05-24
creator:
viewed: 609
title: 97-507*A Hemerocallis 'Girl Scout'
abstract:

url: http://hdl.handle.net/1813/1423
date: 2005-05-24
creator:
viewed: 1298
title: Hemerocallis 'Prairie Moonlight'
abstract:

url: http://hdl.handle.net/1813/1424
date: 2005-05-24
creator:
viewed: 513
title: 97-512*C Potentilla fruticosa 'McKay's White'
abstract:

url: http://hdl.handle.net/1813/1425
date: 2005-05-24
creator:
viewed: 776
title: 97-524*A Hemerocallis 'So Sweet'
abstract:

url: http://hdl.handle.net/1813/1426
date: 2005-05-24
creator:
viewed: 755
title: 97-588*J Viburnum dentatum 'Ralph Senior' AUTUMN JAZZ

abstract:

url: http://hdl.handle.net/1813/1427
date: 2005-05-24
creator:
viewed: 382
title: 97-599*B Syringa Xswegiflexa
abstract:

url: http://hdl.handle.net/1813/1428
date: 2005-05-24
creator:
viewed: 540
title: 98-111*A Philadelphus xlemoinei 'Manteau d'Hermine'
abstract:

url: http://hdl.handle.net/1813/1429
date: 2005-05-24
creator:
viewed: 587
title: 98-175*A Asclepias tuberosa 'Hello Yellow'
abstract:

url: http://hdl.handle.net/1813/1430
date: 2005-05-24
creator:
viewed: 759
title: 98-186*C Malus 'Prairie Maid'
abstract:

url: http://hdl.handle.net/1813/1431
date: 2005-05-24
creator:
viewed: 600
title: 98-253*A Picea glehnii
abstract:

url: http://hdl.handle.net/1813/1432
date: 2005-05-24
creator:
viewed: 591
title: 98-367*A Hemerocallis 'Missouri Moon'
abstract:

url: http://hdl.handle.net/1813/1433
date: 2005-05-24
creator:
viewed: 416

title: 98-438*A Hemerocallis 'Siloam Double Classic'
abstract:

url: http://hdl.handle.net/1813/1434
date: 2005-05-24
creator:
viewed: 892
title: 99-137*A Alnus glutinosa
abstract:

url: http://hdl.handle.net/1813/1435
date: 2005-05-24
creator:
viewed: 3376
title: 99-288*A Malus 'Makamik'
abstract:

url: http://hdl.handle.net/1813/1436
date: 2005-05-24
creator:
viewed: 3107
title: 99-322*A Iris sibirica 'Baby Sister'
abstract:

url: http://hdl.handle.net/1813/1437
date: 2005-05-24
creator:
viewed: 3105
title: 99-412*A Hemerocallis 'Jason Salter'
abstract:

url: http://hdl.handle.net/1813/1438
date: 2005-05-24
creator:
viewed: 4065
title: 99-414*A Hemerocallis 'Chicago Brave'
abstract:

url: http://hdl.handle.net/1813/1439
date: 2005-05-24
creator:
viewed: 4024
title: 99-432*A Aquilegia 'Mellow Yellow'
abstract:

url: http://hdl.handle.net/1813/1443
date: 2005-05-29
creator:

viewed: 3612
title: Austrian Constitution of 1867: Fundamental Law Concerning the General Rights of Citizens
abstract: 5 pages, also includes "Law Altering the Fundamental Law of February 26, 1861 Concerning Imperial Representation"

url: http://hdl.handle.net/1813/1444
date: 2005-05-29
creator: Ferdinand I, Emperor of Austria
viewed: 2335
title: Proclamation of Ferdinand to Jellachich and the Croats, June 1848
abstract: 6 pages Austrian (Habsburg) Emperor Ferdinand I's reprimand of Croatian Ban Jelacic (Jellachich) and his supporters for attempting separation from the Hungarian crown

url: http://hdl.handle.net/1813/1445
date: 2005-05-30
creator:
viewed: 3067
title: The Hungarian-Croatian Compromise of 1868 (The Nagodba)
abstract: 21 pages

url: http://hdl.handle.net/1813/1446
date: 2005-05-30
creator:
viewed: 4137
title: Hungarian Declaration of Independence, 1849
abstract: 14 pages

url: http://hdl.handle.net/1813/1447
date: 2005-05-30
creator:
viewed: 2976
title: Presentation of a Committee of the Hungarian Diet to Ferdinand, 1848
abstract: 2 pagesAppeal of Hungarian Diet to Austrian Emperor Ferdinand I to help put a stop to Croat rebellion

url: http://hdl.handle.net/1813/1448
date: 2005-05-30
creator: Kossuth, Lajos
viewed: 1913
title: Kossuth's Speech at Dinner Sponsored by U.S. Congress, 1852
abstract: 10 pagesFormer leader of revolutionary Hungary (1848-1849), Lajos Kossuth (in exile), appeals to US Congress to help Hungary and other nations in their struggle against European (neo-)absolutism

url: http://hdl.handle.net/1813/1449
date: 2005-05-30
creator: Kossuth, Lajos
viewed: 2930
title: Kossuth's Address to the People of the United States, 1850

abstract: 16 pages Former regent of revolutionary Hungary (1848-1849), Lajos Kossuth, writes an address to the people of the US following the defeat of Hungarian revolutionary forces. Kossuth praises the ideas of liberty and independence and compares Hungary's goals and ambitions to those of the Americans.

url: http://hdl.handle.net/1813/1450
date: 2005-05-30
creator: Marshall, Joseph
viewed: 2063
title: Joseph Marshall, Travels through Germany, Russia, and Poland, 1769-1770
abstract: 37 pages Silesia--Breslaw--Journey to Berlin--The Country--Agriculture--Description of Berlin--Present State of the King of Prussia's Forces, Revenues, &c.--Saxony--Leipsick-Dresden--State of the Electorate

url: http://hdl.handle.net/1813/1451
date: 2005-05-30
creator: Masaryk, Tomas
viewed: 2066
title: Independent Bohemia, 1915
abstract: 16 pages Confidential memorandum from 1915 in which Tomas Masaryk argues for the dismemberment of Austria and the creation of an independent Bohemia

url: http://hdl.handle.net/1813/1452
date: 2005-06-01
creator: Mason, Paul Andrew
viewed: 2711
title: MOLECULAR AND GENETIC INVESTIGATIONS OF ALUMINUM TOLERANCE IN WHEAT (TRITICUM AESTIVUM) AND MAIZE (ZEA MAYS)
abstract: Aluminum (Al) toxicity is the primary limiting factor of crop production on acid soils, which affect much of the earth's arable lands. Traditional plant breeding has been successful in improving crop tolerance to Al toxicity. However, further improvements in crop aluminum tolerance will require a deeper understanding of the underlying molecular and physiological mechanisms. Hence, the research described in this thesis focused on the genetic and molecular basis for aluminum tolerance in wheat and maize.
In wheat, two approaches were taken to attempt to isolate Al tolerance genes/proteins. A proteomics-based approach using wheat deletion lines around the major Al tolerance locus was unsuccessful in identifying Al tolerance proteins associated with tolerance. An alternate approach focused on the isolation of putative malate transporters of the CLC (chloride channel) channel family, as wheat Al tolerance is based on Al-activated root malate exudation. Eight representatives of this family were cloned from the Al tolerant wheat cultivar Atlas 66; however, genetic analysis revealed that none of these genes were linked to the wheat Al tolerance locus. The CLC genes exhibit widely different tissue and Al responsive gene expression patterns, suggesting different functions for some of these CLCs. Phylogenetic analysis revealed that the cloned TaCLCs represent only a portion of the entire CLC family present in wheat. In maize, a quantitative statistical analysis of aluminum tolerance was conducted on recombinant inbred lines of the intermated B73 x Mo17 (IBM) population. Five quantitative trait loci (QTL) were identified using composite interval mapping as having a significant impact on Al tolerance. These five regions were not orthologous to genomic regions associated with Al tolerance in wheat, rice, sorghum, rye, or barley. In three QTL, Mo17, which has an extremely high Al-activated root citrate release, contributes the superior allele, and these QTL are likely to contribute to that mechanism. In the two QTL in which B73, which has virtually no citrate release, contributes the superior allele tolerance is likely conferred through an alternative mechanism.

url: http://hdl.handle.net/1813/1453
date: 2005-06-02
creator: Dervisevic, Hase
viewed: 2100
title: Years to Forget: Memoirs of a Forgotten War
abstract: 3 pages Brief memoir of a Bosnian man who was among the supporters of Fikret Abdic (Babo) during the Wars of Yugoslav Succession in the 1990s. Babo's supporters--although Muslims themselves for the most part--fought the Bosnian Muslim army that was seeking Bosnia's independence.

url: http://hdl.handle.net/1813/1454
date: 2005-06-02
creator: Carnegie Commission
viewed: 3622
title: Carnegie Report, the Greek Army and Bulgarian Peasants during the Second Balkan War, 1913
abstract: 21 pages Deals with the Greek Army and Bulgarian peasants during the Second Balkan War. Includes letters from Greek soldiers and accounts of Bulgarian villagers reporting atrocities committed by Greeks and Serbs in occupied areas.

url: http://hdl.handle.net/1813/1455
date: 2005-06-02
creator: Carnegie Commission
viewed: 3324
title: Carnegie Report, Macedonian Muslims during the Balkan Wars, 1912
abstract: 11 pages Reports of atrocities and slights against the Muslim population of Macedonia by the Greek, Bulgarian and Serb armies and administrations.

url: http://hdl.handle.net/1813/1456
date: 2005-06-02
creator: Carnegie Commission
viewed: 2833
title: Carnegie Report, The Serbian Army during the Second Balkan War, 1913
abstract: 11 pages Report including eyewitness testimonies relating to the conduct of the Serbian Army during the Second Balkan War (atrocities against Bulgarians and others). Also deals with atrocities committed by and against other belligerents and villagers (Greeks, Bulgarians, Turks).

url: http://hdl.handle.net/1813/1457
date: 2005-06-02
creator: Kurth, Martin
viewed: 3976
title: Using MARC Repurposing to Initiate a Metadata Management Design
abstract:

url: http://hdl.handle.net/1813/1469
date: 2005-06-13
creator: Calhoun, Karen
viewed: 1894
title: Lists, Catalogs and Portals: Models and Tools for E-Resource Access

abstract: Describes a mumber of methods for accessing a library's electronic resources, including aggregator databases, SerialsSolutions data, portals, federated searching, reference linking, and OpenURL.

url: http://hdl.handle.net/1813/1470
date: 2005-06-13
creator: Wicks, Scott;Calhoun, Karen
viewed: 4481
title: Technology, Process Redesign, and the Evolving Role of Technical Services
abstract: Discusses the reorganization of technical services and development of tools (including CUL's Integrated Tool for Selection and Ordering (ITSO CUL) acquisitions tool) at Cornell University Library to create efficiencies for providing library users with faster access to materials.

url: http://hdl.handle.net/1813/1471
date: 2005-06-13
creator: Calhoun, Karen
viewed: 3294
title: Curves Ahead! A Sunday Driver's Tour of Metadata, Metasearch, and Open Linking
abstract: Provides an overview of metadata, federated searching, and reference linking.

url: http://hdl.handle.net/1813/1472
date: 2005-06-13
creator: Calhoun, Karen
viewed: 3581
title: User-Centered Services: Information Experts, Interface and Content in the Virtual Library
abstract: Discusses the need for closely tying together library operations and services so their connection appears seamless to the library user.

url: http://hdl.handle.net/1813/1473
date: 2005-06-13
creator: Calhoun, Karen
viewed: 2607
title: Libraries and Librarians Responding to Change: Transitions and Emerging Priorities
abstract: Discusses the environment in which libraries, especially technical services departments, find themselves in in the early twenty-first century, how they need to change to succeed in that environment, and how to best manage that change.

url: http://hdl.handle.net/1813/1474
date: 2005-06-13
creator: Calhoun, Karen
viewed: 3907
title: E-Journal Access Using the Catalog, Federated Search, and Reference Linking Systems
abstract: Discusses the use of a variety of means to search electronic journals, including via the library catalog, through federated searching, and through reference linking.

url: http://hdl.handle.net/1813/1475
date: 2005-06-13
creator: Noid, William
viewed: 4031

title: The (Semi-)Classical Vibrational Echo
abstract: The ultrafast vibrational echo experiment is one of a modern generation of nonlinear coherent optical spectroscopies probing the nuclear dynamics of condensed phases. The vibrational echo is the vibrational analog of the NMR spin echo and selectively eliminates inhomogeneous broadening from the echo spectrum, providing direct information about the timescale of dynamics within a sample. Echo experiments performed by the Fayer group at Stanford University on carbonmonoxy myoglobin discriminate between the dynamic lineshapes of the A states of MbCO. By performing classical molecular dynamics simulations and using nonlinear optical response theory, we have identified the microscopic origins of these states based upon agreement between the experimental vibrational echo decays of the states and echo decays calculated for two distinct structures observed within simulation. We have analysed the properties of the vibrational echo response within the framework of classical mechanics. We have discovered that van Kampen's objection to nonlinear response theory is particularly significant in classical mechanics, where we have shown that the classical echo response function describing the experimental signal diverges in time for a thermal ensemble of noninteracting anharmonic oscillators. We have interpreted the dephasing and rephasing of the vibrational echo experiment in terms of a classical picture which also identifies the classical analogs of quantum mechanical double-sided Feynman diagrams. We have investigated the role of resonant coupling on the quantum mechanical vibrational echo at zero temperature and have analytically taken the classical limit of this expression to investigate the effect of resonance on classical echoes. Finally, we have developed a formalism for utilising the semiclassical Herman-Kluk propagator in the calculation of nonlinear response functions. Applying this formalism we have demonstrated that, for a thermal ensemble of non-interacting Morse oscillators, nearly quantitatively exact approximations to the quantum mechanical vibrational echo signal may be calculated using classical trajectories.NSF - graduate research fellowship, NSF - IGERT fellowship (Grant DGE-9870681), NSF CHE-0105623, NSF CHE-0413992, petroleum research fund of the American Chemical Society

url: http://hdl.handle.net/1813/1476
date: 2005-06-13
creator: Braig, Stephan
viewed: 2724
title: Electron Transport Through Nanoscopic Structures
abstract: This doctoral dissertation is concerned with modeling electron transport through nanoscopic structures, such as quantum dots, metal particles, or molecules.

In Chapter 2, we consider statistical correlations between the heights of conductance peaks corresponding to two different levels in a Coulomb-blockaded quantum dot. Correlations exist for two peaks at the same magnetic field if the field does not fully break time-reversal symmetry as well as for peaks at different values of a magnetic field that fully breaks time-reversal symmetry.

In Chapter 3, we present a density-matrix rate-equation approach to sequential tunneling through a metal particle weakly coupled to ferromagnetic leads. Our formalism is valid for an arbitrary number of electrons on the dot, for an arbitrary angle between the polarization directions of the leads, and with or without spin-orbit scattering on the metal particle. Interestingly, we find that the density-matrix description may be necessary even for metal particles with unpolarized leads if three or more single-electron levels contribute to the transport current and electron-electron interactions in the metal particle are described by the `universal interaction Hamiltonian'.

In Chapters 4 and 5, we consider transport through molecular devices with strong coupling to a single vibrational mode for the case that the vibration is damped by coupling to the environment. We focus on the weak tunneling limit, for which a rate-equation approach is valid. The role of the environment can be characterized by a frequency-dependent frictional damping term and corresponding resonance frequency shift. We calculate current-voltage curves in Chapter 4 and find qualitative agreement between our theory

and recent experiments on C_{60} single-molecule devices. In Chapter 5, we see that, depending on how the characteristic length scales of the van der Waals and electrostatic interaction of the molecule with the environment compare to each other, orthogonality catastrophe may appear or disappear, resulting in a smooth or discontinuous current-voltage curve, respectively.
Finally, in Chapter 6, we investigate the influence of electron-phonon coupling on the current through a metallic single-walled carbon nanotube. In particular, we consider the high-energy optical and zone-boundary phonons and calculate an effective high-bias electron scattering rate, which is close to the experimentally observed value.Support by the Cornell Center for Materials Research (CCMR) under NSF grant no. DMR 0079992.

url: http://hdl.handle.net/1813/1477
date: 2005-06-14
creator: Snapp, S. S.;Drinkwater, L. E.
viewed: 2572
title: Nutrients in agroecosystems: Rethinking the management paradigm
abstract: Agricultural intensification has greatly increased the productive capacity of agroecosystems, but has had unintended environmental consequences including degradation of soil and water resources, and alteration of biogeochemical cycles. Current nutrient management strategies aim to deliver soluble inorganic nutrients directly to crops and have uncoupled carbon, nitrogen and phosphorus cycles in space and time. As a result, agricultural ecosystems are maintained in a state of nutrient saturation and are inherently leaky because chronic surplus additions of nitrogen and phosphorus are required to meet yield goals. Significant reductions of nutrient surpluses can only be achieved by managing a variety of intrinsic ecosystem processes at multiple scales to re-couple elemental cycles. Rather than focusing solely on soluble, inorganic plant-available pools, an ecosystem-based approach would seek to optimize organic and mineral reservoirs with longer mean residence times that can be accessed through microbially- and plant-mediated processes. Strategic use of varied nutrient sources, including inorganic fertilizers, combined with increases in plant diversity aimed at expanding the functional roles of plants in agroecosystems will help restore desired agroecosystem functions. To develop crops that can thrive in this environment, selection of cultivars and their associated microorganisms that are able to access a range of nutrient pools will be critical. Integrated management of biogeochemical processes that regulate the cycling of nutrients and carbon combined with increased reservoirs more readily retained in the soil will greatly reduce the need for surplus nutrient additions in agriculture.

url: http://hdl.handle.net/1813/1478
date: 2005-06-14
creator: Chandler, Adam
viewed: 4892
title: Update on DLF Electronic Resource Management Initiative (ERMI), with Focus on XML Schema for E-Resource Licenses
abstract: Provides an overview of the Digital Library Federation's (DLF) E-Resource Management Initiative (ERMI) and the development of Electronic Resource Management (ERM) systems using XML. Includes a discussion of an investigation into the metadata associated with electronic resource licenses.

url: http://hdl.handle.net/1813/1479
date: 2005-06-14
creator: Kurth, Martin
viewed: 1837
title: Three Years Later: Lessons Learned from Establishing a Metadata Service
abstract: Discusses the development of a metadata services unit at the Cornell University Library.

url: http://hdl.handle.net/1813/1480
date: 2005-06-14
creator: Kurth, Martin
viewed: 3811
title: A Practical Introduction to XML in Libraries
abstract: Gives a functional overview of XML, discusses one use of XML at Cornell, describes the conversion of MARC to XML, and shows what a Dublin Core XML record looks like.

url: http://hdl.handle.net/1813/1481
date: 2005-06-15
creator: Rupp, Nathan;Banush, David
viewed: 2332
title: Staying Afloat in a Sea of E-Journals: An Automated Process for Cataloging Electronic Serials
abstract: Provides an overview of Cornell's method for using automatically generated MARC metadata from vendors such as SerialsSolutions to create library catalog records for electronic journals.

url: http://hdl.handle.net/1813/1482
date: 2005-06-16
creator: Calhoun, Karen
viewed: 4007
title: Catalogs and Portals: Models and Tools for Discovery and Access
abstract: Provides an overview of systems for accessing library resources, including catalogs and portals. Specifically discusses Endeavor's ENCompass product and its implementation at Cornell University Library.

url: http://hdl.handle.net/1813/1483
date: 2005-06-16
creator: Rupp, Nathan;Paulson, Joy
viewed: 3072
title: Opportunities for Collaboration: The Hearth Project
abstract: Provides an overview of the cross-functional team approach to the development of the HEARTH (Home Economics Archive: Research, Tradition and History) project at Cornell University's Mann Library. HEARTH's development involved staff from the Library's public services, technical services, collection development, information technology, and preservation departments.

url: http://hdl.handle.net/1813/1484
date: 2005-06-16
creator: Wicks, Scott
viewed: 4479
title: One-Step Shopping, One-Stop Shipping: ITSO CUL
abstract: Discusses ITSO CUL (Integrated Tool for Selection and Ordering), a software program designed at Cornell University Library to facilitate improved acquisiton of library materials.

url: http://hdl.handle.net/1813/1485
date: 2005-06-17
creator: Viele, Pat
viewed: 2137

title: Tips for Evaluating Web Sites
abstract: Presented at the summer meeting of the American Association of Physics Teachers in 2002For better or worse, the web has become an integral part of our lives. As a central repository for information, the web can greatly enrich institutions that have limited resources at their disposal. The good news is that the size of the web is estimated at three-billion documents. That is also the bad news. The sheer size of the monster gives one pause. How can one possibly find relevant information in the morass? More importantly, how can one evaluate the information found? Help is readily available.

url: http://hdl.handle.net/1813/1486
date: 2005-06-17
creator: Viele, Pat
viewed: 2986
title: Sample Web Site Evaluation Form
abstract: This is a sample form for the purpose of evaluating a web site.

url: http://hdl.handle.net/1813/1487
date: 2005-06-19
creator: Viele, Pat
viewed: 3184
title: Understanding the Research and Teaching Needs of Physics Faculty
abstract: Traditionally, physicists have not been big users of libraries. Now that so much of the information they need is on-line, interactions between faculty and librarians have become few and far between. Here are some of the ways that I have built connections with the physics community at Cornell and beyond.

url: http://hdl.handle.net/1813/1488
date: 2005-06-20
creator: Variano, Evan
viewed: 3818
title: QUANTITATIVE VISUALIZATION OF CARBON DIOXIDE GAS TRANSFER AT A TURBULENT FREE SURFACE
abstract: Advisor = Edwin A. CowenWe study the aqueous-phase side of the transfer of carbon dioxide gas across an air-water interface. Quantitative imaging techniques are used to directly visualize the physical processes which determine the average gas transfer rate. The interface is a free surface in the absence of mean shear, with turbulence generated on the water side, well away from the free surface, which then transports itself to the free surface. This turbulence is generated far beneath the free surface by an array of upward-pointing synthetic jets which are each driven according to independent random time series. We show that this method of turbulence generation is superior to the traditional grid-stirred tank in that it exhibits weaker mean secondary flows.
Using Laser Induced Fluorescence (LIF) and Particle Image Velocimetry (PIV) we measure simultaneous concentration and velocity fields, respectively. These are measured in planar fields perpendicular to and intersecting the free surface. From these we calculate turbulent statistics of interest. Namely, the vertical profiles of mean and fluctuating velocity magnitudes, momentum dissipation rate, spatial power spectra for velocity and concentration, and the turbulent mass flux.
Examination of the turbulent mass flux field reveals that downward-traveling fluid, which leaves the concentration boundary layer at the surface and enters the bulk, is responsible for the majority of the gas transfer. This is in contrast to the commonly held view that upward-traveling fluid from the bulk dominates gas transfer. The spectrum of the turbulent mass flux field is nearly flat, showing that motions of all sizes in the inertial subrange contribute equally to the mass transfer. This resolves the longstanding question about

which size eddies are responsible for gas transfer.This work was supported by: NSF CAREER Grant CTS-0093794, NSF IGERT Site Grant DGE-9870631, and NSF GK-12 Site Grant 0231913. Any opinions, findings, and conclusions or recommendations are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.

url: http://hdl.handle.net/1813/1489
date: 2005-06-20
creator: Kurth, Martin
viewed: 2870
title: Implementing "Find Articles": A Low Altitude View of Metasearching
abstract: Provides an overfiew of "Find Articles," Cornell University Library's federated searching solution.

url: http://hdl.handle.net/1813/1490
date: 2005-06-20
creator: Calhoun, Karen
viewed: 4528
title: Librarians, Learning, and Creativity: A Boundary-Breaking Perspective
abstract: In the increasingly interconnected world of the Web, in which information seekers want to work self-sufficiently, how can librarians continue to contribute to saving time and advancing the state of knowledge? Taking the Web, dramatic shifts in information-seeking behavior, and technology-driven research, teaching and learning as starting points, Karen Calhoun will suggest a proactive, community-based, collaborative role for libraries and librarians in the online information marketplace of the twenty-first century.
Calhoun's talk, which explores libraries' traditional boundaries and a possible new model for a library's participation in its community, provides a number of examples of strategic choices and actions, including making library collections and services more visible. She concludes with a discussion of the role of the creative workplace and leadership in achieving renewed vision, sustainable change, and ongoing innovation in libraries.

url: http://hdl.handle.net/1813/1491
date: 2005-06-21
creator: Gottwald, Klement
viewed: 2607
title: Some Principles of the New Constitution, 1946
abstract: 2 pages
Statement of policy of the third Government of the National Front of the Czechs and Slovaks, made by the Premier, Klement Gottwald, in the Constituent National Assembly, Prague, July 8, 1946

url: http://hdl.handle.net/1813/1492
date: 2005-06-21
creator: Kreisler, Fritz
viewed: 3384
title: Four Weeks in the Trenches, 1915
abstract: 30 pages
Memoir of Austrian violinist Fritz Kreisler covering the four weeks he spent as an Austrian soldier fighting the Russians on the Eastern front during WWI.

url: http://hdl.handle.net/1813/1493
date: 2005-06-21

creator: Masaryk, Tomas G.
viewed: 2508
title: Economic Democracy
abstract: 3 pages
From the memoirs of Czechoslovak President Masaryk from the years 1914-1918 wherein he talks about how communism is not the right path to take to equality. Includes a short biography of Masaryk at the end.

url: http://hdl.handle.net/1813/1494
date: 2005-06-21
creator: Masaryk, Tomas G.
viewed: 1687
title: Message of President Masaryk to Parliament of Czechoslovakia, 1922
abstract: 4 pages
SpeechMessage of Czechoslovak President Tomas Masaryk to the Representatives of Parliament (January 1, 1922) in which he addresses the need for agrarian reform and "de-Austrianizing" the bureaucracy.

url: http://hdl.handle.net/1813/1495
date: 2005-06-21
creator: Masaryk, Tomas G.
viewed: 1775
title: Speech of President Masaryk, 1928
abstract: 15 pages
speech Czechoslovak President Tomas Masaryk's speech on the Tenth Anniversary of Czechoslovak Independence, October 28, 1928 in which he speaks about the foundations of the republic, the past and future of the Czechs and Slovaks, and the challenges facing Czechoslovakia. Includes biography of Masaryk at the end.

url: http://hdl.handle.net/1813/1499
date: 2005-06-21
creator: Arango, Carlos Alberto
viewed: 1977
title: Classical and Semiclassical Mechanics of Molecular Rotors in Tilted Fields
abstract: Committee: Greg Ezra (chair), Ben Widom, Roger Loring We investigate the classical mechanics of diatomic and symmetric top molecules in tilted fields. These molecules exhibit regular, chaotic or mixed phase space depending on the tilt angle β, the energy E, and the relative intensity of the fields $\omega/\Delta\omega$. In the integrable collinear problem the projection of the angular momentum into the spatial z axis is a constant of motion, m, which allows us to explore the geometry of the phase space, and to use energy momentum diagrams to classify the motions of the rotor. For $\beta \ne 0$ the system is non-integrable showing mostly regular dynamics in the high-energy (free-rotor) and low-energy (pendular) limits; for energy near the tilted fields barrier the phase space is highly chaotic with degree of chaos increasing with β between 0 and $\pi/2$. Periodic orbits and bifurcation diagrams are obtained from symmetry lines and their iterations under the Poincar\'{e} map. These bifurcation diagrams are used to observe the changes in the basic structure of the phase space as β changes between collinear and perpendicular fields. Some quantum eigenstates are localized near stable or unstable periodic orbits showing tori quantization or scarring respectively.
For asymmetric top molecules only the case of collinear fields is treated. In parallel fields m is a constant of the motion and it is possible to define an effective potential $V_m(\theta,\psi)$. In an E-m diagram the equilibrium solutions of $V_m(\theta,\psi)$ are curves that enclose regions of qualitatively different

accessible θ-ψ configuration space. Interestingly these regions can be used to classify the quantum eigenstates.
For plane rotors primitive semiclassical mechanics is used to calculate the rotational excitation caused by laser pulses. Depending on the pulse intensity and duration several methods are employed from the analytical sudden approximation to primitive semiclassical initial value representation (IVR) integrals. The calculated transition probabilities are in good agreement with the quantum probabilities considering the simplicity of the methods. In the case of plane rotors in electric fields we calculate energy spectra, orientation ($\left<\cos\varphi\right>$), and alignment ($\left<\cos^2\varphi\right>$), using the Herman-Kluk propagator in terms of periodic coherent states. These results are in good agreement with the quantum analogues although the number of trajectories used is discouragingly large. For diatomic rotors in tilted fields, the HK propagator was used to calculate energy spectra with good agreement for high-energy and not very dense eigenspectra. Some steps are taken towards the development of HK-type propagator for rotational coherent states.Cornell University, Department of Chemistry and Chemical Biology

url: http://hdl.handle.net/1813/1500
date: 2005-06-21
creator: Goel, Sharad
viewed: 2420
title: Estimating Mixing Times: Techniques and Applications
abstract: How many times do you have to shuffle a deck of n cards before it is close to random? log n? n? n^3? Similar convergence rate questions for finite Markov chains are central to solving applied problems in diverse fields including physics, computer science and biology. This thesis investigates two general techniques for estimating mixing times for finite Markov chains: modified logarithmic Sobolev inequalities and Faber-Krahn inequalities; and analyzes the convergence behavior of a specific family of random walks: the top to bottom shuffles.
Logarithmic Sobolev inequalities are a well-studied technique for estimating convergence rates for Markov chains. In contrast to continuous state spaces, there are several distinct modified log Sobolev inequalities in the discrete setting. Here we derive modified log Sobolev inequalities for several models of random walk, including the random transposition shuffle. These results lead to tight mixing time estimates, and additionally, yield concentration inequalities.
Faber-Krahn inequalities have been used to estimate the rate of decay of the heat kernel on complete, non-compact manifolds and infinite graphs. We develop this technique in the setting of finite Markov chains, proving upper and lower mixing time bounds via the spectral profile. This approach lets us recover previous conductance-based bounds of mixing time, and in general leads to sharper estimates of convergence rates. We apply this method to several models, including groups with moderate growth, the fractal-like Viscek graphs, and the torus, and obtain tight bounds on the corresponding mixing times.
A deck of n cards is shuffled by repeatedly moving the top card to one of the bottom k positions of the deck uniformly at random. We give upper and lower bounds on the total variation mixing time for this shuffle as k ranges from a constant to n. We also consider a symmetric variant of this walk which at each step either inserts the top card randomly into the bottom k positions or moves a random card from the bottom k positions to the top. For this reversible shuffle we derive L^2 mixing time bounds.National Science Foundation grant DMS-0306194

url: http://hdl.handle.net/1813/1501
date: 2005-06-21
creator: Dopman, Erik
viewed: 2706
title: The genetics of speciation and the origin of genomic divergence

abstract: Richard Harrison, Charles Aquadro, Amy McCune Speciation involves the origin of trait differences that limit or prevent gene exchange and ultimately results in daughter populations that form monophyletic or exclusive genetic groups. However, for recently diverged populations or species, between which reproductive isolation is often incomplete, gene genealogies will be discordant and most regions of the genome will display nonexclusive genealogical patterns. In these situations, genome regions for which one or both species are exclusive groups may mark the footprint of recent selective sweeps. Alternatively, such regions may include or be closely linked to "speciation genes," genes involved in reproductive isolation. Therefore, comparisons of gene genealogies allow inferences about the genetic architectures of both reproductive isolation and adaptation. Contrasting genealogical relationships in sexually isolated Z and E pheromone strains of the European corn borer moth (ECB) demonstrate the relevance of this approach.
Genealogies for five gene regions in ECB are discordant, and for only one molecular marker, the sex-linked gene Tpi, are the two pheromone strains exclusive groups. A genetic linkage map provides the context for understanding genealogical discordance. The factors responsible for sexual isolation, male behavioral response (Resp) and female pheromone production (Pher), and the factor causing temporal isolation, post-diapause development (Pdd), were placed on a linkage map that also contained the mapping positions of the gene genealogies. Pher maps to an autosome, whereas Resp and Pdd are sex-linked. The exclusive gene, Tpi, maps to a position on the sex chromosome that is indistinguishable from Pdd; Resp maps 20-30 cM away. Neutral demography involving population expansion and population substructure can explain most genetic patterns among loci; however, Tpi shows evidence for non-neutral evolution. Because Tpi is tightly linked to Pdd, recent evolution of this reproductive barrier may be responsible for the evolution of genetic divergence between these incipient species.Graduate School at Cornell University, Department of Ecology and Evolutionary Biology at Cornell University, U.S. Environmental Protection Agency Science to Achieve Results fellowship for graduate environmental study (U-94589501-1), U.S. Department of Agriculture (2001-35302-11123), National Science Foundation (DEB-0415343).

url: http://hdl.handle.net/1813/1502
date: 2005-06-22
creator: Metternich, Prince Richard
viewed: 2411
title: The Renewal of the Carlsbad Decrees, 1824
abstract: 6 pages, correspondencePrince Metternich's 1824 correspondence with various individuals regarding the renewal of the Carlsbad Decrees originally implemented in the German states in 1819 to thwart revolutionary activity.

url: http://hdl.handle.net/1813/1503
date: 2005-06-22
creator: Metternich, Prince Richard
viewed: 3154
title: Of the Necessity of a Censorship of the Press, 1808
abstract: 2 pages, correspondenceMetternich argues to Count Stadion that, in order to effectively thwart revolutionary activity, the government must censor the press (1808).

url: http://hdl.handle.net/1813/1504
date: 2005-06-22
creator: Metternich, Prince Richard
viewed: 2074
title: Prince Metternich on the Death of Emperor Francis, 1835
abstract: 4 pages, correspondenceIn a correspondence with the Russian imperial court in St. Petersburg,

Prince Metternich reports the death of Austrian Emperor Francis (1935). There is also a short reply from Czar Nicholas.

url: http://hdl.handle.net/1813/1505
date: 2005-06-22
creator: Metternich, Prince Richard
viewed: 2334
title: Metternich on Opposition in the Pressburg Diet
abstract: 8 pages, correspondencePrince Metternich reports on his correspondence with Hungarian Count Szechenyi regarding opposition to imperial policy in the Hungarian Diet.

url: http://hdl.handle.net/1813/1506
date: 2005-06-22
creator: Metternich, Prince Richard
viewed: 2881
title: On the Vienna Congress, 1815
abstract: 19 pages, memoir and correspondenceEvents of the Congress of Vienna, 1815. Includes: 192. Memoir by Frederick von Gentz, February 12, 1815. 193. Metternich to Hardenberg, Vienna, December 10, 1814. 194. Talleyrand to Metternich, Vienna, December 12, 1814.

url: http://hdl.handle.net/1813/1507
date: 2005-06-22
creator: Nobility
viewed: 2681
title: Declaration of the Nobility to President Benes, 1938
abstract: 1 page, declarationThe Czech nobility writes to Czechoslovak President Eduard Benes voicing their desire to preserve the unity of Bohemia in the face of the threat of German expansion and claims on the Sudetenland.

url: http://hdl.handle.net/1813/1508
date: 2005-06-23
creator: Abawi, G.S.;Ludwig, J.W.;Widmer, T.L.
viewed: 3069
title: The Northern Root-Knot Nematode on Carrot, Lettuce, and Onion in New York
abstract: Root-knot nematodes (Meloidogyne spp.) are major pathogens of vegetables throughout the United States and world, impacting both the quantity and quality of marketable yields. In addition, root-knot nematodes interact with other plant pathogens, resulting in increased damage caused by other diseases. To date, only the northern root-knot nematode (NRKN; Meloidogyne hapla) has been found on vegetables grown on organic or mineral soil in New York, as it is able to survive the extreme low temperatures during winter. The NRKN has a wide host range consisting of more than 550 crop and weed species, including weeds common to muck soils such as dandelion (Taraxacum officinalis), purslane (Portulaca oleracea), mallow (Malva rotundifolia) and plantain (Plantago major). The increasing occurrence and damage of this nematode to onions, lettuce, and carrots grown on organic soils in New York was recently documented.

url: http://hdl.handle.net/1813/1509
date: 2005-06-24
creator: Hermsen, Elizabeth Jean
viewed: 3578

title: The Fossil Record of Iteaceae and Grossulariaceae in the Cretaceous and Tertiary of the United States and Canada
abstract: Committee: W.L. Crepet, K.C. Nixon, M.A. Luckow, and W.D. AllmonCircumscriptions and the perceived importance of the family Saxifragaceae (Order Saxifragales) in angiosperm evolution have historically been highly mutable. It is only recently, with the advent of phylogenetic techniques employing molecular sequence data, that the content and relationships of the family appear to have stabilized. Saxifragaceae is now thought to consist of ca. 30 genera of herbaceous plants and to form a monophyletic group with the small families Grossulariaceae (Ribes, the currants and gooseberries), Iteaceae (Chorstylis and Itea), and Pterostemonaceae (Pterostemon). The earliest known member of this saxifrage clade, Divisestylus, occurs in Turonian-age (ca. 90 Ma) sediments of New Jersey, USA, and appears?based on both comparative morphological analysis and cladistic analyses of Saxifragales with Divisestylus?to be most closely related to Iteaceae, being nearly identical in floral morphology but lacking the characteristic diporate, psilate pollen of the modern family. In contrast, the oldest potential member of Iteaceae proper, Iteaphyllum from the Eocene (ca. 49 Ma) Republic flora, Washington, USA, includes fossil leaves that co-occur with Itea sp. pollen in at least two localities. The worldwide fossil record of Iteaceae is extensive, and, while the modern family includes one eastern North American-eastern Asian disjunct taxon (Itea) and one taxon endemic to eastern Africa (Choristylis), fossils suggest that in the Tertiary Iteaceae also occurred in western North America from the Eocene to Miocene and Europe from the Eocene to Pliocene. In contrast, whereas Ribes is today distributed widely in the Northern Hemisphere and into the Andes of South America, the fossil record of Grossulariaceae largely consists of leaf compressions restricted to western North America. Previously published papers suggest that Ribes appears in the Cretaceous and is well-represented in Eocene to Pleistocene sediments. However, a reanalysis of the specimens on which this published record is based reveals that occurrences of Ribes leaf fossils are infrequent and restricted to the Eocene to Miocene in North America. Despite this, at least two subgeneric lineages within Ribes can be recognized by the mid-Miocene, Symphocalyx and Cerophyllum/Caloboytra, suggesting that they had diverged prior to that time. Saxifragaceae and Pterostemonaceae largely lack fossil records.American Society of Plant Taxonomists, Paleontological Society, National Science Foundation, L.H. Bailey Hortorium Moore Fund

url: http://hdl.handle.net/1813/1511
date: 2005-06-24
creator: Thomas, Sarah
viewed: 1777
title: The Cornell Library and Its Contributions to Open Access
abstract: This presentation discusses the Cornell Library's approach to Open Access including examples of initiatives launched by the Library. The presenter was Sarah E. Thomas, C. A. Kroch University Librarian.

url: http://hdl.handle.net/1813/1512
date: 2005-06-24
creator: Ehling, Terry
viewed: 3237
title: Cornell University Library's Publishing Model for Scholarly Literature
abstract: Terry Ehling, Director of Electronic Publishing at Cornell University presented the Cornell University Library's approach to Scholarly Publishing on the Web. Using the example of the the Library's innovative publishing software, DPubS (Digital Publishing System), which was developed to deliver Project Euclid (a Mellon Foundation-supported scholarly communications initiative), she showed how Project Euclid provides cost efficient distribution of serial literature in mathematics and statistics, and now DPubS will be enhanced and released as a general-purpose publishing platform for scholarly literature in diverse fields, supporting peer review, extensive administrative functionality, and interoperability with open source repository systems

such as Fedora and DSpace. This flexible online publishing tool will aid institutions of higher education and research in managing and distributing the intellectual efforts of scholars and researchers. DPubS v.2 will significantly expand opportunities for affordable and creative scholarly communication.

url: http://hdl.handle.net/1813/1513
date: 2005-06-24
creator: Ginsparg, Paul
viewed: 2590
title: Overview of the Open Access Movement: National and International
abstract: Paul Ginsparg, Physics & Computing and Info. Sci. and Founder of arXiv.org e-Print presented an apolitical perspective on questions raised by Open Access initiatives. Various Financial Models and Initiatives were addressed.

url: http://hdl.handle.net/1813/1514
date: 2005-06-24
creator: McMillan, Gail
viewed: 2862
title: Trends in Online Theses and Dissertations: National and International
abstract: Gail McMillan, Director, Digital Library and Achives, Virginia Tech presented the pros and cons of electronic submissions of theses and dissertations. She used the experience of the Networked Digital Library of Theses and Dissertations (NDLTD)which is an organization dedicated to promoting the adoption, creation, use, dissemination, and preservation of electronic analogues to the traditional paper-based theses and dissertations.

url: http://hdl.handle.net/1813/1515
date: 2005-06-24
creator: Cooke, J. Robert
viewed: 3143
title: Internet-First University Press and Creating Departmental and College Digital Repositories
abstract: J. Robert Cooke, Biol. and Env. Engr., presented the efforts of Internet-First University Press as an open access publishing effort using DSpace including the concepts of print-on-demand and DVDs for videos.

url: http://hdl.handle.net/1813/1516
date: 2005-06-24
creator: Kozak, George
viewed: 3244
title: Demo of Quick Submit Interface for Digital Repository
abstract: George Kozak, Digital Library Information Technology of the Cornell Library and DSpace Administer presented the "Quick Submit" process which was developed at Cornell University to help users to get their submissions quickly and easily into DSpace.

url: http://hdl.handle.net/1813/1517
date: 2005-06-24
creator: Steele, William
viewed: 2938
title: Workshop on new DSpace digital archive options set for May 9
abstract: Cornell's DSpace, an online digital archive administered by Cornell University Library to make

university scholarship freely available, is offering new options for the university's scientists and scholars with the creation of "communities" for every department. Faculty and department representatives have been invited to a half-day workshop to learn how the DSpace repositories will work and to discuss possible uses.

url: http://hdl.handle.net/1813/1518
date: 2005-06-24
creator: Atkinson, Ross;Thomas, Sara;McMillan, Gail;Kozak, George;Ginsparg, Paul;Ehling, Terry;Cooke, J. Robert
viewed: 3692
title: Agenda of Meeting and combined Presentations
abstract: This is a collection of the combined presentation which were presented at this conference: (1) Agenda; (2) The Cornell Library and Its Contributions to Open Access by Sarah E. Thomas, C. A. Kroch University Librarian; (3) Cornell University Library's Publishing Model for Scholarly Literature by Terry Ehling, Director of Electronic Publishing at Cornell University; (4) An Overview of the Open Access Movement: National and International by Paul Ginsparg, Physics & Computing and Info. Sci. and Founder of arXiv.org e-Print; (5) Trends in Online Theses and Dissertations: National and International by Gail McMillan, Director, Digital Library and Achives, Virginia Tech; (6) Internet-First University Press and Creating Departmental and College Digital Repositories by J. Robert Cooke, Biol. and Env. Engr.; (7) Demo of Quick Submit Interface for Digital Repository by George Kozak, Digital Library Info. Tech of Cornell Library.

url: http://hdl.handle.net/1813/1519
date: 2005-06-24
creator: Turk, Kenneth
viewed: 2141
title: Animal Husbandry at Cornell: A History and Record of Development from 1868 to 1963
abstract: A print on demand of these books and articles can be obtained from Cornell Business Services (CBS) Digital Services by sending e-mail to digital@cornell.edu or calling 607.255.2524. In the body of the message include the identifier.uri for the book or article, and ask to be contacted regarding payment.Animal husbandry at Cornell is as old as the university itself. It is hoped that those that study this early history will grasp the significance of the evolutionary growth and development of the College's functions in educating and training men and women for leadership, the contributions to animal agriculture through research, and the transfer of knowledge and technology to livestock producers, industries, and consumers. Progress and development of animal husbandry at Cornell from the beginning through 1963 provided a firm foundation for even greater accomplishments in the future in the animal science.

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title: 86-039*B Astilbe 'Ostrich Plume'
abstract:

url: http://hdl.handle.net/1813/1706
date: 2005-07-06
creator:
viewed: 681
title: 86-217*A Hosta 'Fringe Benefit'
abstract:

url: http://hdl.handle.net/1813/1707
date: 2005-07-06
creator:
viewed: 489
title: 86-218*A Hosta tardiflora
abstract:

url: http://hdl.handle.net/1813/1708
date: 2005-07-06
creator:
viewed: 706
title: 86-219*A Hosta 'Green Wedge'
abstract:

url: http://hdl.handle.net/1813/1709
date: 2005-07-06
creator:
viewed: 466
title: 86-221*A Hosta 'Blue Wedgewood'
abstract:

url: http://hdl.handle.net/1813/1710
date: 2005-07-06
creator:
viewed: 462
title: 86-226*A Astilboides tabularis
abstract:

url: http://hdl.handle.net/1813/1711
date: 2005-07-06
creator:
viewed: 1021
title: 86-227*A Astrantia major var. involucrata
abstract:

url: http://hdl.handle.net/1813/1712
date: 2005-07-06
creator:
viewed: 1222
title: 86-286*A Athyrium felix-femina 'Congestum Cristatum'
abstract:

url: http://hdl.handle.net/1813/1713
date: 2005-07-06
creator:
viewed: 875
title: 86-288*A Dryopteris filix-mas 'Linearis Polydactyla'
abstract:

url: http://hdl.handle.net/1813/1714
date: 2005-07-06
creator:
viewed: 738
title: 86-336*A Hosta 'Blue Cadet'
abstract:

url: http://hdl.handle.net/1813/1715
date: 2005-07-06
creator:
viewed: 521
title: 87-011*A Rodgersia aesculifolia
abstract:

url: http://hdl.handle.net/1813/1716
date: 2005-07-06
creator:
viewed: 299
title: 87-044*B Hosta plantaginea
abstract:

url: http://hdl.handle.net/1813/1717
date: 2005-07-06
creator:
viewed: 992
title: 87-090*B Dryopteris goldiana
abstract:

url: http://hdl.handle.net/1813/1718
date: 2005-07-06
creator:
viewed: 297
title: 87-092*C Diplazium acrostichoides

abstract:

url: http://hdl.handle.net/1813/1719
date: 2005-07-06
creator:
viewed: 1012
title: 87-145*A Dryopteris xcomplexa 'Robust'
abstract:

url: http://hdl.handle.net/1813/1720
date: 2005-07-06
creator:
viewed: 1412
title: 87-376*A Hosta 'Tall Boy'
abstract:

url: http://hdl.handle.net/1813/1721
date: 2005-07-06
creator:
viewed: 1360
title: 87-571*B Hosta sieboldiana 'Elegans'
abstract:

url: http://hdl.handle.net/1813/1722
date: 2005-07-06
creator:
viewed: 1894
title: 87-575*A Hosta ventricosa 'Aureo-marginata'
abstract:

url: http://hdl.handle.net/1813/1723
date: 2005-07-06
creator:
viewed: 2252
title: 88-022*A Calamagrostis xacutiflora 'Karl Foerster'
abstract:

url: http://hdl.handle.net/1813/1724
date: 2005-07-06
creator:
viewed: 1634
title: 90-002*A Hosta 'Wide Brim'
abstract:

url: http://hdl.handle.net/1813/1725
date: 2005-07-06
creator:
viewed: 621

title: 90-032*A Hosta 'Sum and Substance'
abstract:

url: http://hdl.handle.net/1813/1726
date: 2005-07-06
creator:
viewed: 1396
title: 90-142*A Hosta 'Summer Fragrance'
abstract:

url: http://hdl.handle.net/1813/1727
date: 2005-07-06
creator:
viewed: 1355
title: 91-168*A Astilbe xarendsii 'Queen of Holland'
abstract:

url: http://hdl.handle.net/1813/1728
date: 2005-07-06
creator:
viewed: 570
title: 91-169*A Astrantia 'Rosensinfonie'
abstract:

url: http://hdl.handle.net/1813/1729
date: 2005-07-06
creator:
viewed: 1298
title: 92-179*A Hosta 'Tokudama Flavocircinalis Sport'
abstract:

url: http://hdl.handle.net/1813/1730
date: 2005-07-06
creator:
viewed: 1360
title: 93-067*A Hosta 'Pearl Lake'
abstract:

url: http://hdl.handle.net/1813/1731
date: 2005-07-06
creator:
viewed: 1167
title: 94-064*A Hosta 'Heartsong'
abstract:

url: http://hdl.handle.net/1813/1732
date: 2005-07-06
creator:

viewed: 2541
title: 94-066*A Hosta sieboldiana 'Northern Halo'
abstract:

url: http://hdl.handle.net/1813/1733
date: 2005-07-06
creator:
viewed: 2265
title: 94-067*A Hosta 'Tokudama Aureonebulosa'
abstract:

url: http://hdl.handle.net/1813/1734
date: 2005-07-06
creator:
viewed: 1350
title: 94-156*A Hosta rectifolia 'Chionea'
abstract:

url: http://hdl.handle.net/1813/1735
date: 2005-07-06
creator:
viewed: 1338
title: 95-180*A Heuchera 'Purple Sails'
abstract:

url: http://hdl.handle.net/1813/1736
date: 2005-07-06
creator:
viewed: 2200
title: 95-189*A Athyrium felix-femina 'Victoriae'
abstract:

url: http://hdl.handle.net/1813/1737
date: 2005-07-06
creator:
viewed: 1376
title: 95-261*A Hosta 'Aspen Gold'
abstract:

url: http://hdl.handle.net/1813/1738
date: 2005-07-06
creator:
viewed: 472
title: 96-118*A Hosta 'Antioch' Distinguished Merit Eunice Fisher Award
abstract:

url: http://hdl.handle.net/1813/1739
date: 2005-07-06

creator:
viewed: 412
title: 96-502*A Heuchera 'Amethyst Mist'
abstract:

url: http://hdl.handle.net/1813/1740
date: 2005-07-06
creator:
viewed: 398
title: 96-527*A Astilbe chinensis 'Visions'
abstract:

url: http://hdl.handle.net/1813/1741
date: 2005-07-06
creator:
viewed: 457
title: 96-528*A Astilbe xarendsii 'Augustleuchten'
abstract:

url: http://hdl.handle.net/1813/1742
date: 2005-07-06
creator:
viewed: 455
title: 96-539*A Hosta 'Snowstorm'
abstract:

url: http://hdl.handle.net/1813/1743
date: 2005-07-06
creator:
viewed: 879
title: 96-557*A Astilbe 'Veronica Klose'
abstract:

url: http://hdl.handle.net/1813/1744
date: 2005-07-06
creator:
viewed: 304
title: 96-574*A Heuchera 'Velvet Night'
abstract:

url: http://hdl.handle.net/1813/1745
date: 2005-07-06
creator:
viewed: 710
title: 97-119*A Hosta 'On Stage'
abstract:

url: http://hdl.handle.net/1813/1746

date: 2005-07-06
creator:
viewed: 418
title: 97-121*A Hosta 'Hoosier Harmony'
abstract:

url: http://hdl.handle.net/1813/1747
date: 2005-07-06
creator:
viewed: 484
title: 97-123*A Hosta 'Iron Gate Delight'
abstract:

url: http://hdl.handle.net/1813/1748
date: 2005-07-06
creator:
viewed: 322
title: 97-125*A Hosta 'Fragrant Bouquet' HOSTA OF THE YEAR
abstract:

url: http://hdl.handle.net/1813/1749
date: 2005-07-06
creator:
viewed: 336
title: 97-207*A Dryopteris tokyoensis
abstract:

url: http://hdl.handle.net/1813/1750
date: 2005-07-06
creator:
viewed: 338
title: 97-333*A Sambucus nigra 'Castledean'
abstract:

url: http://hdl.handle.net/1813/1751
date: 2005-07-06
creator:
viewed: 334
title: 97-420*A Hemerocallis 'Cragmoor Sweetheart'
abstract:

url: http://hdl.handle.net/1813/1752
date: 2005-07-06
creator:
viewed: 539
title: 98-078*B Astrantia 'Ruby Cloud'
abstract:

url: http://hdl.handle.net/1813/1753
date: 2005-07-06
creator:
viewed: 374
title: 98-155*A Heuchera 'Chocolate Veil'
abstract:

url: http://hdl.handle.net/1813/1754
date: 2005-07-06
creator:
viewed: 389
title: 98-211*A Heuchera americana 'Ruby Ruffles'
abstract:

url: http://hdl.handle.net/1813/1755
date: 2005-07-06
creator:
viewed: 540
title: 98-353*A Hosta 'Guacamole'
abstract:

url: http://hdl.handle.net/1813/1756
date: 2005-07-06
creator:
viewed: 587
title: 98-447*A Hosta 'Komodo Dragon'
abstract:

url: http://hdl.handle.net/1813/1757
date: 2005-07-06
creator:
viewed: 659
title: 98-448*A Hosta nigrescena
abstract:

url: http://hdl.handle.net/1813/1758
date: 2005-07-06
creator:
viewed: 541
title: 98-449*A Hosta 'Raspberry Sorbet'
abstract:

url: http://hdl.handle.net/1813/1759
date: 2005-07-06
creator:
viewed: 731
title: 98-450*A Hosta 'Savannah'
abstract:

url: http://hdl.handle.net/1813/1760
date: 2005-07-06
creator:
viewed: 730
title: 99-085*A Hosta 'Black Beauty'
abstract:

url: http://hdl.handle.net/1813/1761
date: 2005-07-06
creator:
viewed: 1472
title: 99-087*A Hosta 'Colossal'
abstract:

url: http://hdl.handle.net/1813/1762
date: 2005-07-06
creator:
viewed: 1182
title: 99-089*A Hosta 'Lakeside Black Satin'
abstract:

url: http://hdl.handle.net/1813/1763
date: 2005-07-06
creator:
viewed: 2200
title: 99-285*A Hosta 'Paradigm'
abstract:

url: http://hdl.handle.net/1813/1764
date: 2005-07-06
creator:
viewed: 2159
title: 99-304*A Hosta 'Blue Arrow'
abstract:

url: http://hdl.handle.net/1813/1765
date: 2005-07-06
creator:
viewed: 1365
title: 99-359*A Hosta 'Twilight'
abstract:

url: http://hdl.handle.net/1813/1766
date: 2005-07-06
creator:
viewed: 906
title: 99-378*A Hosta 'Chantilly Lace'

abstract:

url: http://hdl.handle.net/1813/1767
date: 2005-07-06
creator:
viewed: 2009
title: 99-379*A Hosta 'Crested Surf'
abstract:

url: http://hdl.handle.net/1813/1768
date: 2005-07-06
creator:
viewed: 3189
title: 99-380*A Hosta 'Moon River'
abstract:

url: http://hdl.handle.net/1813/1769
date: 2005-07-06
creator:
viewed: 3404
title: 99-387*A Hosta 'Tamborine'
abstract:

url: http://hdl.handle.net/1813/1770
date: 2005-07-06
creator:
viewed: 4403
title: 99-388*A Hosta 'Mildred Seaver'
abstract:

url: http://hdl.handle.net/1813/1771
date: 2005-07-06
creator:
viewed: 3044
title: 99-423*A Hosta 'Twilight'
abstract:

url: http://hdl.handle.net/1813/1920
date: 2005-07-08
creator:
viewed: 2381
title: 00-260*A Rosa 'Autumn Sunset'
abstract:

url: http://hdl.handle.net/1813/1921
date: 2005-07-08
creator:
viewed: 3274

title: 00-262*A Rosa ‘Delicata’
abstract:

url: http://hdl.handle.net/1813/1922
date: 2005-07-08
creator:
viewed: 4631
title: 00-265*A Rosa Rosarium Uetersen (R)
abstract:

url: http://hdl.handle.net/1813/1923
date: 2005-07-08
creator:
viewed: 967
title: 01-424*B Lamium maculatum ‘Pink Pewter’
abstract:

url: http://hdl.handle.net/1813/1924
date: 2005-07-08
creator:
viewed: 1744
title: 01-428*A Lilium lancifolium
abstract:

url: http://hdl.handle.net/1813/1925
date: 2005-07-08
creator:
viewed: 880
title: 01-449*A Dianthus deltoides
abstract:

url: http://hdl.handle.net/1813/1926
date: 2005-07-08
creator:
viewed: 668
title: 01-452*A Phlox paniculata ‘Starfire’
abstract:

url: http://hdl.handle.net/1813/1927
date: 2005-07-08
creator:
viewed: 767
title: 01-453*A Geranium xcantabrigiense ‘Karmina’
abstract:

url: http://hdl.handle.net/1813/1928
date: 2005-07-08
creator:

viewed: 614
title: 81-450*A Iris 'Am I Blue'
abstract:

url: http://hdl.handle.net/1813/1929
date: 2005-07-08
creator:
viewed: 354
title: 82-097*A Astilbe x arendsii 'Betsy Cuperis'
abstract:

url: http://hdl.handle.net/1813/1930
date: 2005-07-08
creator:
viewed: 523
title: 84-060*A Stokesia laevis 'Cyanea'
abstract:

url: http://hdl.handle.net/1813/1931
date: 2005-07-08
creator:
viewed: 411
title: 84-127*A Rosa 'The Fairy'
abstract:

url: http://hdl.handle.net/1813/1932
date: 2005-07-08
creator:
viewed: 806
title: 86-083*A Allium pulchellum
abstract:

url: http://hdl.handle.net/1813/1933
date: 2005-07-08
creator:
viewed: 1242
title: 86-544*A Digitalis grandiflora
abstract:

url: http://hdl.handle.net/1813/1934
date: 2005-07-08
creator:
viewed: 1252
title: 87-181*A Heuchera 'Chatterbox'
abstract:

url: http://hdl.handle.net/1813/1935
date: 2005-07-08

creator:
viewed: 272
title: 87-184*A Iris sibirica ‘Tycoon’
abstract:

url: http://hdl.handle.net/1813/1936
date: 2005-07-08
creator:
viewed: 320
title: 89-090*A Leucanthemum xsuperbum ‘Alaska’
abstract:

url: http://hdl.handle.net/1813/1937
date: 2005-07-08
creator:
viewed: 2051
title: 89-091*A Veronica austriaca ssp. teucrium ‘Crater Lake Blue’
abstract:

url: http://hdl.handle.net/1813/1938
date: 2005-07-08
creator:
viewed: 898
title: 90-025*B Euphorbia corollata
abstract:

url: http://hdl.handle.net/1813/1939
date: 2005-07-08
creator:
viewed: 1147
title: 90-203*A Myrrhis odorata
abstract:

url: http://hdl.handle.net/1813/1940
date: 2005-07-08
creator:
viewed: 595
title: 96-461*A Scabiosa ‘Butterfly Blue’
abstract:

url: http://hdl.handle.net/1813/1941
date: 2005-07-08
creator:
viewed: 718
title: 97-219*A Phlomis tuberosa ‘Amazone’
abstract:

url: http://hdl.handle.net/1813/1942

date: 2005-07-08
creator:
viewed: 349
title: 97-221*A Astilbe 'Red Ostrich Plume'
abstract:

url: http://hdl.handle.net/1813/1943
date: 2005-07-08
creator:
viewed: 482
title: 97-222*A Lobelia xspeciosa 'Russian Princess'
abstract:

url: http://hdl.handle.net/1813/1944
date: 2005-07-08
creator:
viewed: 348
title: 97-237*A Tradescantia (Andersoniana Group) 'Zwanenburg Blue'
abstract:

url: http://hdl.handle.net/1813/1945
date: 2005-07-08
creator:
viewed: 848
title: 97-249*A Eryngium alpinum 'Blue Star'
abstract:

url: http://hdl.handle.net/1813/1946
date: 2005-07-08
creator:
viewed: 361
title: 97-260*A Monarda didyma 'Raspberry Wine'
abstract:

url: http://hdl.handle.net/1813/1947
date: 2005-07-08
creator:
viewed: 686
title: 97-353*A Paeonia lactiflora 'Moon River'
abstract:

url: http://hdl.handle.net/1813/1948
date: 2005-07-08
creator:
viewed: 2337
title: Paeonia lactiflora 'Mrs. Franklin D. Roosevelt' Gold Medal
abstract:

url: http://hdl.handle.net/1813/1949
date: 2005-07-08
creator:
viewed: 544
title: 97-355*A Paeonia 'Raspberry Sundae'
abstract:

url: http://hdl.handle.net/1813/1950
date: 2005-07-08
creator:
viewed: 516
title: 97-356*A Paeonia 'Leda'
abstract:

url: http://hdl.handle.net/1813/1951
date: 2005-07-08
creator:
viewed: 327
title: 97-357*A Paeonia lactiflora 'Bride's Dream'
abstract:

url: http://hdl.handle.net/1813/1952
date: 2005-07-08
creator:
viewed: 496
title: 97-393*A Rosa 'Linda Campbell'
abstract:

url: http://hdl.handle.net/1813/1953
date: 2005-07-08
creator:
viewed: 337
title: 97-405*A Rosa (Explorer Series) A. MacKenzie
abstract:

url: http://hdl.handle.net/1813/1954
date: 2005-07-08
creator:
viewed: 534
title: 98-263*C Rosa 'Harison's Yellow'
abstract:

url: http://hdl.handle.net/1813/1955
date: 2005-07-08
creator:
viewed: 366
title: 98-267*A Rosa (Explorer Series) 'Henry Kelsey'
abstract:

url: http://hdl.handle.net/1813/1956
date: 2005-07-08
creator:
viewed: 877
title: 98-268*A Rosa (Explorer Series) 'Champlain'
abstract:

url: http://hdl.handle.net/1813/1957
date: 2005-07-08
creator:
viewed: 528
title: 98-270*A Rosa 'Therese Bugnet'
abstract:

url: http://hdl.handle.net/1813/1958
date: 2005-07-08
creator:
viewed: 547
title: 98-271*A Rosa 'Herbstfeuer'
abstract:

url: http://hdl.handle.net/1813/1959
date: 2005-07-08
creator:
viewed: 616
title: 98-274*A Rosa (Explorer Series) 'Charles Albanel'
abstract:

url: http://hdl.handle.net/1813/1960
date: 2005-07-08
creator:
viewed: 651
title: 98-299*A Gypsophila paniculata 'Perfekta'
abstract:

url: http://hdl.handle.net/1813/1961
date: 2005-07-08
creator:
viewed: 531
title: 98-300*A Gypsophila paniculata 'Viette's Dwarf'
abstract:

url: http://hdl.handle.net/1813/1962
date: 2005-07-08
creator:
viewed: 391
title: 98-313*A Nepeta xfaassenii 'Walker's Low'

abstract:

url: http://hdl.handle.net/1813/1963
date: 2005-07-08
creator:
viewed: 929
title: 98-413*A Achillea ptarmica 'Ballerina'
abstract:

url: http://hdl.handle.net/1813/1964
date: 2005-07-08
creator:
viewed: 3840
title: 98-417*A Astilbe xarendsii 'Red Sentinel'
abstract:

url: http://hdl.handle.net/1813/1965
date: 2005-07-08
creator:
viewed: 822
title: 98-420*A Coreopsis verticillata 'Moonbeam'
abstract:

url: http://hdl.handle.net/1813/1966
date: 2005-07-08
creator:
viewed: 366
title: 98-424*A Iris 'Cracklin Burgundy'
abstract:

url: http://hdl.handle.net/1813/1967
date: 2005-07-08
creator:
viewed: 683
title: 98-425*A Iris sibirica 'Illini Charm' Ds 433 Notes "award Winning"
abstract:

url: http://hdl.handle.net/1813/1968
date: 2005-07-08
creator:
viewed: 531
title: 98-429*A Nepeta 'Souvenir D'andre Chaudron'
abstract:

url: http://hdl.handle.net/1813/1969
date: 2005-07-08
creator:
viewed: 717

title: 98-430*A Platycodon grandiflorus 'Mariesii'
abstract:

url: http://hdl.handle.net/1813/1970
date: 2005-07-08
creator:
viewed: 617
title: 98-433*A Rudbeckia maxima
abstract:

url: http://hdl.handle.net/1813/1971
date: 2005-07-08
creator:
viewed: 507
title: 98-482*A Iris xgermanica 'Dusky Challenger'
abstract:

url: http://hdl.handle.net/1813/1972
date: 2005-07-08
creator:
viewed: 753
title: 98-483*A Iris xgermanica 'Silverado'
abstract:

url: http://hdl.handle.net/1813/1973
date: 2005-07-08
creator:
viewed: 537
title: 98-484*A Iris 'Paradise'
abstract:

url: http://hdl.handle.net/1813/1974
date: 2005-07-08
creator:
viewed: 370
title: 98-486*A Iris pallida 'Variegata'
abstract:

url: http://hdl.handle.net/1813/1975
date: 2005-07-08
creator:
viewed: 451
title: 98-497*A Lilium 'Tristar'
abstract:

url: http://hdl.handle.net/1813/1976
date: 2005-07-08
creator:

viewed: 529
title: 98-505*A Thalictrum rochebruneanum 'Lavender Mist'
abstract:

url: http://hdl.handle.net/1813/1977
date: 2005-07-08
creator:
viewed: 557
title: 98-506*A Heuchera 'Chocolate Ruffles'
abstract:

url: http://hdl.handle.net/1813/1978
date: 2005-07-08
creator:
viewed: 430
title: 98-513*A Scabiosa caucasica
abstract:

url: http://hdl.handle.net/1813/1979
date: 2005-07-08
creator:
viewed: 412
title: 98-516*A Campanula persicifolia 'Chettle Charm'
abstract:

url: http://hdl.handle.net/1813/1980
date: 2005-07-08
creator:
viewed: 537
title: 98-525*A Allium atropurpureum
abstract:

url: http://hdl.handle.net/1813/1981
date: 2005-07-08
creator:
viewed: 385
title: 98-526*A Allium caeruleum
abstract:

url: http://hdl.handle.net/1813/1982
date: 2005-07-08
creator:
viewed: 774
title: 98-527*A Allium giganteum
abstract:

url: http://hdl.handle.net/1813/1983
date: 2005-07-08

creator:
viewed: 891
title: 98-564*B Papaver orientale 'Carneum'
abstract:

url: http://hdl.handle.net/1813/1984
date: 2005-07-08
creator:
viewed: 791
title: 98-567*A Phlox paniculata 'Nicky'
abstract:

url: http://hdl.handle.net/1813/1985
date: 2005-07-08
creator:
viewed: 566
title: 98-568*A Veronica longifolia 'Pink Shades'
abstract:

url: http://hdl.handle.net/1813/1986
date: 2005-07-08
creator:
viewed: 800
title: 98-581*A Campanula persicifolia 'White Bell'
abstract:

url: http://hdl.handle.net/1813/1987
date: 2005-07-08
creator:
viewed: 898
title: 98-586*B Dianthus deltoides 'Arctic Fire'
abstract:

url: http://hdl.handle.net/1813/1988
date: 2005-07-08
creator:
viewed: 1599
title: 99-144*A Weigela florida 'Alexandra' WINE and ROSES
abstract:

url: http://hdl.handle.net/1813/1989
date: 2005-07-08
creator:
viewed: 1293
title: 99-213*A Heuchera 'Petite Marbled Burgundy'
abstract:

url: http://hdl.handle.net/1813/1990

date: 2005-07-08
creator:
viewed: 2008
title: 99-224*A Clematis integrifolia 'Caerulea'
abstract:

url: http://hdl.handle.net/1813/1991
date: 2005-07-08
creator:
viewed: 1771
title: 99-243*A Leucanthemum xsuperbum 'Tinkerbelle'
abstract:

url: http://hdl.handle.net/1813/1992
date: 2005-07-08
creator:
viewed: 1253
title: 99-244*A Delphinium xbelladonna 'Bellamosum'
abstract:

url: http://hdl.handle.net/1813/1993
date: 2005-07-08
creator:
viewed: 1222
title: 99-280*A Delphinium 'Black Knight'
abstract:

url: http://hdl.handle.net/1813/1994
date: 2005-07-08
creator:
viewed: 2849
title: 99-448*A Ligularia xpalmatiloba
abstract:

url: http://hdl.handle.net/1813/1995
date: 2005-07-08
creator:
viewed: 3501
title: 99-449*A Delphinium (Belladonna Group) 'Cliveden Beauty'
abstract:

url: http://hdl.handle.net/1813/1996
date: 2005-07-08
creator:
viewed: 3425
title: 99-482*A Eremurus stenophyllus ssp. stenophyllus
abstract:

url: http://hdl.handle.net/1813/1997
date: 2005-07-08
creator:
viewed: 2279
title: 99-501*A Scutellaria orientalis 'Eastern Sun'
abstract:

url: http://hdl.handle.net/1813/1998
date: 2005-07-08
creator:
viewed: 3329
title: 99-503*A Campanula latifolia 'Brantwood'
abstract:

url: http://hdl.handle.net/1813/1999
date: 2005-07-11
creator:
viewed: 3834
title: 00-047*A Cotinus coggygria 'Nordine Red'
abstract:

url: http://hdl.handle.net/1813/2000
date: 2005-07-11
creator:
viewed: 2872
title: 00-048*D Potentilla fruticosa 'Coronation Triumph'
abstract:

url: http://hdl.handle.net/1813/2001
date: 2005-07-11
creator:
viewed: 2431
title: 00-057*C Philadelphus lewisii 'Blizzard'
abstract:

url: http://hdl.handle.net/1813/2002
date: 2005-07-11
creator:
viewed: 4831
title: 00-076*A Hydrangea paniculata 'Interhydia' PINK DIAMOND
abstract:

url: http://hdl.handle.net/1813/2003
date: 2005-07-11
creator:
viewed: 4403
title: 00-116*C Philadelphus 'Snow Velvet'
abstract:

url: http://hdl.handle.net/1813/2004
date: 2005-07-11
creator:
viewed: 4576
title: 00-130*B Weigela florida 'Brigela' FRENCH LACE
abstract:

url: http://hdl.handle.net/1813/2005
date: 2005-07-11
creator:
viewed: 1614
title: 00-487*A Hemerocallis 'Sparkling Orange' HONORABLE MENTION
abstract:

url: http://hdl.handle.net/1813/2006
date: 2005-07-11
creator:
viewed: 2812
title: 00-504*A Hemerocallis 'Miss Amelia'
abstract:

url: http://hdl.handle.net/1813/2007
date: 2005-07-11
creator:
viewed: 1734
title: 00-505*A Hemerocallis 'Black Eyed Stella' ANNUAL WINNER
abstract:

url: http://hdl.handle.net/1813/2008
date: 2005-07-11
creator:
viewed: 3184
title: 00-510*B Weigela 'Bristol Snowflake'
abstract:

url: http://hdl.handle.net/1813/2009
date: 2005-07-11
creator:
viewed: 1532
title: 00-511*A Berberis thunbergii 'Rose Glow' AGM
abstract:

url: http://hdl.handle.net/1813/2010
date: 2005-07-11
creator:
viewed: 2664
title: 00-528*A Hemerocallis 'Buttered Popcorn' BEST CLUMP

abstract:

url: http://hdl.handle.net/1813/2011
date: 2005-07-11
creator:
viewed: 1770
title: 00-529*A Hemerocallis 'Prairie Blue Eyes'
abstract:

url: http://hdl.handle.net/1813/2012
date: 2005-07-11
creator:
viewed: 1826
title: 00-552*B Spiraea xbumalda 'Dart's Red'
abstract:

url: http://hdl.handle.net/1813/2013
date: 2005-07-11
creator:
viewed: 2361
title: 00-570*A Weigela florida 'Red Prince'
abstract:

url: http://hdl.handle.net/1813/2014
date: 2005-07-11
creator:
viewed: 1227
title: 01-009*C Caragana microphylla
abstract:

url: http://hdl.handle.net/1813/2015
date: 2005-07-11
creator:
viewed: 1675
title: 01-018*A Hypericum densiflorum
abstract:

url: http://hdl.handle.net/1813/2016
date: 2005-07-11
creator:
viewed: 1619
title: 01-019*B Hypericum prolificum
abstract:

url: http://hdl.handle.net/1813/2017
date: 2005-07-11
creator:
viewed: 1896

title: 01-052*A Deutzia ningpoensis
abstract:

url: http://hdl.handle.net/1813/2018
date: 2005-07-11
creator:
viewed: 1803
title: 01-053*A Forsythia giraldiana 'Golden Times'
abstract:

url: http://hdl.handle.net/1813/2019
date: 2005-07-11
creator:
viewed: 3047
title: 01-185*A Deutzia 'Strawberry Fields'
abstract:

url: http://hdl.handle.net/1813/2020
date: 2005-07-11
creator:
viewed: 999
title: 01-305*D Spiraea japonica 'Shirobana'
abstract:

url: http://hdl.handle.net/1813/2021
date: 2005-07-11
creator:
viewed: 2041
title: 01-307*A Spiraea japonica 'Neon Flash'
abstract:

url: http://hdl.handle.net/1813/2022
date: 2005-07-11
creator:
viewed: 1107
title: 01-316*A Hemerocallis 'Addie Branch Smith'
abstract:

url: http://hdl.handle.net/1813/2023
date: 2005-07-11
creator:
viewed: 1322
title: 01-317*A Hemerocallis 'Barbary Corsair'
abstract:

url: http://hdl.handle.net/1813/2024
date: 2005-07-11
creator:

viewed: 577
title: 01-318*A Hemerocallis 'Chicago Star'
abstract:

url: http://hdl.handle.net/1813/2025
date: 2005-07-11
creator:
viewed: 768
title: 01-322*A Hemerocallis 'Pandora's Box' Honorable Mention Award of Merit
abstract:

url: http://hdl.handle.net/1813/2026
date: 2005-07-11
creator:
viewed: 1701
title: 01-323*A Hemerocallis 'Winsome Lady' LENINGTON ALL-AMERICAN AWARD FOR EXCELLENT PERFORMANCE AROUND THE COUNTRY AWARD OF MERIT
abstract:

url: http://hdl.handle.net/1813/2027
date: 2005-07-11
creator:
viewed: 531
title: 01-324*A Hemerocallis 'Yellow Explosion'
abstract:

url: http://hdl.handle.net/1813/2028
date: 2005-07-11
creator:
viewed: 847
title: 01-348*B Sambucus nigra ssp. canadensis 'Aurea'
abstract:

url: http://hdl.handle.net/1813/2029
date: 2005-07-11
creator:
viewed: 766
title: 01-417*A Spiraea 'Anna Feih'
abstract:

url: http://hdl.handle.net/1813/2030
date: 2005-07-11
creator:
viewed: 690
title: 02-059*A Cotinus coggygria 'Daydream'
abstract:

url: http://hdl.handle.net/1813/2031

date: 2005-07-11
creator:
viewed: 731
title: 02-383*A Pennisetum orientale 'Karley Rose'
abstract:

url: http://hdl.handle.net/1813/2032
date: 2005-07-11
creator:
viewed: 905
title: 03-203*A Spiraea japonica 'White Gold' PRELIMINARY COMMENDATION
abstract:

url: http://hdl.handle.net/1813/2033
date: 2005-07-11
creator:
viewed: 450
title: 29-088*A Euonymus hamiltonianus var. maackii
abstract:

url: http://hdl.handle.net/1813/2034
date: 2005-07-11
creator:
viewed: 588
title: 77-677*B Chionanthus virginicus
abstract:

url: http://hdl.handle.net/1813/2035
date: 2005-07-11
creator:
viewed: 708
title: 84-375*A Neillia sinensis
abstract:

url: http://hdl.handle.net/1813/2036
date: 2005-07-11
creator:
viewed: 714
title: 86-171*C Viburnum plicatum f. tomentosum 'Mariesii'
abstract:

url: http://hdl.handle.net/1813/2037
date: 2005-07-11
creator:
viewed: 534
title: 86-315*A Cotinus 'Flame'
abstract:

url: http://hdl.handle.net/1813/2038
date: 2005-07-11
creator:
viewed: 526
title: 86-471*H Syringa pubescens ssp. patula 'Miss Kim'
abstract:

url: http://hdl.handle.net/1813/2039
date: 2005-07-11
creator:
viewed: 2163
title: 87-222*A Hydrangea serrata 'Bluebird'
abstract:

url: http://hdl.handle.net/1813/2040
date: 2005-07-11
creator:
viewed: 1847
title: 88-144*D Viburnum 'Oneida'
abstract:

url: http://hdl.handle.net/1813/2041
date: 2005-07-11
creator:
viewed: 947
title: 88-298*A Calycanthus floridus 'Athens'
abstract:

url: http://hdl.handle.net/1813/2042
date: 2005-07-11
creator:
viewed: 678
title: 89-021*G Amelanchier laevis 'Cumulus'
abstract:

url: http://hdl.handle.net/1813/2043
date: 2005-07-11
creator:
viewed: 1542
title: 91-181*A Spiraea betulifolia
abstract:

url: http://hdl.handle.net/1813/2044
date: 2005-07-11
creator:
viewed: 1146
title: 92-066*A Ilex 'Bonfire'
abstract:

url: http://hdl.handle.net/1813/2045
date: 2005-07-11
creator:
viewed: 1425
title: 93-004*A Spiraea nipponica 'Halward's Silver'
abstract:

url: http://hdl.handle.net/1813/2046
date: 2005-07-11
creator:
viewed: 982
title: 95-221*A Hemerocallis 'Sherwood Soldier'
abstract:

url: http://hdl.handle.net/1813/2047
date: 2005-07-11
creator:
viewed: 1333
title: 95-222*A Hemerocallis 'Sherwood Gladiator'
abstract:

url: http://hdl.handle.net/1813/2048
date: 2005-07-11
creator:
viewed: 994
title: 95-270*C Cotoneaster lucidus
abstract:

url: http://hdl.handle.net/1813/2049
date: 2005-07-11
creator:
viewed: 858
title: 96-164*B Hydrangea quercifolia 'Harmony'
abstract:

url: http://hdl.handle.net/1813/2050
date: 2005-07-11
creator:
viewed: 332
title: 96-264*A Koelreuteria paniculata
abstract:

url: http://hdl.handle.net/1813/2051
date: 2005-07-11
creator:
viewed: 820
title: 96-271*A Spiraea 'June Bride'

abstract:

url: http://hdl.handle.net/1813/2052
date: 2005-07-11
creator:
viewed: 389
title: 96-491*C Viburnum ichangense
abstract:

url: http://hdl.handle.net/1813/2053
date: 2005-07-11
creator:
viewed: 622
title: 97-083*E Philadelphus 'Buckley's Quill'
abstract:

url: http://hdl.handle.net/1813/2054
date: 2005-07-11
creator:
viewed: 580
title: 97-099*A Philadelphus 'Natchez'
abstract:

url: http://hdl.handle.net/1813/2055
date: 2005-07-11
creator:
viewed: 381
title: 97-104*E Spiraea fritschiana
abstract:

url: http://hdl.handle.net/1813/2056
date: 2005-07-11
creator:
viewed: 679
title: 97-168*A Sambucus nigra ssp. canadensis 'Maxima'
abstract:

url: http://hdl.handle.net/1813/2057
date: 2005-07-11
creator:
viewed: 418
title: 97-331*A Hydrangea paniculata 'White Moth'
abstract:

url: http://hdl.handle.net/1813/2058
date: 2005-07-11
creator:
viewed: 499

title: 97-362*B Viburnum sargentii 'Flavum'
abstract:

url: http://hdl.handle.net/1813/2059
date: 2005-07-11
creator:
viewed: 322
title: 97-422*A Hemerocallis 'Golden Gate'
abstract:

url: http://hdl.handle.net/1813/2060
date: 2005-07-11
creator:
viewed: 721
title: 97-461*A Hemerocallis 'Butter Dish' Honorable Mention
abstract:

url: http://hdl.handle.net/1813/2061
date: 2005-07-11
creator:
viewed: 711
title: 97-465*A Spiraea xbumalda 'Dolchica
abstract:

url: http://hdl.handle.net/1813/2062
date: 2005-07-11
creator:
viewed: 722
title: 97-498*A Hemerocallis 'Raspberry Pixie'
abstract:

url: http://hdl.handle.net/1813/2063
date: 2005-07-11
creator:
viewed: 436
title: 97-499*A Hemerocallis 'Skylark'
abstract:

url: http://hdl.handle.net/1813/2064
date: 2005-07-11
creator:
viewed: 634
title: 97-506*A Hemerocallis 'Baja'
abstract:

url: http://hdl.handle.net/1813/2065
date: 2005-07-11
creator:

viewed: 657
title: 97-520*A Hemerocallis 'Celebrity Elite'
abstract:

url: http://hdl.handle.net/1813/2066
date: 2005-07-11
creator:
viewed: 492
title: 97-523*A Hemerocallis 'Crimson Joy'
abstract:

url: http://hdl.handle.net/1813/2067
date: 2005-07-11
creator:
viewed: 709
title: 98-081*A Hemerocallis 'Luxury Lace'
abstract:

url: http://hdl.handle.net/1813/2068
date: 2005-07-11
creator:
viewed: 606
title: 98-102*B Fontanesia fortunei 'Titan'
abstract:

url: http://hdl.handle.net/1813/2069
date: 2005-07-11
creator:
viewed: 603
title: 98-130*C Deutzia gracilis 'Nikko' Gold Medal
abstract:

url: http://hdl.handle.net/1813/2070
date: 2005-07-11
creator:
viewed: 553
title: 98-137*C Sambucus nigra 'Aureomarginata'
abstract:

url: http://hdl.handle.net/1813/2071
date: 2005-07-11
creator:
viewed: 734
title: 98-142*C Weigela 'Looymansii Aurea'
abstract:

url: http://hdl.handle.net/1813/2072
date: 2005-07-11

creator:
viewed: 346
title: 98-182*A Indigofera kirilowii
abstract:

url: http://hdl.handle.net/1813/2073
date: 2005-07-11
creator:
viewed: 394
title: 98-360*A Hemerocallis 'Preppie'
abstract:

url: http://hdl.handle.net/1813/2074
date: 2005-07-11
creator:
viewed: 836
title: 98-361*A Hemerocallis 'Siloam Little Girl'
abstract:

url: http://hdl.handle.net/1813/2075
date: 2005-07-11
creator:
viewed: 807
title: 98-368*A Hemerocallis 'Ruffled Apricot'
abstract:

url: http://hdl.handle.net/1813/2076
date: 2005-07-11
creator:
viewed: 657
title: 98-372*A Hemerocallis 'Siloam Pink Petite'
abstract:

url: http://hdl.handle.net/1813/2077
date: 2005-07-11
creator:
viewed: 806
title: 98-373*A Hemerocallis 'Tree Swallow'
abstract:

url: http://hdl.handle.net/1813/2078
date: 2005-07-11
creator:
viewed: 418
title: 98-377*A Hemerocallis 'Siloam Jim Cooper'
abstract:

url: http://hdl.handle.net/1813/2079

date: 2005-07-11
creator:
viewed: 363
title: 98-378*A Hemerocallis 'Sherwood Chief'
abstract:

url: http://hdl.handle.net/1813/2080
date: 2005-07-11
creator:
viewed: 611
title: 98-379*A Hemerocallis 'Staghorn Sumac'
abstract:

url: http://hdl.handle.net/1813/2081
date: 2005-07-11
creator:
viewed: 535
title: 98-380*A Hemerocallis 'Witch Hazel'
abstract:

url: http://hdl.handle.net/1813/2082
date: 2005-07-11
creator:
viewed: 643
title: 98-440*A Hemerocallis 'Caprician Fiesta'
abstract:

url: http://hdl.handle.net/1813/2083
date: 2005-07-11
creator:
viewed: 462
title: 98-461*A Hemerocallis 'Soft Lavender'
abstract:

url: http://hdl.handle.net/1813/2084
date: 2005-07-11
creator:
viewed: 933
title: 99-008*B Cotoneaster acutifolius
abstract:

url: http://hdl.handle.net/1813/2085
date: 2005-07-11
creator:
viewed: 1276
title: 99-016*A Spiraea xvanhouttei 'Catpan' PINK ICE
abstract:

url: http://hdl.handle.net/1813/2086
date: 2005-07-11
creator:
viewed: 3661
title: 99-029*C Neillia uekii
abstract:

url: http://hdl.handle.net/1813/2087
date: 2005-07-11
creator:
viewed: 3979
title: 99-161*B Syringa xnanceiana 'Floreal'
abstract:

url: http://hdl.handle.net/1813/2088
date: 2005-07-11
creator:
viewed: 3800
title: 99-411*A Hemerocallis 'Scarlet Orbit' AWARD OF MERIT HONORABLE MENTION
abstract:

url: http://hdl.handle.net/1813/2089
date: 2005-07-11
creator:
viewed: 3493
title: 99-428*B Potentilla fruticosa 'Pink Beauty'
abstract:

url: http://hdl.handle.net/1813/2090
date: 2005-07-11
creator:
viewed: 5119
title: 99-429*B Potentilla fruticosa 'Abbotswood'
abstract:

url: http://hdl.handle.net/1813/2091
date: 2005-07-12
creator: Lieverse, Angela Rose
viewed: 3906
title: Bioarchaeology of the Cis-Baikal: Biological Indicators of Mid-Holocene Hunter-Gatherer Adaptation and Cultural Change
abstract: This bioarchaeological investigation of the Cis-Baikal skeletal and dental record focuses on health and lifestyle reconstruction of the region's mid-Holocene foragers with particular interest in the circumstances surrounding an alleged fifth millennium BC biocultural hiatus. The five cemetery populations considered - two representing the pre-hiatus Kitoi culture and three the post-hiatus Serovo-Glaskovo - provide an excellent opportunity not only to characterize boreal forest foraging adaptation, but also to investigate cultural change in the region. Research focuses on three discrete lines of bioarchaeological inquiry: dental enamel hypoplasia, osteoarthritis (degenerative joint disease), and paleopathology (both skeletal and dental). Results

reveal several discrepancies between the pre- and post-hiatus peoples, lending some support to previous assertions of distinct Kitoi and Serovo-Glaskovo adaptive regimes, particularly the narrower subsistence base and lower residential mobility of the former. For example, pre-hiatus individuals appear to have suffered greater physiological stress than their successors, likely reflecting seasonal or annual fluctuations in resource availability, and to have engaged in distinct activity patterns suggesting increased (and sexually disparate) logistical foraging in response to reduced residential mobility. However, remarkable parallels have also been observed between these two groups in terms of overall mobility, general health status, and numerous behavioral characteristics, suggesting a general pattern of continuity throughout the mid-Holocene period. Skeletal and dental data indicate that all occupants of the Cis-Baikal employed variable but effective adaptive strategies: despite their documented differences, both pre- and post-hiatus peoples appear to have been more than successful in exploiting the region's rich aquatic and terrestrial resources.Social Sciences and Humanities Research Council of Canada, Cornell University Graduate School, Einaudi Center for International Studies (Cornell University), Human Biology Program (Cornell University)

url: http://hdl.handle.net/1813/2092
date: 2005-07-13
creator: Rosenkrantz, Marcy
viewed: 3003
title: CUL's Institutional Repositories
abstract: This presentation was made at a LITA panel on Institutional Repositories at the Annual ALA meeting in Chicago, IL on June 27, 2005. In it, I discuss the use at Cornell of such repositories as DSpace, techreports, and arXiv.org to address the crisis in scholarly communications, and as producer repositories for an OAIS digital preservation system at CUL.

url: http://hdl.handle.net/1813/2093
date: 2005-07-13
creator: Hartman, Paul L.
viewed: 2008
title: The Cornell Physics Department: Recollections and a History of Sorts
abstract: A professionally printed version of this 359-page book may be purchased through Cornell Business Services (CBS) Digital Services by sending e-mail to digital@cornell.edu or calling 607.255.2524. In the body of the message include the identifier.uri for the book, and ask to be contacted regarding payment.The late Paul Hartman chronicled in his delightfully unique writing style the growth and development of one of the strongest departments at Cornell. "The Physics Department of Cornell has had a long and illustrious history which is nowhere written down in any complete way. It was suggested that the present writer, now on a part time "retirement" appointment in the Physics Department, with which he has been associated during a period going back forty-five years, put together a history of the department." This is an updating of the 1984 manuscript in 1993.

url: http://hdl.handle.net/1813/2094
date: 2005-07-13
creator: Stanton, Bernard F. ("Bud")
viewed: 1894
title: Agricultural Economics at Cornell: A History, 1900-1990
abstract: A professionally printed version may be obtained by contacting the department at http://aem.cornell.edu/news/stanton/stanton.html
or http://aem.cornell.edu/undergrad_news/alumni.htm#stantonThis 292-page picture-filled book, first-ever history of the department chronicles the major contributions made by its faculty and students to research,

teaching, and extension in the field of agricultural economics during the twentieth century. The book's chapters focus on the key people and events of each decade and describes the transitions and celebrates the accomplishments of a department noted for its commitment to people and finding solutions to real economic problems.

url: http://hdl.handle.net/1813/2095
date: 2005-07-13
creator: Butterfield, Rex M.
viewed: 3525
title: New Concept of Sheep Growth
abstract: A limited supply of original, first edition copies of this book provided by Professor Butterfield can be obtained for the cost of shipping by contacting:

Victoria Badalamenti
114 Morrison Hall
Cornell University
Ithaca, NY 14853-4801
E-mail: vb65@cornell.edu

Then, A print on demand of this book can be obtained from Cornell Business Services (CBS) Digital Services by sending e-mail to digital@cornell.edu or calling 607.255.2524. Please include the indentifier: http://hdl.handle.net/1813/2095, and ask to be contacted regarding payment.Sheep are one of the most important animal agricultural species and how they grow is a topic of interest to farmers and agricultural scientists world-wide. This book, published in 1988, lays the foundation for an understanding of how tissues grow in relation to each other and to the maturity of sheep. It first describes the growth of a single sheep and then goes on to show how mature size, castration, gender, and breeds affect body composition at given stages of growth. Special emphasis is placed on modern quantitative methods to define the relative maturing rate, Q, of various parts of the body. The author makes use of an extensive data base on the body composition of Australian Merino and Dorset Horn breeds for comparison purposes. Detailed appendices define terminology, techniques for carcass dissection, suggestion indices for describing changes in body composition during growth, and provide detailed data on dissectible muscle weights in sheep. This classical book should be included in the collections of agricultural scientists and livestock farmers.

url: http://hdl.handle.net/1813/2096
date: 2005-07-19
creator: Lu, Mathew
viewed: 2662
title: On Loyalty
abstract: Richard Miller (chair), Scott MacDonald, Jennifer WhitingIn this dissertation, I defend a particularist, developmental account of the demands of loyalty, particularly towards unchosen objects (e.g. familial loyalties, piety, and patriotism). After surveying the limited literature in the field, I begin by pursuing Bernard Williams' suggestion that the deepest loyalties in human life are not subject to justification on the basis of universalist moral theories. In general, I argue that modern ethical theory?both broadly consequentialist and broadly Kantian?cannot account for demands of special concern towards particular persons, groups, and traditions, because those theories are intrinsically insensitive to the intra-volitional values that inform such demands. In response to the inadequacies of the universalist views, I attempt to derive such loyalties from the intra-volitional structure of a mature human will. My argument describes the ground conditions of a morally mature will?conditions with which any tenable moral theory must be compatible. I hope to be describing

some of the essential features of human moral psychology as they are actually valued, features no moral theory can ignore while remaining faithful to the content of the lived moral life.
I make special use of Harry Frankfurt's account of volition, autonomy and commitment, especially his notion of volitional necessity?the idea that a moral agent is compelled to perform certain actions not as a result of the deliberations of practical reason, but because his caring for certain objects is itself partially constitutive of his will. However, I think this view is incomplete and so drawing on work by Jonathan Lear, I offer an account of the origins of moral responsibility in the course of personal moral development. I argue that moral responsibility can only be fully understood in light of how an agent achieves maturity as a reaction to and reflection of the public values of his social world.
I ultimately hold that the structure of any humanly valuable will is characterized by the sort of volitional necessities that give rise to the deepest demands of love and loyalty. Accordingly, any adequate conception of the mature moral agent must make room for loyalties directed at unchosen objects as acts of self expression.
Intercollegiate Studies Institute

url: http://hdl.handle.net/1813/2097
date: 2005-07-19
creator: Jung, Hee
viewed: 2156
title: ESTIMATION PROBLEMS FOR SATELLITE ORBIT AND ATTITUDE DETERMINATION AND FOR GPS-BASED REMOTE IONOSPHERIC SENSING
abstract: Prof. Mark L. Psiaki
Prof. Paul Kintner
Prof. Mark CampbellThree separate applications of estimation problems in satellite navigation and attitude determination and in ionospheric scintillation monitoring have been solved numerically. The first application is magnetometer-based autonomous orbit determination, the second application is attitude determination using a GPS antenna on a turntable, and the third application is ionospheric scintillation monitoring using semi-codeless dual-frequency GPS techniques.
As the first application, a magnetometer-based orbit determination batch filter has been improved and tested with real flight data to determine the performance of a low-cost autonomous orbit determination system. The spacecraft?s orbit, magnetometer biases, and correction terms to the Earth?s magnetic field are estimated by this filter. The maximum position error of this filter for a 24-hour batch of ?rsted data is 59.50 km without field model corrections, but is only 2.19 km with 10th order/degree field model corrections.
The second application develops the signal processing algorithm for a prototype of a new attitude sensor, one that uses a single GPS antenna mounted on a rotating turntable, and evaluates its accuracy using real data. The goal of this study is to experimentally validate this new concept. The new attitude sensor measures attitude by using the sinusoidal phase modulation of the GPS carrier signal that is caused by turntable rotation. The new sensor system has been demonstrated to work in practice, and its peak attitude error is between 0.4 and 1.9 deg for a 15 cm antenna mounting radius and a rotation rate of 1000 rpm.
The third application is to develop optimal semi-codeless algorithms to track weak dual-frequency P(Y) GPS signals during strong ionospheric scintillations and to test them with real and simulated RF data. The goal of this work is to determine whether these new algorithms are less prone to loss of lock during strong scintillations than are other semi-codeless algorithms. The tracking algorithms use extended Kalman filter (EKF) and smoother methods as part of a semi-codeless technique that performs maximum a posteriori estimation of the W encryption bits of the unknown P(Y) code, which are known to chip at approximately 480 KHz.
The algorithms have been successfully tested with real wide-band dual-frequency GPS data under normal signal strength and simulated scintillation conditions with strong amplitude and phase fluctuations. The C/N0 thresholds above which the Kalman-filter algorithm and the smoother algorithm can still track without

losing lock are found based on the computed steady-state standard deviation of the L2 carrier phase error from steady-state covariance analysis. This threshold roughly agrees with the tracking results for the simulation data and can be used to predict the possibility of loss of lock.NASA grants NAG5-8076 and NAG5-9612, NASA grant NAG5-11919, NASA grant NAG5-12211

url: http://hdl.handle.net/1813/2100
date: 2005-07-21
creator: Porter, Katherine
viewed: 2788
title: SUBDUCTION ZONE-TO-MANTLE FLUXES OF TRACE ELEMENTS AT INTRAOCEANIC MARGINS AND IMPLICATIONS FOR MANTLE EVOLUTION
abstract: Chemical and isotopic anomalies in mantle-derived rocks have been explained by invoking the presence of recycled oceanic crust (i.e., material of crustal origin that is incorporated into the mantle at subduction zones) in their mantle sources. Differences between the chemical and isotopic characteristics of the ingoing slab material and those of the inferred slab-derived mantle reservoirs have been attributed to processes within the subduction zone that alter the composition of the ingoing slab. However, there have been few studies that have specifically examined the composition of residual slab material to determine the effects of subduction zone processing. I used a mass-balance approach to calculate residual slab compositions at nine intraoceanic subduction zones. I calculated residual slab trace element ratios and modern isotopic characteristics of ancient subducted slabs in order to examine the feasibility of mantle evolution models that posit a major role for subducted slabs. Using my calculated residual slab compositions, I was unable to reproduce the chemical and isotopic characteristics of the mantle that have been attributed to the incorporation of recycled crustal material. Modifications to my model to account for variations in mantle wedge composition and in crustal addition rates do not significantly alter these conclusions. My results therefore indicate that subduction zone processing alone is probably insufficient to produce the chemical and isotopic characteristics of inferred mantle reservoirs.

url: http://hdl.handle.net/1813/2101
date: 2005-07-21
creator: Douds, David;Seidel, Rita;Hanson, James;Hepperly, Paul;Pimentel, David
viewed: 2538
title: Organic and Conventional Farming Systems: Environmental and Economic Issues.
abstract:

url: http://hdl.handle.net/1813/2102
date: 2005-07-21
creator: Rajagopalan, Ranjithkumar
viewed: 2299
title: Algorithms for Some Clustering Problems
abstract: Committee Members: David Shmoys, Shane Henderson, Jon KleinbergThe first part of this work gives new insight into two well-known approximation algorithms for the uncapacitated facility location problem: the primal-dual algorithm of Jain & Vazirani, and an algorithm of Mettu & Plaxton. The main result answers positively a question posed by Jain and Vazirani of whether their algorithm can be modified to attain a desired "continuity" property. This yields an upper bound of 3 on the integrality gap of the natural LP relaxation of the k-median problem, but our approach does not yield a polynomial time algorithm with this guarantee. We also give a new simple proof of the performance guarantee of the Mettu-Plaxton algorithm using LP duality, which suggests a minor modification of the algorithm that makes it Lagrangian multiplier-preserving.

The second part of this work deals with a problem we call the maximum average ratio cut problem. The motivation for this problem is a desire to expose structure in populations based on genetic information. Specifically, solving this problem allows us to evaluate unusually low heterozygosity in subpopulations. We reduce this problem to the maximum cut problem with given cardinality, and implement a branch and bound procedure to find exact solutions.National Science Foundation

url: http://hdl.handle.net/1813/2103
date: 2005-07-21
creator: Li, Hui
viewed: 3291
title: Radioisotope-Powered Self-Reciprocating Cantilever for Micro Power Generation
abstract: Prof. Amit Lal, Prof. Rajit Manohar, Prof. Michael Spencer, Micro electromechanical systems (MEMS) provide many devices in sub-millimeter size for sensing and actuation. However, the lack of size-compatible power supplies prohibits entire systems to be within the same scale. The same problem of battery scaling exists for micro electronic devices. Reported in this dissertation is a novel way of micro power generation with radioisotopes. Due to the high energy densities and long half-lives of selected radioisotopes, high energy density power sources with extremely long operation time are possible.

Conversion of direct charge collection to mechanical actuation is the main achievement. A cantilever with a conductive collector collects the emitted electrons from a Ni-63 beta source. Due to charge conservation, positive charges are left in the radioactive source. The resulting electrostatic force moves the cantilever toward the source. When the cantilever contacts the source, charges are neutralized and the spring force pulls the cantilever back to its initial position. This cycle repeats itself as long as the radioactive source is active. Therefore a self-reciprocating cantilever is realized. An electromechanical model is developed to characterize the cantilever and verified with experimental results. The factors that limit the energy conversion efficiency are discussed. Further, radio frequency (RF) pulse generation at the end of the reciprocation cycle is achieved using a dielectric cantilever with metal electrodes, due to the excitation of dielectric waveguide mode. This RF pulse could be used for self-powered remote sensing and wireless communication. To generate electricity, a piezoelectric unimorph replaces the cantilever. At the end of the reciprocation, the sudden release of the unimorph excites its mechanical vibration, thereby generating electricity through the piezoelectric element.

The radioisotope-powered self-reciprocating cantilever provides a single platform for mechanical actuation, RF pulse generation and electrical power generation. Integration of all these functions holds great potential to enable self-powered autonomous systems.DOE NEER Grant DARPA MTO

url: http://hdl.handle.net/1813/2104
date: 2005-07-22
creator: Silva, Helena G
viewed: 2992
title: Back Side Charge Trapping Nano-Scale Silicon Non-Volatile Memories
abstract: Sandip Tiwari, Lester Eastman, Joel Brock A new alternative device structure for scalable silicon non-volatile memories was investigated. The difficulties in scaling current devices arise from the non-scalability of the gate stack formed by the tunneling oxide, floating gate and control oxide. The proposed device is based on storage of charge in silicon nitride traps in the back of a thin single crystal silicon channel. This is intrinsically different from conventional silicon non-volatile memory structures, in which charge is stored between the silicon channel and the gate.

The devices are fabricated on a modified silicon-on-insulator substrate that employs a stack of silicon oxide ? silicon nitride ? silicon oxide as the buried insulator. The charge trapping layer, silicon nitride, is separated from the silicon channel by a thin tunneling oxide and from a back gate by a thicker blocking oxide. The

device is written and erased by applying an electric field between the back gate and source and drain that causes charge to tunnel between the silicon channel and the trapping layer. When there is no voltage applied, charge is retained in the silicon nitride, hence the non-volatility of the memory. Charges stored in the silicon nitride traps change the potential of the silicon channel resulting in a threshold voltage shift of the device that is sensed using the front gate. The decoupling of the read function (front) from the write and erase functions (back) gives this device a unique advantage in scalability and the ability to operate simultaneously as a high performance transistor and as a non-volatile memory.
Back side charge trapping non-volatile memory devices were demonstrated for the first time. The fabrication process is described and the electrical characteristics are presented. Fabricated devices exhibit memory operation down to 50 nm gate length and double gate operation down to 20 nm gate length. The memory characteristics of the devices, programming times, cycling endurance and retention time are comparable to those of conventional front side storage devices. The new device has the potential to be scaled to 10 nm gate length, a significant improvement from current devices, for higher density and lower power semiconductor non-volatile memory.National Science Foundation through the Cornell Center for Materials Research, Foundation for Science and Technology (Portugal), European Social Fund (Third Community Support Framework)

url: http://hdl.handle.net/1813/2105
date: 2005-07-26
creator: Woodroofe, Russell S
viewed: 3387
title: Shelling The Coset Poset
abstract: It is shown that the coset lattice of a finite group has shellable order complex if and only if the group is complemented. It is also shown that the order complex is Cohen-Macaulay under the same circumstances. The group theoretical tools used are relatively elementary, and avoid the classification of finite simple groups and of minimal finite simple groups.

url: http://hdl.handle.net/1813/2106
date: 2005-07-26
creator: Murphy, Troy
viewed: 2087
title: ADAPTIVE SIGNIFICANCE OF ELABORATE PLUMAGE WHEN EXPRESSED IN BOTH SEXES: MULTIPLE FUNCTIONS OF THE RACKETED-TAIL OF THE TURQUOISE-BROWED MOTMOT (EUMOMOTA SUPERCILIOSA)
abstract:

url: http://hdl.handle.net/1813/2107
date: 2005-07-27
creator: Conway, Christopher
viewed: 1746
title: An odyssey through sight, sound, and touch: Toward a perceptual theory of implicit statistical learning
abstract: Morten H. Christiansen, Michael Owren, Elizabeth Regan, Michael SpiveyIn order to steer through a world characterized by a complex mixture of variability and structure, organisms rely upon implicit statistical learning, the capability to extract probabalistic patterns occurring in environmental stimuli. Although statistical learning has been found to occur across a myriad of domains, there has been little investigation into the effect that sense modality and other stimulus attributes may have on learning. In a series of experiments, I investigate to what extent implicit statistical learning is constrained and influenced by the nature of the input

in which the statistical regularities occur. All experiments have in common the use of artificial grammar learning methodology, where adult participants are incidentally exposed to statistically-governed patterns and then are tested on their ability to apply their acquired knowledge to novel instances. Chapter 2 presents two experiments that compared learning across touch, vision, and audition, producing evidence for modality constraints. Specifically, the auditory modality displayed a quantitative learning advantage compared to vision and touch; additionally, each sense modality was more or less attuned to specific aspects of the input. Chapter 3 describes an experiment that further explored modality constraints by manipulating both the presentation format (temporal, spatial, or spatiotemporal) and presentation rate for visual and auditory material. Consistent with a modality-constrained view of learning, vision and audition were best at encoding spatial and temporal regularities, respectively. Finally, using a novel cross-over design, Chapter 4 presents three experiments that pitted abstract, amodal processing against stimulus-specific learning and found that statistical learning is mediated to a greater extent by stimulus-specific, not abstract, representations. Taken together, the results from these experiments suggest that statistical learning inherently involves learning mechanisms that are heavily influenced by the perceptual and sensory characteristics of the stimuli. I argue that a full understanding of statistical learning -- and likely other aspects of language and cognition will come only by specifying the role played by the senses. I conclude with a proposal for a perceptual, modality-constrained view of implicit statistical learning framed within the context of cognition as a whole.

url: http://hdl.handle.net/1813/2108
date: 2005-07-27
creator: Kennerly, William W.
viewed: 1807
title: MOLECULES ROTATING IN ELECTRIC FIELDS BY
QUANTUM AND SEMI-QUANTUM MECHANICS
abstract: My academic committee consisted of Greg Ezra (advisor), Ben Widom, and Paul Houston, all in the Department of Chemistry and Chemical Biology.The quantum and semi-quantum mechanics of rigid molecules rotating in static electric and intense nonresonant laser fields have been studied. Basic quantum features including energy level correlation diagrams, eigenfunctions, alignment, orientation, and time-dependent wave functions propagated under pulsed fields are calculated. Energy level nearest neighbor spacing disributions are the primary semi-quantum approach, but Husimi distributions, periodic orbits, and monodromy diagrams are also investigated. We have elucidated these facets of the quantum-classical correspondence in this important rotational model, which is classically nonscaling with mixed phase space.

url: http://hdl.handle.net/1813/2109
date: 2005-07-27
creator: Konkapaka, P. Phanikumar
viewed: 3419
title: Bulk GaN growth and Characterization
abstract: GaN is a wide bandgap semiconductor material that is used for fabrication of laser diodes, light emitting diodes, and high power, high frequency electronic devices. Due to the absence of free standing GaN substrates, these devices are fabricated on foreign substrates such as SiC, Sapphire, LiGaO2 or LiGaO3. Performance of these devices is reduced due to high dislocation densities resulting from lattice mismatch and thermal expansion coefficient mismatch between the GaN and substrate. In order to improve the performance of devices, homoepitaxial device layers grown on high quality free standing GaN substrates are needed. Bulk GaN crystals of dimensions 8.5 mm x 8.5 mm were grown at growth rates greater than 200mm/hr using gallium oxide vapor transport technique. Commercially available GaN powder and ammonia were used as the precursors for growing bulk GaN. Nitrogen was used as the carrier gas to transport the gallium containing

species that was obtained from the decomposition of GaN powder. These experiments were performed in a flow over configuration where the nitrogen carrier gas was flowing over the powder transporting the growth species. Using this process, it was possible to achieve growth rates of above 200 microns/hr. The GaN layers thus obtained were characterized using X-Ray diffraction, scanning electron microscopy, and atomic force microscopy. X-ray diffraction patterns showed that the grown GaN layers are single crystals oriented along c direction. AFM studies indicated that the dominant growth mode was dislocation mediated spiral growth. Hall mobility measurements indicated a mobility of 550 cm2/V.s and a carrier concentration of 6.67 x 10 18/cm3.

It was found that kinetics of decomposition of pure GaN powder without oxygen resulted in incongruent evaporation leading to the formation of the liquid gallium in the powder. A flow through configuration was also used because of its high collection efficiency of growth species. A mixture of Ga2O3 and carbon powder as well as commercial GaN powder were used as precursors of gallium suboxide in this configuration. This configuration also demonstrated growth rates that are comparable to flow over configuration.

url: http://hdl.handle.net/1813/2110
date: 2005-07-27
creator: Giridhar, Jothiprasad
viewed: 1009
title: A Framework for Large Eddy Simulation of incompressible flows with error control
abstract: This work developed tools to make Large Eddy Simulation (LES) more easily applicable to engineering problems. An iterative fractional step method was developed for LES. A block-matrix-based analysis procedure proved that two iterations are sufficient to achieve desired second-order temporal accuracy. Stretched Cartesian grids are mapped onto a uniform computational grid. The stencil of the pressure Poisson equation was reduced from seven to five points in each coordinate direction, while still requiring the volume fluxes to satisfy a fourth-order spatially discretized continuity equation to machine precision. The algorithm was implemented in parallel.

Improved criteria for comparing sub-grid models was obtained by comparing the statistics from the LES with those from the unfiltered Navier-Stokes equations. This allowed us to clearly define the convergence of an LES approach with resolution length scale, Δ. The difficulty in assessing the accuracy of the statistics obtained from an LES is solved by modeling the statistics of unresolved, or residual, motions. We then combine the ideas of convergence and modeling the statistics of residual motions to give a rationale for the choice of better values for sub-grid model parameters. The performance of these ideas is studied in the context of forced isotropic turbulence and temporal mixing layer.

In isotropic turbulence, extrapolation techniques were developed to determine the DNS statistics in the limit of infinite Re. The resolved kinetic energy (KE) converged to the same asymptote for the three eddy-viscosity models studied. Addition of modeled residual KE to resolved KE improved estimate for turbulent KE. Improved values for the sub-grid model parameters were obtained by removing the leading order $\Delta^{2/3}$ term in the total KE.

In mixing layer, Δ convergence of the volume-averaged total turbulent KE degraded with time. Eddy-viscosity models were poor models for residual shear stress because the modeled residual shear stress is aligned with the resolved strain rate. Improved model parameters, which minimized the Δ variation of the volume-averaged turbulent KE, strongly depended on the time. Hence, for the above low Re mixing layer LES, it is not possible to remove the Δ variation at all times, by choosing a single set of values.

url: http://hdl.handle.net/1813/2111
date: 2005-07-29
creator: Weaver, Kenneth M
viewed: 1656

title: OBSERVATION OF chi_b(2P) TO chi_b(1P) pi+ pi-
abstract: Committee Members:
Richard S. Galik, Louis Hand, Tomas A. Arias We have searched for the di-pion transition chi_b(2P) to chi_b(1P) pi+ pi- in the CLEO-III sample of Upsilon(3S) decays in the exclusive decay chain, Upsilon(3S) to gamma chi_b(2P), chi_b(2P) to chi_b(1P) pi+ pi-, chi_b(1P) to gamma Upsilon(1S), and, finally, Upsilon(1S) to l+ l-. We refute the null hypothesis, finding a signal greater than 6 sigma deviation from expected background, and thus claim observation of this di-pion decay. For comparisons we have used the well-established channels Upsilon(3S) to Upsilon(2S) pi+ pi-, with either Upsilon(2S) to l+ l- or Upsilon(2S) to gamma chi_b(1P). Under reasonable assumptions, we find the two-pion partial width to be, Gamma_(pi+pi-) = 0.80 +- (0.21) +- (0.23,0.17) keV.

url: http://hdl.handle.net/1813/2112
date: 2005-08-01
creator: Festa, Paul E.
viewed: 3668
title: Manly Vice and Virtu: State Specters, Secular Rituals, and Public Culture in Taiwan
abstract: P. Steven Sangren, Jane Fajans, Dominic Boyer, Sherman CochranThis dissertation is an ethnographic study of male sociality and public culture in Taiwan. I examine the poetics and politics of disreputable social activities in which cohorts of male friends engage regularly and extensively, including hunting, drinking, and gambling. My analytical point of departure is the concept of ?cultural intimacy,? which recognizes how shadowy public practices whose social efficacy derives from contravening official norms actually constitute the state as well as national and other identities. This approach departs from the orthodoxy of Taiwan (and China) studies by locating the political basis of society in the public realm rather than in the family and work. This study addresses three overarching questions: What are the micropolitics of disreputable social activities through which men negotiate status and identity and construct homosocial bonds of intimacy? How are mainstream gender values and norms perpetuated and reworked through these activities, and how do subversive forms become incorporated into everyday social repertoires? In what ways do these activities instantiate, resist, and reinforce state power and nationalist ideologies?
Ethnographically, my research focuses on three social activities: deep-sea spearfishing, carousing at hostess clubs, and high-stakes gambling at mahjong, each of which my informants understood to be subversive of societal norms. Methodologically, I structure my examination of each activity around an adaptation of classic ritual analysis--namely totemism, sacrifice, and ludus--and interpret each ritual activity in the respective mass-mediated context of public culture. In so doing, I explore the production of male sociality in relation to nature and environmental discourses, gender and sexuality, fate/luck and military training, as well as state ideology and global capitalism. Based on my findings, I argue that disreputable male social activities are key sites for the production of values and communities that reconfigure the contours of public culture, capitalism, and democratization in Taiwan, and that both contest and legitimate state power. By integrating ritual analysis and cultural studies approaches, I make an original contribution to gender studies in Taiwan/China and to anthropological studies of public culture and the nation-state.Fulbright, Cornell East Asia Program, Cornell Olin Fellowship

url: http://hdl.handle.net/1813/2113
date: 2005-08-01
creator: Steven Michael Finckbeiner
viewed: 4233
title: PARTIAL CHARACTERIZATION OF COYPU SCENT GLAND COMPOUNDS
abstract: Coypu are invasive rodents that are ravaging wetlands across their introduced range. Coypu have a sexually dimorphic (male larger) anal gland (AG) used in scent marking behavior. Using GC-MS, this

study looked for a similar dimorphism in compounds produced by the AG. Male AG extract contained 15 compounds. Of the 15 compounds, 6 are fatty acids of known structure. Nine of the compounds are partially characterized farnesene isomers. Each male AG chromatograph had the same compounds present, but in differing proportions. This suggests that coypu can use AG secretion to identify individual males. Such knowledge of compounds used in coypu chemical communication could be useful in developing coypu-specific attractants. The second part of this study used a computer program to identify individual coypu by marking and matching whisker-insertion patterns. It was found that whisker insertion pattern can be used as a ?fingerprint? to aid in the photographic identification of individual coypu.

url: http://hdl.handle.net/1813/2114
date: 2005-08-01
creator: Fang, Austin
viewed: 3447
title: Porous Silicon as a Proton Exchange Membrane for Direct Methanol Fuel Cells
abstract: Direct Methanol Fuel Cells (DMFCs) show the most potential in efficient chemical to electrical energy conversion having approximately half the specific energy compared to gasoline at 5.54 kW-hr/kg (19.9 MJ/kg). With a density of 0.792 kg/L, methanol?s energy density is 4.39 kW-hr/L. By designing a system to utilize methanol, the advantages from quick refills and the elimination of recharge times offer great motivation for further analysis on this topic. Furthermore, methanol is a relatively low cost alcohol/fuel with popular applications such as automobile windshield wiper and aircraft de-icing fluids. One major source of inefficiency within the DMFC is the electrolyte allowing fuel to cross over from the anode to cathode. Proprietary DuPont Nafion 117 has been the standard thus far for all meso-scale direct methanol power conversion systems and its shortcomings are primarily in the areas of slow anodic reaction rates and fuel crossover resulting in lower voltage generation or ?mixed potential.? Porous Silicon (P-Si) is traditionally used in photovoltaic and photoluminescence applications. Rarely is it used to function as a mechanical filter or membrane. The research deals with investigations into using P-Si as a functioning electrolyte to transfer ions from the anode to cathode of a DMFC. In addition, an effort to observe the consequences of stacking multiple layers of anodes is attempted. Porous silicon was fabricated in a standard Teflon cylindrical cell by an anodization process including varying the current density to etch and electro-polish the silicon membrane. The result was a silicon membrane with pore sizes of approximately 1.5 ?m when optically characterized by a scanning electron microscope. The porous membranes were then coated in approximately 0.2 mg/cm2 Pt-Ru catalyst with a 10% Nafion solution binding agent onto the anode. Voltage versus current data shows that an open circuit voltage (OCV) of 0.25V was achieved with one layer when operating at 20oC. When adding a second layer of porous silicon, the OCV was raised to approximately 0.32V under the same conditions. The experimental data suggests that the current collected also increases with an additional identical layer of anode prepared the same way. The only difference is that the air cathode side was surface treated to 0.1 mg of Pt black catalyst with a 10% Nafion binding agent to aid in the recombination of hydrogen atoms to form the water byproduct. Porous silicon endurance runs with 2ml of 3% by volume methanol (0.7425M) fuel dissolved in water show that an operating voltage was generated for approximately 3 hours before the level dropped to approximately 65% of the maximum voltage of 0.25V. Endurance runs with a second layer added extended the useful life of the cell by approximately 2 hours to 5 hours when tested under the same conditions. When tests were conducted for voltage generation by varying the methanol concentration, a linear relationship developed up until the point where methanol seepage through the porous membrane affected measurements. In an effort to quantify the results and confirm the usefulness of the addition of a second layer, Fourier Transform Infrared Spectrometry was conducted on a number of samples to verify the methanol concentration for each layer. Additionally, a pH test was conducted to measure the relative amounts of protons dissolved in solution between the layers.

url: http://hdl.handle.net/1813/2115
date: 2005-08-02
creator: Ware, Eric Chay
viewed: 2265
title: Corrections to Radar-Estimated Precipitation Using Observed Rain Gauge Data
abstract: Chair: Dr. Daniel S. Wilks; Committee: Dr. Arthur T. DeGaetano, Dr. Patrick J. SullivanA new method is presented for calculating daily rainfall amounts from radar. Radar data from two River Forecast Centers (RFC), and daily rain gauge data from stations around the Northeast U.S. are used to create a radar-level resolution grid of rainfall. The purpose for this method is to produce fields of precipitation estimates in the operational area of the Northeast Regional Climate Center (NRCC), to archive the high-resolution precipitation product, and to use the product as input into a crop modeling program. Considering rain gauge observations as the true values, radar errors are calculated at each rain gauge location every day. Using an interpolation method, the errors are estimated at each radar pixel and added back to the radar grid. Thirty cases were selected from different times of year and different weather types. Three interpolation methods, Inverse Distance Weighting, Multiquadric Interpolation, and Ordinary Kriging, are compared to the Multisensor Precipitation Estimation (MPE), used operationally by River Forecast Centers. Parameters associated with each interpolation method are adjusted daily using cross-validation to produce the best results for each case. By using daily rain gauge data, all three interpolation methods perform similarly and better than MPE, which uses hourly rain gauge data. All methods for estimating precipitation perform best at low values of precipitation and worst at high values of precipitation. Because of the similarity in results between interpolation methods, the simplest method computationally, Inverse Distance Weighting, has been chosen to be used operationally for the Northeast Regional Climate Center.Cornell Initiative on Computational Agriculture, funded by a Special Grant of the USDA-CSREES

url: http://hdl.handle.net/1813/2116
date: 2005-08-02
creator: Hannon, Erin E
viewed: 1972
title: Infants' Perception of Musical Rhythm and Meter: Early Abilities and Developmental Change
abstract: This is my PhD dissertation in two parts.Perception of the temporal structure, or ?meter?, of music enables a range of socially and culturally significant musical behaviors such as synchronized dancing and singing. This dissertation combines developmental and cross-cultural comparisons to examine the perception of musical meter and its development during infancy. The first chapter reports that 7-month-old infants can categorize simple rhythms according to a common underlying meter. Infants also detect contingencies between positions in the meter and individual pitches, an ability that may bootstrap acquisition of knowledge about musical pitch structure. Chapter II shows that Western adults? knowledge of Western meter interferes with their ability to detect rhythmic disruptions in a foreign, Balkan meter. By contrast, adults exposed to both Western and Balkan music throughout childhood perform accurately in either context. Six-month-old infants, who have had relatively limited exposure to music, can detect metrical disruptions in either Western or Balkan contexts, which seems to indicate culture-general perception of meter. Chapter III reports a decline in 12-month-olds? performance only in the foreign musical context, which is consistent with the emergence of culture-specific metrical biases by this age. After 12-month-old infants and adults receive one or two weeks of brief, daily exposure to foreign music, infants can detect the rhythmic disruptions in foreign metrical contexts, but adults cannot. Overall, the findings document early sensitivity to culture-general aspects of metrical structure but rapid developmental change in response to culture-specific musical experiences.

url: http://hdl.handle.net/1813/2117
date: 2005-08-02

creator: Grevstad-Nordbrock, Theodore
viewed: 2440
title: THE AMERICAN COMMISSION FOR THE PROTECTION AND SALVAGE OF ARTISTIC AND HISTORIC MONUMENTS IN WAR AREAS: HISTORIC PRESERVATION IN EUROPE DURING WORLD WAR II
abstract: The subject of this thesis is historic preservation during times of armed conflict. Specifically, my purpose here is to evaluate a single effort in a discrete moment in time at a specific place: the American efforts during World War II to protect the historic buildings of Europe. To do so, the work of two civilian agencies is examined: the monuments subcommittees of American Defense-Harvard Group and the American Council of Learned Societies. Both groups were charged with sifting through the vast body of information on Europe?s cultural patrimony and rendering it usable by the Allied governments. These groups sent the information they gathered on to the American Commission for the Protection and Salvage of Artistic and Historic Monuments in War Areas, a Federal clearinghouse that, in turn, compiled the information and disseminated it to its military components serving in the various theaters of war. The final recipients of this information were the famed Monuments, Fine Arts and Archives soldiers of the United States Army. On their shoulders fell the responsibility of protecting the sweeping cultural heritage of Europe from destruction. Failing this lofty goal, they were charged with stabilizing damage to monuments where possible and recording the destruction where there was nothing left to save.

To evaluate the efficacy of this program, an examination of the city of Frankfurt am Main, Germany, is offered as a case study. Frankfurt was chosen for two reasons. First, it was typical. It was not a national capital like Berlin, Rome, or London, and thus was not rife with symbolic meaning as capital cities are. It was also ordinary in most other ways?in terms of population, history, built environment?and is arguably representative of European cities. The experiences of this city during World War II may fairly be extrapolated to those of others, not just in Germany but in other European nations as well. Frankfurt was also selected because it was the subject of a unique post-war photographic and textual survey of its historic buildings, now in the collections of the National Archives in suburban Washington, D.C. This rich resource has never been systematically analyzed.

My final assessment of these historic preservation efforts is fairly straightforward. I contend that no degree of military planning, political wherewithal, or plain good intentions would likely have spared much of the destruction suffered by Europe?s historic architecture. Even with landmarks earmarked for protection, the technology available during World War II was insufficient to guaranty against unintended damage (?collateral damage? in today?s parlance). The ?strategic, precision? bombing so often alluded to at the time, though strategic in bringing about the end of the war, was rarely precise, and many historic buildings suffered as a result.

My context here is historical. Yet this topic is as relevant today as it was in the 1940s. In spite of much-ballyhooed American ?smart? armaments and the effortless removal of desired targets with ?surgical? precision, wars still create confused, random environments. Unintended events with irreversible consequences still occur, and buildings earmarked for protection are destroyed. Adding to this confusion is a global information infrastructure, which allows news?and propaganda?to travel instantaneously to the far corners of the planet and shape international public opinion. Realizing the strategic potential in this, an enemy, even a militarily inferior one, can publicize the destruction of a monument (whether legitimately destroyed by its enemy or self-inflicted (like Nero?s Rome or Hitler?s Reichstag allegedly were)), and garner support while portraying the enemy as latter-day barbarians. And in this way, the tide of war can be shaped in ways that have little to do with military superiority.

url: http://hdl.handle.net/1813/2118
date: 2005-08-03
creator: Rider, Traci

viewed: 2870
title: Education, Environmental Attitudes and the Design Profession: A Masters Thesis
abstract: Jack Elliott, Charles GeislerAs the concept of sustainability continues to become more popular within society, a number of different professions are called on to help champion the movement. With the resource strain inflicted by the construction industry alone, dedicated architects and interior designers are important players in forward progress. Though many organizations and associations have been created to help the building industry embrace sustainability both practically and theoretically, the actual implementation of green building practices in construction has been minimal. The main focus of this study is to look at the influence of undergraduate education on designers? interest in sustainable design. Additional interest was in environmental attitudes and the impact of interpersonal relations on those attitudes.
Self-proclaimed practitioners in the green building industry were surveyed through a specified email list of the United States Green Building Council. The survey was web-based and addressed issues including environmental attitudes, undergraduate education and professional training. Dunlap and Catton?s widely-used New Ecological Paradigm scale was included to measure proenvironmental orientation of the professionals.
Contrary to the main hypothesis of the study, undergraduate education was not seen by subjects to be a fundamental force in the decision to concentrate on sustainability. A number of educational elements typically seen in environmental education, including interpersonal interactions, were mentioned by subjects as substantially influential and are therefore explored.

url: http://hdl.handle.net/1813/2119
date: 2005-08-03
creator: Schmidt, Anneliese
viewed: 1595
title: INVESTIGATION OF NEW CHEVREL PHASE COMPOUNDS FOR IMPROVED EFFICIENCY OF THERMOELECTRIC POWER GENERATION DEVICES
abstract: In the search for improved high-temperature thermoelectric materials, we investigate new Chevrel phase materials that combine substitution of Ru on some of the Mo sites and the intercalation of various metals into the Chevrel structure. We expect these materials to have low thermal conductivities, due to their rattling structure type. Nominal compositions are (generally) chosen to add 4 valence electrons to the basic Chevrel unit Mo6Se8, and make the structure semiconducting. Two series of compounds were synthesized, (CuyMo6S e8)1-x(Mo4Ru2Se8)x, with y = 2, 4 and x = 0, 0.2, 0.4, 0.6, 0.8, and MxMo5RuSey, with M = Zn, Cd, Sn and Pb, x < 1, and y < 8. These generally differ from loading stoichiometry, and only a few were found to be intrinsic semiconductors. For the first series we report the synthesis and transport property measurements, and for the latter we present the synthesis and characterization of each compound. Since nearly all previous studies of Chevrel phase compounds have exclusively involved either substitution or intercalation, this research is an important addition to the study of Chevrel phase compounds.

url: http://hdl.handle.net/1813/2122
date: 2005-08-03
creator: Kazmierczak, Mark J.
viewed: 2754
title: CONTRIBUTIONS OF SIGMA-B AND PRFA TO STRESS RESPONSE AND VIRULENCE GENE EXPRESSION IN LISTERIA MONOCYTOGENES
abstract: Dr. Martin Wiedmann, chair;Dr. John Helmann, Dr. Marci ScidmoreThe food borne bacterial pathogen Listeria monocytogenes has several mechanisms for regulating expression of stress response and virulence genes. The alternative sigma factor sigmaB is a global regulator of genes active under environmental stress conditions and during stationary phase growth. I identified a large portion of the genes regulated by

sigmaB using a promoter consensus sequence search and microarrays. sigmaB directly controls expression of at least 54 genes. The genes regulated by sigmaB encode proteins with a wide variety of functions, including basic metabolic pathways, membrane solute transporters, and stress resistance. In addition, I found six virulence genes, including bsh and five internalin genes, to be controlled by sigmaB. Another protein that regulates virulence gene expression in L. monocytogenes is PrfA. I measured expression of PrfA-dependent and sigmaB-dependent genes under conditions that activate each regulator, using quantitative reverse transcription-PCR (qRT-PCR). I found that sigmaB is active preferentially under environmental stress conditions, and activity decreases upon internalization of the bacteria by human epithelial cells. Conversely, PrfA is not active under stress conditions, but is highly active intracellularly. Additionally, I used qRT-PCR to determine that sigmaB contributes directly to prfA expression at the P2 promoter region. One gene initially identified in the microarray analysis to be sigmaB-dependent is lmo1433, which is predicted to encode glutathione reductase, an enzyme used by some bacteria to counteract oxidative stress. Characterizations of a strain bearing an in frame polar deletion of lmo1433 (delta-lmo1433), as well as a delta-sigB delta-lmo1433 strain, showed no difference in the strains' abilities to survive oxidative stress when compared to their respective parent strains, although presence of an intact sigB allele was important for survival. Likewise, the delta-lmo1433 and delta-sigB delta-lmo1433 strains did not show a difference in total glutathione reductase activity or intracellular survival and spread, as determined by plaquing ability on mouse L2 cell monolayers, when compared to parent strains.National Intstitutes of Health, U.S. Department of Agriculture

url: http://hdl.handle.net/1813/2123
date: 2005-08-03
creator: LaFrieda, Christopher
viewed: 2980
title: Custom-Quality Wire Routing Using Modern Design Rules
abstract: Rajit Manohar, Martin Burtscher, Sally McKeeThis thesis presents a wire routing methodology that produces custom-quality results. We use a gridless tile-based approach that extends previous works in four main ways. First, it captures all the intricacies of modern design rules, e.g. the difference between contact-to-contact spacing and contact-to-wire spacing. Second, it implements a robust cost model that includes: i) horizontal wire costs, ii) vertical wire costs, iii) via costs, and iv) jog costs. Third, a design-rule correct route is always guaranteed even if the search for the least-cost path is terminated early. Fourth, route ordering is dynamically updated based upon the routability of nodes. The resulting router is shown to route 1.5-11x faster than the Cadence Chip Assembly Router while consuming 6-8x less memory with 5-15% less wiring overhead.

url: http://hdl.handle.net/1813/2124
date: 2005-08-03
creator: Champagne, Alexandre
viewed: 2557
title: Mechanically Adjustable Single-Molecule Transistors and Stencil Mask Nanofabrication of High-Resolution Scanning Probes
abstract: This dissertation presents the development of two original experimental techniques to probe nanoscale objects. The first one studies electronic transport in single organic molecule transistors in which the source-drain electrode spacing is mechanically adjustable. The second involves the fabrication of high-resolution scanning probe microscopy sensors using a stencil mask lithography technique.

We describe the fabrication of transistors in which a single organic molecule can be incorporated. The source and drain leads of these transistors are freely suspended above a flexible substrate, and their spacing can be adjusted by bending the substrate. We detail the technology developed to carry out measurements on these samples.

We study electronic transport in single C$_{60}$ molecules at low temperature. We observe Coulomb blockaded transport and can resolve the discrete energy spectrum of the molecule. We are able to mechanically tune the spacing between the electrodes (over a range of 5 \AA) to modulate the lead-molecule coupling, and can electrostatically tune the energy levels on the molecule by up to 160 meV using a gate electrode. Initial progress in studying different transport regimes in other molecules is also discussed.
We present a lithographic process that allows the deposition of metal nanostructures with a resolution down to 10 nm directly onto atomic force microscope (AFM) tips. We show that multiple layers of lithography can be deposited and aligned. We fabricate high-resolution magnetic force microscopy (MFM) probes using this method and discuss progress to fabricate other scanning probe microscopy (SPM) sensors.

url: http://hdl.handle.net/1813/2125
date: 2005-08-03
creator: Cadle-Davidson, Molly
viewed: 2943
title: MECHANISM OF RESISTANCE TO BEAN COMMON MOSAIC VIRUS CONFERRED BY THE I LOCUS IN PHASEOLUS VULGARIS L.
abstract: Resistance employed by plants to combat infection by pathogens from a broad range of species is frequently mediated by resistance genes (R genes). While R genes are known to be involved in pathogen recognition, how they convey this message to host defense machinery is not completely understood. These studies employ genetics and cell biology to evaluate the interaction of pathogen infection in resistant and susceptible host plants. The system used here is the I locus of Phaseolus vulgaris L. and the Potyvirus, Bean common mosaic virus (BCMV). Near isogenic lines for the I locus were challenged with BCMV at 20?C, 26?C and 34?C, and assayed over time using a number of different techniques. A protoplast system was developed for use in transfection experiments for determination of viral replication in the presence of the I allele. Confocal laser scanning microscopy was used in combination with fluorescence immunostaining to localize viral coat protein in resistant and susceptible responses. Genes that are differentially expressed in these isolines at 26?C and 34?C following inoculation with BCMV were detected using cDNA-AFLP. Protoplast experiments revealed that BCMV is able to accumulate in genotypes containing zero, one, or two copies of the I allele, although at different rates. Results from microscopic observations support the protoplast data and show that BCMV infects II, Ii and ii plants but that movement is restricted in resistant genotypes (II and Ii). cDNA-AFLP analysis revealed 20 genes that are differentially expressed during the infection process. Sequence analysis demonstrated that several of these genes are Phaseolus homologs of those known to be involved in plant defense responses in other well-characterized systems.

url: http://hdl.handle.net/1813/2126
date: 2005-08-03
creator: Futrell, William Chad
viewed: 2698
title: DAIRY INDUSTRIALIZATION AND SPRAWL IN AN UPSTATE NEW YORK COUNTY
abstract: Thomas A. Lyson; Max J. Pfeffer; Gilbert W. Gillespie, Jr.In this thesis I examine the interaction of agricultural industrialization and sprawl in an upstate New York county. A longitudinal representative case study of dairy farming in Ontario County, NY was conducted in order to evaluate the efficacy of the treadmill of technology and impermanence syndrome hypotheses in explaining dairy farm survival and expansion. According to the treadmill of technology hypothesis, larger farmers are more likely to adopt capital and management-intensive technology. They are then more likely to expand their operations in part to increase the returns on their investment. Those farmers that do not adopt these technologies are more likely to exit agricultural production. The impermanence syndrome hypothesis, on the other hand, holds that farms located in areas experiencing urban sprawl are likely to experience a number of negative

externalities, including complaints about their operations. These farmers are less likely to continue investing in their farms because they foresee selling their land to developers. These farmers are thus more likely to exit agricultural production.

The case study site, Ontario County, NY, was chosen because it has experienced many of the processes representative of the Northeast. Namely, the County is a traditional dairy farming area where the number of farms has been declining and the size of farms increasing. Also, the traditionally rural County is experiencing increasing urban sprawl emanating from Rochester.

I collected primary and secondary qualitative and quantitative data on the County in order to build the case study. Qualitative data included numerous site visits and interviews with community leaders and residents in order to understand the historical and socio-economic context. Quantitative data included Census of Agriculture data on the County's agricultural sector, with particular emphasis on dairy farming. I also used national Census data and tax parcel data to chart population and housing flows as well as the conversion of farmland to non-agricultural uses. Finally, the case study hinges upon surveys conducted on a group of Ontario County dairy farmers in 1993, 1998, and 2002. While the original intention of the study was to follow 50 dairy farmers over a 10 year period, the high number of farm exits among the group made this impossible. As such, my thesis discusses the results of the initial survey along with the farmers still dairy farming in 1998 and 2002.

Employing the analytic technique of pattern matching, the case study produced contradictory findings in terms of the two hypotheses examined. In terms of the treadmill of technology hypothesis, the on-farm panel surveys showed that adopting capital-intensive technologies increased the likelihood of expanding production to become a very large dairy farm but did not necessarily ensure that the farm would continue dairy farming. In terms of the impermanence syndrome hypothesis, the results show that scholars must be more precise when operationalizing their studies. While scholars have generally used the perception of sprawl as a proxy for objectively measured sprawl, the perception of sprawl was strongly associated with farm exit in the 1993 survey with objective sprawl being a stronger indicator in the 1998 survey. Likewise, complaints from neighbors were more associated with the size of the dairy farm than the existence of urban sprawl.

I showed that the treadmill of technology and impermanence syndrome hypotheses should not necessarily be seen as rival hypotheses but rather complement one another. That is, farms located in more rural areas are more likely to expand their production than those located in sprawl areas. Also, larger farms are more likely to perceive sprawl, in part because they are more likely to receive complaints.USDA Regional Project NE-177 Structural Transformation of the Dairy Industry

url: http://hdl.handle.net/1813/2127
date: 2005-08-03
creator: Scimeca, Michael
viewed: 2743
title: EFFECTS OF GLUTATHIONE PEROXIDASE 1, GLUTATHIONE PEROXIDASE 4 AND COPPER, ZINC-SUPEROXIDE DISMUTASE GENE KNOCKOUTS ON ENZYME ACTIVITIES, BODY SELENIUM AND RESISTANCE TO OXIDATIVE AND NITROSATIVE STRESSES
abstract: This thesis addresses two studies, 1) characterization of a glutathione peroxidase 4 (GPx4) haploid insufficient (+/-) mouse and 2) effects of different levels of glutathione peroxidase 1 (GPx1) and Cu, Zn - superoxide dismutase 1 (SOD1) gene dosage on enzyme _expression and responses to paraquat (PQ), diquat (DQ) and/or acetaminophen (AP) toxicity. These studies are united in a general way by addressing response to oxidative stress with altered antioxidant enzyme _expression and in a more specific way by involvement of two selenium (Se) containing glutathione peroxidases (GPx1 and GPx4) and SOD1. All three of these enzymes are believed to be involved in in vivo metabolism of reactive oxygen species (ROS).

GPx4 is structurally and functionally unique among selenoperoxidases since it functions as a monomer and is able to metabolize phospholipid hydroperoxides. GPx4 is more resistant to Se depletion than other

selenoperoxidases and deletion of both GPx4 alleles is embryonic lethal, indicating an important role that is not yet fully understood.

Experiment 1 examined the effects of deletion of one gpx4 allele at baseline and with a ROS challenge. GPx4+/- and wild-type (WT or GPx4+/+) mice were injected with 24 mg/kg body weight of the ROS generator PQ or phosphate buffered saline (PBS) control and sacrificed 4 h later. GPx4+/- mice had decreased GPx4 activity in lung, liver, kidney and testis, from 24 to 39% ($P < 0.05$) lower activity than WT. GPx4+/- mice had a 34% ($P < 0.05$) decrease in testis Se concentration. GPx4+/- had no effect on Se concentration, protein carbonyl formation (measure of oxidized protein) or GPx1 activity in other tissues or GPx3 and alanine aminotransferase (ALT) activity in plasma. In summary, deletion of one gpx4 allele demonstrated a range of effects on GPx4 activities and Se concentrations, but did not affect susceptibilities to pro-oxidant-induced protein oxidation in various tissues of mice.

SOD1 and GPx1 are often considered to detoxify ROS in the cytosol. SOD1 produces hydrogen peroxide from superoxide which GPx1 reduces to water. A dramatic increase in ROS lethality has been found in cells and mice lacking GPx1 or SOD1 (GPx1-/- or SOD1-/-) whereas GPx1-/- hepatocytes are protected against reactive nitrogen species (RNS) induced cell death.

Experiment 2 compared responses of mice with various gene dosages of both SOD1 and GPx1 in a 72 h survival trial to the ROS generator DQ (25 mg/kg body weight) or the putative in vivo RNS generator AP (600 mg/kg body weight). Although this experiment was limited by sample size and group death rates, some general trends emerged. The SOD1 knockout allele decreased AP-induced mortality and increased DQ-induced mortality ($P < 0.05$). The GPx1 knockout allele increased mortality from both AP and DQ ($P < 0.05$). In combination, mice with only one functional copy in total of SOD1 and GPx1 (GPx1+/-|SOD1-/- or GPx1-/-|SOD1+/-) had significantly decreased DQ survival time but unchanged AP survival time ($P < 0.05$). AP-treated GPx1+/-|SOD1+/+ mice died significantly earlier than control (<40 h) but GPx1+/-|SOD1+/- survival time was not significantly different from control (>72 h). SOD1 knockout was also associated with 28 to 34% decreases in GPx1 activity, ($P < 0.05$; +/+ vs. +/- and $P = 0.078$ +/+ vs. -/-), depending on SOD1 copy number). Plasma ALT peaked between 20-40 h (11740 ? 1074) with AP treatment and <20 h with DQ treatment (2129 ? 537) but was unchanged in all surviving mice.

In summary, there are a variety of responses to antioxidant enzyme knockouts and not all are detrimental to defense against oxidative stress. In Experiment 1, gpx4 deletion reduced tissue GPx4 activity and testis Se without increased susceptibility to PQ toxicity. In Experiment 2, SOD1 knockout was associated with high resistance to AP toxicity, high susceptibility to DQ toxicity and decreased GPx1 activity while GPx1 knockout was associated with increased AP and DQ mortality. Overall, the effect of SOD1 knockout on resistance to AP lethality was greater than the effect of GPx1 knockout on AP lethality.

url: http://hdl.handle.net/1813/2128
date: 2005-08-04
creator: Ling, Tzufan
viewed: 2319
title: LASER INDUCED LYSIS OF ESCHERICHIA COLI CELLS AND BACILLUS SUBTILIS SPORES
abstract: The principle of laser induced cell/spore lysis was explored in this project. E. coli K12 and B. subtilis spores were chosen as the target analytes. The lasers available for testing were of wavelength 980nm and 1480nm. As a proof of concept, a 2uL droplet of E. coli culture in nutrient broth was place on a hydrophobic surface. The tip of the laser fiber was placed directly above the droplet, and the droplet was exposed to 100mW (1480nm) or 200mW (980nm) for 4 minutes. An alternative setup of the droplet testing was also designed to prevent evaporation. The droplet was placed in a well made in 2mm thick PDMS and covered with a glass slide. The laser fiber was placed above the glass slide. The results showed that there was moderated lysis using both lasers. The percentage lysis was greater using 1480nm laser (21%) than the 980nm laser (14%). This was expected since the main cause of cell lysis is due to a sudden increase in temperature. The aqueous nature of

cells thus makes the lysis highly dependent on the water absorption coefficient, which is 50 times higher at 1480 nm than at 980 nm. The alternative setup showed slightly less lysis (9% for 980nm). The difference to the droplet experiment results indicates that evaporation occurred during the droplet test which resulted in a smaller testing volume and thus in higher exposure to the laser.

The next step was to test the laser in microfluidic channels in order to determine whether it would be applicable for a micro-bioanalytical system. A 25 parallel-channel design with channel widths of 50?m and depths of 100?m were fabricated on a silicon wafer and subsequently realized in poly(dimethylsiloxane) using soft-lithography. In addition to E. coli cells, the effectiveness of lysis of B. subtilis spores was also explored. Variable flow rates of 5?L/min, 2?L/min, 1?L/min and 0.5 ?L/min were implemented. The results showed a greater percentage of lysis of E. coli cells compared to the droplet method (31% for 5uL/min, 41% for 2uL/min, and 43% for 1uL/min). However, no lysis was observed for B. subtilis spores under any flow rate.

url: http://hdl.handle.net/1813/2130
date: 2005-08-05
creator: Nussbaum, Rachel Emily
viewed: 4417
title: The Kroll Opera and the Politics of Cultural Reform in the Weimar Republic
abstract: THE KROLL OPERA AND THE POLITICS OF CULTURAL REFORM IN THE WEIMAR REPUBLIC

Rachel Emily Nussbaum, Ph.D, Cornell University, 2005

This dissertation deals with changes in cultural policy during the Weimar Republic and how they affected the structure of the German opera public. I pay special attention to the role of theater-goers' organizations such as the Berlin Volksb?hne, who formed a major part of the audience for Weimar Germany's best-known experimental opera, the Kroll Opera (1927-1931). The expansion of the opera public to include social groups who had previously been excluded was here combined with an attempt to reform opera aesthetically, to create an "everyday opera" which would do away with kitsch and make opera a viable art form capable of speaking to a modern audience.

The ideas of the Volksb?hne centered on community (Gemeinschaft) which involved using the theater as a way of uniting German society. In this way, they lined up with conductor Otto Klemperer's plans for an opera representative of the new republican state form. Although the opera was forced to close in 1931, I argue that it nevertheless managed to create its own public far beyond the elites who usually attended opera. The Kroll is an example of the transformation of the idea of the Bildungsb?rgertum , or the educated bourgeoisie, in the1920s. It has often been argued that this was an outdated idea in the Weimar era. However, it had considerable power at the time. Avant-garde critics who supported Klemperer's idea of an opera stripped of spectacle were actually part of the Bildungsb?rgertum due to their continued belief in the power of culture to unite disparate groups within German society. However, as the opera audience actually expanded to include the working class and white-collar workers, conflict surrounding the idea of Bildung (self-formation) was inevitable. What would have to change about operatic culture? Its form, its content or simply its price structure? The decline of the old bourgeois culture which had supported opera before 1914 meant that its heritage was placed in question. Would "an opera for every day" still be opera? My sources include the files of the Prussian state theater administration; the files of the Ministry of State; the records of Volksb?hne annual meetings, as well as the organization's published journals; and contemporary newspapers and music journals. Michael P. Steinberg, Isabel V. Hull, Arthur Groos

url: http://hdl.handle.net/1813/2131
date: 2005-08-05
creator: Yiu, Fang

viewed: 3818
title: A GEOMETRICALLY EXACT THIN-WALLED BEAM THEORY CONSIDERING IN-PLANE CROSS-SECTION DISTORTION
abstract: A fully nonlinear theory of a three-dimensional thin-walled beam, in arbitrary rectangular coordinates with the pole of the sectorial area at an arbitrary point and the origin of the sectorial area at an arbitrary point of the beam section, is developed to incorporate transverse shear, torsion-induced warping, and local-buckling-induced cross-section distortion. Based on a geometrically-exact description of the kinematics of deformation, this theory allows large deformation and large overall motion with a general out-of-plane warping function and a general in-plane distortion function. The present theory can exactly reduce to the classical Vlasov theory for vanishing shearing and cross-section distortion in the case of small deformation. The nonlinear weak form of the governing equations of equilibrium is constructed and the linearization of the weak form is derived. A finite element code is developed to implement this generalized thin-walled beam element. The results given by the post-buckling analysis are compared with numerical and/or experimental results to investigate the local buckling effect on the member behavior.

url: http://hdl.handle.net/1813/2132
date: 2005-08-05
creator: Fredrickson, Daniel
viewed: 3085
title: The Nowotny Chimney Ladder Phases: the role of electron counts and interfaces in the stability of intermetallic compounds abstract: Consists of 4 previously published articles (Chapters 1-4) and one unpublished (Chapter 5).This thesis consists of three investigations into the electronic structure of solid state materials. In each case a semi-empirical method, extended Hueckel (eH) or mu2-Hueckel (mu2) is used for qualitative insight, with LDA-DFT being used to calibrate the semi-empirical calculations.
The first part accounts for two empircal rules of the Nowotny Chimney Ladder phases (NCLs, intermetallic compounds of the form TtEm, T: groups 4-9, E: groups 13-15). The first rule is that for late transition metal NCLs there are 14 valence electrons per T atom. The second is a pseudo-periodicity with a spacing of cpseudo=c/(2t-m), for the stoichiometry TtEm. Both rules accounted are for by viewing the NCLs as constructed from blocks of the RuGa2 structure of thickness c/2, with successive layers rotated 90 degrees relative to each other. Sterically encumbered E atoms are then deleted at the interfaces between layers, followed by relaxation. eH calculations explain the special stability of RuGa2, the parent NCL structure, at 14 electrons per T atom. A gap between filled and unfilled bands arises from the occupation of two Ga-Ga bonding/Ru-Ga nonbonding orbitals plus all five Ru d levels per RuGa2 (7 filled bands for 14 electrons/Ru). We discuss the connections between this 14 electron rule and the 18 electron rule of organometallic complexes.
Second part of this thesis reports the synthesis, crystal structures, and electronic band structures of (pyrene)10-(I3-)4(I2)10, 1, and of [1,3,6,8-tetrakis(methyl- thio)pyrene]3(I3)3-(I2)7, 2. In both structures, the organic molecules form face-to-face cationic stacks which are separated from one another by a polyiodide network. eH Band calculations suggest that the stacks of pyrene molecules in 1 have undergone a Peierls distortion appropriate to a 3/4 filling of the HOMO bands of the stacked pyrene molecules. Band calculations on 2 suggest that it is a Mott insulator. The intermolecular contacts within both the polyiodide networks and the face-to-face stacks of organic cations are rationalized within the frontier orbital framework.
In the final part studies a two-dimensional structure map for AB3 binary transition metal compounds with variables appropriate for direct quantum-mechanical energy calculations: electron count and Delta Hii, the difference in d-orbital Coulombic integrals. The experimental structure map differentiates between the six known AB3 transition metal structure types: Cr3Si, AuCu3, SnNi3, TiAl3, TiCu3 and TiNi3. The theoretical map (based on mu2 calculations) gives good agreement with the experimental map. Further analysis of the mu2 results indicates that the major energetic differences stem from the varying number of three- and four-member rings of bonded atoms.

url: http://hdl.handle.net/1813/2133
date: 2005-08-05
creator: Vaccaro, Lynn Ellise

title: Patterns, Mechanisms, and Ecological Implications of Cattail (Typha spp.) Dominance in Great Lakes Wetlands
abstract: Committee: Barbara Bedford and Jed SparksMany wetlands of the Great Lakes region are increasingly dominated by species of cattails, including the native Typha latifolia, the introduced Typha angustifolia, and their hybrid Typha glauca. Cattails are observed to form dense stands of live and dead biomass that may reduce plant diversity and compromise wetland habitat value. Cattail expansion has been used as an indicator of environmental change in the Everglades, but a broad analysis of the distribution and impacts of the northern species has not been conducted. In this study, I examined the patterns of cattail distribution across the Great Lakes, explored one mechanism by which cattails attain dominance in several Lake Ontario wetlands, and experimentally measured the effect of cattail biomass on plant species diversity in one wetland.

Patterns at the regional scale were addressed by analyzing vegetation surveys of 90 wetlands around the Great Lakes. Surveys were conducted in collaboration with scientists from the University of Minnesota, Duluth and the University of Wisconsin, Madison as part of an EPA-funded research program, the Great Lakes Environmental Indicators project. I compared patterns of dominance of invasive Typha (T. angustifolia and T. glauca) with those of five co-occurring, native graminoids, Typha latifolia, Sparganium eurycarpum, Calamagrostis canadensis, Carex lacustris and Schoenoplectus tabernaemontani. In contrast to the native species, the invasive Typha species represented a larger proportion of the plant cover in wetlands where they occurred (16% vs. 2 - 9% for natives), and their occurrence was associated with lower species density (7.1 vs. 8.6- 9.7 spp/m2 for natives). Unlike the native species, the relative cover of invasive Typha was positively related to an index of agricultural intensity calculated for a wetland's watershed ($p<0.001$). Agriculture uniquely explained 10% of the variation in the relative cover of invasive Typha, after accounting for variation due to lake identity (21%) and mean water depth (6%).

Among six Lake Ontario wetlands, I investigated the relationship between cattail abundance, litter accumulation, and species density in two hydrogeologic settings. I hypothesized that litter biomass would be higher in the Typha-dominated, open embayment wetlands than the protected wetlands that contained a mixed marsh meadow community. The mean biomass of all litter was higher in the open wetlands (1.7 - 2.6 vs. 0.4 -1.2 kg/m2 for protected sites) and litter biomass was negatively related to species density ($r2=0.88$, $p=0.005$). I further explored whether variation in litter biomass could be explained by differences in production, decomposition or hydrology. Peak live biomass was similar across the six sites. Decomposition rates in the fallen litter layer explained some of the variation in total litter (standing and fallen), but could not account for the overall higher accumulation in the open wetlands. Between May and September 2004, wetlands open to the lake experienced a narrower range of monthly water levels than the protected wetlands. The more stable water levels and the higher density of standing cattail litter in the open wetlands may be limiting the physical removal of litter, resulting in greater litter biomass.

Within one cattail-dominated wetland, I experimentally tested the hypothesis that an accumulation of cattail litter reduced species density. I added and removed both standing and fallen litter, and transplanted test seedlings into all plots. After 14 weeks, I found that fallen litter negatively influenced seedling survival ($p=0.061$) and species density ($p=0.024$), but the effect of standing litter was insignificant. In summary, both observational and experimental data indicate a negative relationship between cattail litter biomass and species density. Therefore, factors affecting cattail litter production (e.g., agriculture) and decomposition (e.g., water levels) could have important implications for cattail dominance and species diversity in Great Lakes wetlands.
US EPA's Science to Achieve Results (STAR) Estuarine and Great Lakes (EaGLe) program through funding to the Great Lakes Environmental Indicators (GLEI) Project, US EPA Agreement EPA/R-8286750. Andrew

W. Mellon Student Research Grant. Biogeochemistry and Environmental Biocomplexity Small Grants.

url: http://hdl.handle.net/1813/2134
date: 2005-08-05
creator: Cu, Yen
viewed: 2379
title: Design of Plasmid Amplified DNA Building Block Synthesis System and Evaluation of Dendrimer-Like DNA Based Fluorescent Nanobarcodes
abstract: Masters ThesisMethods for producing DNA building blocks with high purity and yield were investigated, including solid-phase DNA synthesis and plasmid amplified DNA synthesis (PADS). In addition, an analysis of the properties of dendrimer-like DNA (DL-DNA) as nanobiosensor was conducted to explore the viability of its real-world application.

Four-armed dsDNA building blocks (X-DNA's) were successfully acquired using solid-phase synthesis. X-DNA consisted of 4 oligonucleotides that are partially complementary such that a cross-shaped dsDNA molecule is formed upon annealing. It was ligated to a 30bp dsDNA spacer immobilized onto micrometer-sized 6% cross-linked agarose beads via biotin-avidin interactions. A subsequent washing step was performed to rid the sample of non-X-DNA structures, and X-DNA was released from the spacer by restriction enzyme digestion. Gel electrophoresis of the product showed higher purity, 72% compared to 67.5% shown in the solution-hybridized X-DNA prior to solid-phase. Characterization of X-DNA was performed by ligation of 4 complementary hairpin loops which serve to close off all open dsDNA ends and prevent the structure from exonuclease digestion. Unchanged DNA concentration after 15 and 30 min of ExoIII digestion at 37oC was observed, confirming the synthesis of X-DNA.

Plasmid amplified DNA synthesis takes advantage of the natural DNA producing system in Escherichia coli for high-yield production of plasmids containing sequence for three-armed DNA building blocks (Y-DNA). A nicking enzyme was used to produce a single-stranded break in the plasmid. ExoIII digestion at 37oC was performed to produce ssDNA plasmids. Annealing at 70oC causes a branched hairpin (Y-shape) to form on each ssDNA strand. Simultaneous digestion of the Y-shape hairpin by three enzymes produces Y-DNA. Single and combinational of enzyme digestion was applied to characterize the ssDNA plasmid, and determined to be a Y-shape structure.

Lastly, fluorescent DNA nanobarcodes were analyzed for their purity, coding capability, compared to concentration-based coding method, as well as differential bleaching of green (G) and red (R) fluorescence. Pure populations of DNA nanobarcodes (4G1R, 2G1R, 1G1R, 1G2R, 1G4R) and multi-code mixtures, immobilized on 5.5um polystyrene beads, were obtained. The fluorescent intensities (R and G) were measured from 12-bit images taken by a wide-field microscope; the illumination source is a Mercury arc lamp and respective fluorescent colors obtained using green and far-red filters. The purity of each population was assessed by analyzing the magnitude of R/G fluorescent ratio standard deviation for each pure barcode populations (N>50beads). Comparison of the mean for each codes to a theoretical R/G ratio yield their codability. The DNA nanobarcodes were determined to be pure and their experimental R/G ratios conform to theoretical values, unlike concentration-based DNA barcodes. Bleaching analysis of red and green fluorodyes reveal that red dye bleach faster than green, however the ratio of R/G, and nanobarcodes, did not change significantly over time.

url: http://hdl.handle.net/1813/2135
date: 2005-08-05
creator: Isbell, Billie Jean
viewed: 3786
title: To Defend Ourselves, Ecology & Ritual in an Andean Village
abstract: The ethnography, To Defend Ourselves, describes a series of rituals that maintain social structure and

practices in the community of Chuschi, Peru. It was first published in 1978, with a second edition published in 1985 and a Spanish edition due out in the fall, 2005.

url: http://hdl.handle.net/1813/2136
date: 2005-08-09
creator: American Jewish Relief Committee
viewed: 2251
title: Report on Postwar Poland, 1919
abstract: Letter excerpts, 2 pagesWith the American Red Cross in Poland. Excerpts from Letter written by Dr. (Major) H. I. Davis to Mrs. Davis. Poland, Warsaw Mar. 23, 1919

url: http://hdl.handle.net/1813/2137
date: 2005-08-09
creator: De Windt, Harry
viewed: 2364
title: Through Savage Europe, 1907
abstract: Travel narrative, 15 pagesTravel narrative of a special correspondent of the "Westminster Gazette" on the Balkans, first published in 1907.

url: http://hdl.handle.net/1813/2138
date: 2005-08-09
creator:
viewed: 2341
title: U.S. Diplomatic Correspondence on the Destruction of Czechoslovakia, Spring 1939
abstract: Diplomatic correspondence, 40 pages40 pieces of US diplomatic correspondence relating to the dissection of Czechoslovakia.

url: http://hdl.handle.net/1813/2139
date: 2005-08-09
creator:
viewed: 2982
title: Documents on the Founding of Czechoslovakia, 1918-1924
abstract: Documents, 35 pagesDocuments relating to the establishment of the Czechoslovak state.

url: http://hdl.handle.net/1813/2140
date: 2005-08-09
creator: Galloway, George
viewed: 3551
title: The Tears of Poland, 1795
abstract: Poem (or song), 5 pagesPoem of sorrow (nationalist) relating to the second partition of Poland in 1793.

url: http://hdl.handle.net/1813/2141
date: 2005-08-09
creator: Gerard, Emily
viewed: 3745
title: The Land Beyond the Forest, 1888
abstract: Travel narrative, 28 pagesTravel narrative of Gerard's journey to Transylvania -- fragments relating

to the Transylvanian Saxons' (Germans) religion, education and way of life.

url: http://hdl.handle.net/1813/2142
date: 2005-08-09
creator: Kossuth, Lajos
viewed: 2217
title: The Claims of Hungary on the Female Sex, Speech given in New York City, 1851
abstract: Speech, 4 pagesFormer Hungarian president, Lajos Kossuth, speaks to the Ladies of New York in 1851 about the sorrows of Hungary as they relate to women.

url: http://hdl.handle.net/1813/2143
date: 2005-08-09
creator:
viewed: 2671
title: Report on Young Women Workers in Poland, 1952
abstract: Report, 3 pagesReport to the Head of the Labor Unions Regarding the Situation in the Home of the Young Woman Worker in Nowa Sol, the province of Zielona Gora, 1952. Recounts instances of insubordinate and deviant behavior.

url: http://hdl.handle.net/1813/2144
date: 2005-08-09
creator: Musialkowski, J.
viewed: 2922
title: The Warsaw Women-Masons Do Not Give in to Men: Female Teams Achieved 11, 314 Bricks and 74 Square Meters of Plaster
abstract: Newspaper article, 2 pagesRecounts a labor competition in which women do mason work as quickly as men. From Trybuna Ludu, 1949.

url: http://hdl.handle.net/1813/2145
date: 2005-08-09
creator: Taylor, Bayard
viewed: 2506
title: A Glance at Warsaw, 1859
abstract: Travel narrative, 5 pagesTaylor relates scenes from his travels to Cracow and Warsaw in the mid 19th century.

url: http://hdl.handle.net/1813/2147
date: 2005-08-10
creator: Czymmek, Karl;Bouldin, David;Chase, Larry;Bossard, Shawn;McBride, Murray;Telega, Lee; Harrison, Ellen Z., viewed: 2303
title: Considerations for Dairy Farms Regarding Use of Sewage Sludges, Sludge Products and Septage
abstract: Sewage sludges and sludge-based products can be used as agricultural soil amendments. They can provide a free or low-cost source of organic matter, nutrients and sometimes lime. Those entities responsible for sludge management provide farmers with their assessment of the benefits of land application. There are specific considerations regarding sludge use on dairy farms for animal, human, soil and plant health as well as for relationships with neighbors. This document is intended to help dairy farmers and their advisors make informed decisions regarding the use of sewage sludges, sludge-based products and septage and to outline measures that can reduce the risks that may be associated with application on dairy farms.

url: http://hdl.handle.net/1813/2148
date: 2005-08-11
creator: Dadlani, Manoj
viewed: 4009
title: IMAGE PROCESSING OF DNA NANOBARCODE
abstract: Master of Engineering ThesisAn image processing software package was designed to assign clearly distinguishable colors to DNA nanobarcode probes labeled with varying ratios of red and green fluorescent dyes. The DNA nanobarcode probes were produced using novel tri-strand Y-shaped DNA secondary structures. These Y-shaped DNA structures are multivalent and anisotropic, allowing for specific and controlled hybridization to other Y-shaped DNA building blocks to create a dendrimer-like DNA structure (DL-DNA). Here, the image processing of fluorescence-intensity-encoded nanobarcodes was explored using the MATLAB software environment. DNA nanobarcodes were created with varying green:red intensity ratios: 4G1R (4 green : 1 red), 2G1R, 1G1R, 1G2R and 1G4R. Additionally, these nanobarcodes incorporated specific molecular probes to target the DNA of bacillus anthracis (anthrax), francisella tularensis (?rabbit fever?), Ebola virus, a positive control and corona virus (SARS) respectively. Fluorescence was amplified by attaching DL-DNA to polystyrene beads through biotin-avidin interactions. The nanobarcodes were visualized using a fluorescent microscope and pseudocolor images were obtained. These images were easy to distinguish for 4G1R (bright green) and 1G4R (bright red), but were difficult to distinguish for other ratios which showed up as different shades of yellow, green and orange. Using the image processing software, these nanobarcodes were assigned highly distinguishable colors based on their green:red intensity ratio, allowing for easy and fast visual identification of the pathogens targeted. With further development, this software package will be able to assign at least 25 different and visually distinguishable colors for two and three fluorescent dyes arranged in varying ratios to create high throughput visual screening of harmful pathogens.Cornell University, Molecular Bioengineering Laboratory

url: http://hdl.handle.net/1813/2149
date: 2005-08-11
creator: Petzen, Joan;Telega, Lee;Bonhotal, Jean
viewed: 1997
title: Natural Rendering: Composting Livestock Mortality and Butcher Waste
abstract: A set of three posters, both in English and Spanish, have been developed for educators and are available for downloading (Powerpoint) and printing. A 20-minute video complements this fact sheet and is available at www.nraes.org/publications/nraes163.htmlFunded in part by Empire State Development, American Association of Meat Processors and Cornell Cooperative Extension.

url: http://hdl.handle.net/1813/2150
date: 2005-08-16
creator: Kossuth, Lajos
viewed: 3501
title: “Retrospect and Prospect,” Speech given in Utica, NY, 1852
abstract: 4 pagesHungary’s former revolutionary leader, Lajos Kossuth, bemoans the fate of Hungary’s crushed revolution of 1848-1849 and expresses bitterness that the US did not come to Hungary’s aid then.

url: http://hdl.handle.net/1813/2151
date: 2005-08-16
creator: Baron, W.
viewed: 2933

title: Letter from an Austrian Officer in Hungary, 1848-1849
abstract: 5 pagesThe letter of an Austrian soldier describing the military frontier and the border soldiers (Grenzer or Granicari) around the Hungarian periphery. Covers the following themes: Military Frontier of Hungary; its Extent and Situation--Frontier troops--The Seressans; their personal appearance, costume--Dress of the other Border Troops their character; military spirit of their Women; their personal beauty; their costume--Villages of the Borderers--Family houses--Patriarchal manners--Service required of the Border-Soldier--Guard-posts.

url: http://hdl.handle.net/1813/2152
date: 2005-08-16
creator: Namier, Lewis
viewed: 3270
title: The Case of Bohemia, 1917
abstract: 4 pagesArgues for an independent Bohemia as a check on the power of Germans and Magyars (Hungarians).

url: http://hdl.handle.net/1813/2153
date: 2005-08-16
creator: Rasin, Alois
viewed: 3048
title: International Remedy for Depreciated Currencies, 1921
abstract: 4 pagesCzech statesman Rasin discusses the means by which to create a viable Czechoslovak economy in the wake of the collapse of the Austro-Hungarian Monarchy.

url: http://hdl.handle.net/1813/2154
date: 2005-08-16
creator:
viewed: 3098
title: The Rijeka (Fiume) Resolution, 1905
abstract: 3 pagesExpresses solidarity with the Hungarian wish to gradually achieve full independence from Austria. Also, talks about the territorial integration of Dalmatia, Croatia and Slavonia as a condition of support for Hungarian aims.

url: http://hdl.handle.net/1813/2155
date: 2005-08-16
creator: Sapieha, Prince Leon
viewed: 3740
title: Letter on Galician Autonomy, 1868
abstract: 2 pagesLetter from Prince Leon Sapieha to Count Beust reporting on the passage of a resolution to secure autonomy for Galicia by the The Diet of the kingdom of Galicia and Lodomeria and of the Grand Duchy of Cracow.

url: http://hdl.handle.net/1813/2156
date: 2005-08-16
creator: Scheu, Robert
viewed: 1759
title: Travels Through Bohemia, 1919
abstract: 13 pagesThis excerpt comes from a book-length study published in 1919, by an Austrian journalist

who was the son of a famous Austrian Social Democrat. Scheu traveled around the language border in Bohemia during the summer of 1918, just before the Great War ended and much changed. Terms that might be unfamiliar to the American reader are explained within brackets. Other editorial notes consist mostly of factual corrections to Scheu?s account. (Abstract prepared by Jeremy King of Mt. Holyoke College)

url: http://hdl.handle.net/1813/2157
date: 2005-08-16
creator: Lehar, Johann
viewed: 2853
title: Legal Appeal Regarding the National Categorization of Schoolchildren in Moravia, 1912
abstract: 5 pagesAppeal of Johann Lehar in Hohenstadt (Zabreh [the Czech name]) (Moravia) to the Supreme Administrative Court against the Ministry of Religion and Education, May 11, 1912. Complains about the practice of sending German schoolchildren to Czech schools.

url: http://hdl.handle.net/1813/2158
date: 2005-08-16
creator:
viewed: 3481
title: Administrative Court Decision Concerning the National Categorization of Schoolchildren in Moravia, 1913
abstract: 3 pagesDecision on the case of Lehar (see document by this author) regarding the practice of nationalizing schoolchildren in Austrian Moravia.

url: http://hdl.handle.net/1813/2159
date: 2005-08-16
creator: Smodlaka, Josip
viewed: 3540
title: Josip Smodlaka on Conditions in Dalmatia, 1910
abstract: Speech, 10 pagesThe following speech was delivered in the Austrian Parliament on December 3, 1910. The speaker, Dr. Joseph Smodlaka, the founder of the Croat Democratic Party in Dalmatia, and member of Parliament for Spalato, is one of the ablest and most attractive Southern Slav politicians, and what is still better, "a modern of the moderns" in the midst of medieval conditions. The well-known Austrian novelist, Hermann Bahr, in his Dalmatinische Reise (pp. 109-117), gives an admirable character sketch of Dr. Smodlaka. He tells us how he had learnt of Dr. Smodlaka as translated from the Stenographische Protokolle of that date. (Abstract by R.W. Seton-Watson)

url: http://hdl.handle.net/1813/2160
date: 2005-08-16
creator: Turk (Tuerk), Karl
viewed: 3013
title: The Development of German-Czech Relations, 1898
abstract: 13 pagesDiscusses several aspects of Czech-German relations since 1848 from a German perspective. Talks about how Slavs in general and Czechs in particular are edging Germans out of cultural and political life in Austria.

url: http://hdl.handle.net/1813/2161
date: 2005-08-16
creator: Steinacker, Wolfgang

viewed: 2312
title: The Concept of National Belonging and The Practice of Determining National Belonging in Old Austrian Nationalities Law, 1932
abstract: 14 pagesTexts relating to how nationality was determined in Bohemia and Moravia under Habsburg rule (mostly precedents from the beginning of the 20th century). [For related material, see the Lehar case and the Moravian court decision in that case, also in this archive]

url: http://hdl.handle.net/1813/2163
date: 2005-08-18
creator: Young, Thomas
viewed: 3595
title: On the Mechanism of the Eye
abstract: Thomas Young was an English physician and a physicist who was responsible for many important theories and discoveries in optics and in human anatomy. This is a paper written by him that describes the mechanism of the eye from 1801.

url: http://hdl.handle.net/1813/2164
date: 2005-08-20
creator: Archduke Palatine Stephen
viewed: 2383
title: Archduke Palatine Stephen to the Hungarian Diet, July 8, 1848
abstract: Speech, 3 pagesArchduke Palatine Stephen speaks to the Hungarian Diet about "preserving the integrity of the Hungarian realm" in the face of assaults by "evil-disposed, rebellious agitators" (especially in Croatia). Also speaks of Ferdinand's sanction of the union of Transylvania with Hungary. Assures Hungary of the king's respect for and loyalty to Hungary.

url: http://hdl.handle.net/1813/2165
date: 2005-08-20
creator: Strossmayer, Bishop Josip Juraj
viewed: 2372
title: Letter of Bishop Josip Juraj Strossmayer to Mr. William E. Gladstone, October 1, 1876
abstract: Letter, 4 pagesBishop Strossmayer, who signs as "Bishop of Bosnia" (a Croat bishop based in Djakovo, in Slavonia) writes to Gladstone expressing sympathy for the granting of full administrative autonomy or independence to Bosnia and Bulgaria to free them from the Ottoman imperial influence and make them good Christians again.

url: http://hdl.handle.net/1813/2166
date: 2005-08-20
creator: Strossmayer, Bishop Josip Juraj
viewed: 2344
title: Bishop Josip Juraj Strossmayer to Mr. William E. Gladstone, February 10, 1877
abstract: Letter, 4 pagesStrossmayer writes of the need for Europe to intervene in Turkey (on behalf of the Slavs of the Ottoman Empire) to protect Christians against atrocities by the Muslim administration. (See other letters from Strossmayer to Gladstone, 1876, 1878)

url: http://hdl.handle.net/1813/2167
date: 2005-08-20
creator: Strossmayer, Bishop Josip Juraj

viewed: 2182
title: Letter of Bishop Josip Juraj Strossmayer to Mr. William E. Gladstone, February 13, 1878
abstract: Letter, 4 pagesStrossmayer writes to Gladstone more on the Eastern Question (see his other letter from 1876-1878). Says there is an urgent need to free the Christians from Ottoman (Turkish) oppression by granting them autonomy. Recommends territorial gains for Serbia.

url: http://hdl.handle.net/1813/2168
date: 2005-08-20
creator: Strossmayer, Bishop Josip Juraj
viewed: 1748
title: Letter of Bishop Josip Juraj Strossmayer to Mr. William E. Gladstone, April 11, 1878
abstract: Letter, 3 pagesStrossmayer expresses shock that England wishes to be allied with Hungary "who know no policy save that of blind hate and aversion towards the Slavs." Fears the Brits will turn over Balkan Slavs to oppression by Greeks. (See other letters from Strossmayer to Gladstone, 1876-1878)

url: http://hdl.handle.net/1813/2169
date: 2005-08-20
creator: Towle, George M.
viewed: 3386
title: Principalities of the Danube, 1877
abstract: 23 pagesA description and history of the peoples of Serbia and the Romanian principalities from 1877.

url: http://hdl.handle.net/1813/2170
date: 2005-08-20
creator: Clemens, Samuel;Twain, Mark
viewed: 3823
title: Stirring Times in Austria, 1898
abstract: Article, 27 pagesMark Twain spent two years (1897-1899) traveling in Central Europe, staying mostly in Vienna. While there, he reported on the famous sittings of the Austrian House in 1897 during which the conservative government sought to push through the renewal of the Ausgleich [Compromise] agreement against the will of the German Liberals (Twain calls them "the Left" or "the Opposition"). The government at the time was headed by Count Badeni (a Polish aristocrat whose full name was Kazimierz Felix), known as a "strong man" for his overbearing governance of Galicia. His appointment resulted in the slow collapse of German control over the monarchy. The reason for the 1897 legislative crisis was that Badeni had issued a language ordinance that gave Czech equal status with German even within the "inner service" (meaning between government departments). The German liberal opposition was so incensed that it vowed to obstruct the Ausgleich renewal until, in Twain?s words, "the obnoxious Czech-language measure should be shelved." In the wake of the often violent protests, both within the House and in Prague, Vienna, Graz, and elsewhere in the monarchy, Emperor Franz Joseph dismissed Badeni. In the absence of a majority within the House, however, legislative action came to be undertaken increasingly by imperial emergency provisions which the parliament was not in session. This in turn further sapped the government of its remaining legitimacy. Twain outlines all these events with characteristic wit in this piece.

url: http://hdl.handle.net/1813/2171
date: 2005-08-20
creator: U.S. Representative in Vienna
viewed: 2876

title: Reports of the U.S. Representative in Vienna, 1877
abstract: Reports, 9 pagesIncludes reports on the details of Austro-Hungarian dualism, Austrian and Hungarian policy vis-a-vis the declining Ottoman Empire (Turkey) and the so-called "Eastern Question" and a variety of other issues relating to the foreign and domestic policy of Austria-Hungary.

url: http://hdl.handle.net/1813/2172
date: 2005-08-22
creator: Viele, Pat
viewed: 2697
title: Mining the Internet Tutorial
abstract: Presented at the summer 2005 meeting of the American Association of Physics TeachersThe Internet and the World Wide Web have made it very easy to make information widely accessible. Although search engines can be very useful, there are other searching otpions. During this session, I will demonstrate many helpful websites and, if time permits, respond to participant's research questions.Committee on Educational Technologies, Committee on Graduate Education in Physics

url: http://hdl.handle.net/1813/2173
date: 2005-08-23
creator: Pajerek, Jean;Kurth, Martin;Banush, David
viewed: 2872
title: Rehabilitating Killer Serials: An Automated Strategy for Maintaining E-journal Metadata
abstract: Cornell University Library (CUL) has developed a largely automated method for providing title-level catalog access to electronic journals made available through aggregator packages. CUL's technique for automated e-journal record creation and maintenance relies largely on the conversion of externally supplied metadata into streamlined, abbreviated-level MARC records. Unlike the Cooperative Online Serials Cataloging Program's recently implemented 'aggregator-neutral' approach to e-journal cataloging, CUL's method involves the creation of a separate bibliographic record for each version of an e-journal title in order to facilitate automated record maintenance. An indexed local field indicates the aggregation to which each title belongs and enables machine manipulation of all the records associated with a specific aggregation. Information encoded in another locally defined field facilitates the identification of all of the library's e-journal titles and allows for the automatic generation of a Web-based title list of e-journals. CUL's approach to providing title-level catalog access to its e-journal aggregations involves a number of tradeoffs in which some elements of traditional bibliographic description (such as subject headings and linking fields) are sacrificed in the interest of timeliness and affordability. URLs and holdings information are updated on a regular basis by use of automated methods that save on staff costs.

url: http://hdl.handle.net/1813/2174
date: 2005-08-23
creator: Thomas, Sarah
viewed: 4396
title: Advancing Scholarship Through Library Collaboration
abstract: This paper traces the history of library cooperation, from early attempts such as the Farmington Plan through successes in tech services and collection development, and from national to international cooperation. The author suggests that the only way libraries can now successfully confront the societal and economic pressures they are now facing is through continued cooperation. This continued cooperation might be realized in the creation of regional repositories, the pooling of information and data, or continued collaboration with creators of information via open access and institutional repositories. Every division of the library, including acquisitions, cataloging, and digitization, will need to be involved in this continued

collaboration for the library to continue its success in the twenty-first century.

url: http://hdl.handle.net/1813/2175
date: 2005-08-25
creator: Makagon, Maja
viewed: 3143
title: Laughter in Congenitally Deaf versus Normally Hearing College Students: An Acoustic Analisis
abstract: Committee members: Dr. Michael J. Owren, Dr. Michael H. Goldstein.
This work was done in collaboration with Dr. Michael J. Owren and Dr. E. Sumie Funayama.The developmental and phylogenetic origins of human laughter are not well understood, with available evidence inconsistently suggesting both innate stereotypy and high variability in laughter acoustics. We examined this issue by investigating laughter in 19 congenitally deaf college students, with little or no auditory experience, and in 23 normally hearing college students. Acoustic analyses focused on temporal and spectral features, as well as vocal production modes. Repeated-measures ANOVA testing indicated marked similarity in laughter produced by the two groups. Acoustic differences that did occur in amplitudes ($p < 0.01$) and durations ($p < 0.01$) of the laughs likely reflect socially prescribed suppression of loud vocalizations by the profoundly deaf, but may also result from higher phonation thresholds or weakened vocal-fold responsivity. Finding overall similarity in laugh acoustics indicates an innate foundation for the neural circuitry involved, and that specific auditory experience is not a prerequisite for the development of these species-typical sounds. Nonetheless, laugh acoustics within both groups were also quite variable, suggesting diversity, rather than stereotypy in underlying motor behavior.This research was supported in part by a grant from Cornell University Field of Psychology Graduate Student Research Awards Fund.

url: http://hdl.handle.net/1813/2176
date:
creator:
viewed: 6
title:
abstract:

url: http://hdl.handle.net/1813/2177
date: 2005-08-26
creator: Bonhotal, Jean;Harrison, Ellen Z.
viewed: 1478
title: Preventing Animal Nuisances in Small Scale Composting
abstract:

url: http://hdl.handle.net/1813/2178
date:
creator:
viewed: 17
title:
abstract:

url: http://hdl.handle.net/1813/2179
date: 2005-08-29
creator: Aldrich-Wolfe, Laura
viewed: 3689

title: The role of arbuscular mycorrhizal fungi in pasture colonization by the tropical forest tree species Terminalia amazonia
abstract: At three sites in Siete Colinas, Coto Brus, Costa Rica, I examined differences in composition of arbuscular mycorrhizal (AM) fungi between forest fragments and pastures, and consequences of these differences for seedling establishment in pastures by the tropical forest tree Terminalia amazonia.
I estimated species composition of AM fungi through spore counts from field soils and greenhouse cultures. The AM fungal community differed between forest and pasture. While some AM fungi were common in both habitats, others were abundant in one and rare or absent in the other.
To assess the importance of the change in community composition for pasture colonization by T. amazonia, I planted seedlings inoculated with either forest or pasture soil in forest and pasture, and compared survivorship, growth, and root colonization by AM fungi. Seedlings inoculated with forest soil experienced lower mortality, and greater initial growth rates and colonization by AM fungi, than seedlings inoculated with pasture soil. Differences in growth and survivorship may have resulted from differences in the AM fungal community or other differences between forest and pasture soils.
To determine whether AM fungal communities differ in their benefit, I compared the growth of seedlings inoculated with either spores obtained from forest or pasture, or with spore-free media. Seedlings inoculated with forest AM fungi had the highest root colonization, shoot phosphorus, and biomass. Seedlings inoculated with pasture AM fungi differed little from controls.
I used molecular analysis to identify which AM fungi colonize forest T. amazonia, pasture-grown seedlings, and dominant pasture grasses. AM fungal communities of seedlings planted into pastures did not reflect those of the other plants, suggesting the importance of both environment and host in determining AM fungal community composition.
Conversion of forest to pasture alters the AM fungal community. Seedling survival is higher for seedlings inoculated with forest than with pasture soil. At least some pasture AM fungi reduce mycorrhiza formation and seedling growth of T. amazonia relative to forest AM fungi. Seedlings colonizing pastures do not form mycorrhizas with the same symbionts as in forest. The significance of these differences for forest regeneration in tropical pastures merits further exploration.

url: http://hdl.handle.net/1813/2180
date: 2005-08-31
creator: Rosenkrantz, Marcy;Atkinson, Ross
viewed: 2373
title: Fostering Open Access at CUL by the use of Open Access Repositories (OARs)
abstract: Libraries in general and CUL in particular, have always been committed to providing free, open and un-impeded access to information. But as the cost of peer-reviewed scholarly literature, especially in the sciences, continues to increase we find ourselves being forced to make difficult decisions about how to allocate our limited resources. How do we strive to meet this commitment in the face of declining budgets and increasing costs? Several models of open-access publishing have been suggested, and task forces have been convened and have issued reports regarding those models. (see for example http://techreports.library.cornell.edu:8081/Dienst/UI/1.0/Display/cul.lib/2004-3) Ultimately we come to the same conclusion--we must continue to make the access to scholarly information and literature free to our users. But providing that access always has and will continue to come at a cost to the library.

url: http://hdl.handle.net/1813/2181
date: 2005-09-02
creator: Regenstein, Joe M.;Bonhotal, Jean;Olmstead, Dan;Harrison, Ellen Z.
viewed: 3713
title: Health and Safety Guidance for Small Scale Composting

abstract: Support for this project was provided by Cornell University Agricultural Experiment Station, Cornell College of Agriculture and Life Sciences, and Cornell Cooperative Extension

url: http://hdl.handle.net/1813/2182
date: 2005-09-02
creator: Brown, Nellie J.
viewed: 3738
title: Health and Safety Guidance for Composting in the School Setting
abstract:

url: http://hdl.handle.net/1813/2183
date: 2005-09-07
creator: Pesavento, Umberto
viewed: 2185
title: Unsteady aerodynamics of falling plates
abstract: We investigate the problem of falling paper by solving the two dimensional Navier-Stokes equations subject to the motion of a free falling body at Reynolds numbers around 10^3, which is typical for a leaf or business card falling in air, and experimentally, by using a quasi two dimensional set up and high speed digital video at sufficient resolution to determine the instantaneous accelerations and thus deduce the fluid forces. We compare the measurements with the direct numerical solutions of the two-dimensional Navier-Stokes equation and, using inviscid theory as a guide, we decompose the fluid forces into contributions due to acceleration, translation, and rotation of the plate. The aerodynamic lift on a tumbling plate is found to be dominated by the product of linear and angular velocities rather than velocity squared as appropriate for an airfoil. This coupling between translation and rotation provides a mechanism for a brief elevation of center of mass near the cusp-like turning points. The Navier-Stokes solutions further provides the missing quantity in the classical theory of lift: the instantaneous circulation, and suggests a revised ODE model for the fluid forces. Experimentally and numerically, we get access to different dynamics by exploring the phase diagram spanned by the Reynolds number, the dimensionless moment of inertia, and the thickness to width ratio. In agreement with previous experiments, we find fluttering (side to side oscillations), tumbling (end over end rotation), and apparently chaotic motion. We explore further the transition region between fluttering and tumbling using both direct numerical solutions and the ODE model. In particular, by increasing the non-dimensional moment of inertia in the direct numerical simulations, we observe a wide transition region in which the cards flutter periodically but tumble once between consecutive turning points. In this region, we also observe a divergence of the period of oscillation, with the cards falling vertically for distances of up to 50 times the card width. We analyze the transition between fluttering and tumbling in the ODE model and find a heteroclinic bifurcation which leads to a logarithmic divergence of the period of oscillation at the bifurcation point.NSF, ONR, AFOSR, Packard Fundation

url: http://hdl.handle.net/1813/2185
date: 2005-09-09
creator: Silterra, Rick;Nehler, Greg;Kurth, Martin
viewed: 2177
title: Using Controlled Vocabularies to Manage Resource Relationships: The KMODDL Experience
abstract: The Kinematic Models for Design Digital Library (KMODDL) exemplifies digital collections in which groups of objects are versions of the same resource and which resources are related to one another taxonomically. Other objects in the collection are supplementary materials that explicitly cite the primary KMODDL resources. To manage the complex relationships among KMODDL objects while maintaining the DC one-to-one principle, metadata developers established controlled vocabulary encoding schemes

that linked related objects. The solution implemented enables users to find all versions of a resource and all supplementary materials that cite the resource in a single search.

url: http://hdl.handle.net/1813/2186
date: 2005-09-12
creator: Holstein, Alizah
viewed: 4223
title: Rome During Avignon: Myth, Memory, and Civic Identity in Fourteenth-Century Roman Politics
abstract: Paul R. Hyams, John M. Najemy, Marilyn Migiel, Tom V. Cohen. My dissertation examines the social and political ramifications on Rome of the papacy's 1304 departure for Avignon. In this least-studied of Roman centuries, citizens weathered economic shock, loss of prestige, and a traumatic impact on their sense of political relevance. Questioning their city's identity, some turned to the communal model, while others sought to revive Roman claims to empire. Incorporating sociological, anthropological, and psychological theories of memory, my study investigates how social groups employed myth and collective memory to legitimize existing power or to introduce reforms.
Traditional scholarship has it that ideological conflict with the papacy defined the early Roman commune. However, a sustained analysis of the major chronicle sources - John of Salisbury, Otto of Freising, and Matthew Paris - reveals that cooperation was also an important defining element of communal-papal relations beginning with the 1143 revival of the senate. The early commune, moreover, seeking legitimacy, frequently entreated the German emperor to return to Rome.
The empire grew in stature in the Roman political imaginary between 1300 and 1343. The papacy's departure was attended in early century by five major popular revolts that frequently appealed to Romans' mythologized belief in their inherited claims to empire. As Rome lost political power in the papal absence, Romans enhanced their symbolic power by appealing to lasting myths.
In mid-century, Romans often fought socio-political battles through the medium of culture. Classical learning and historical memory became important tools, underscoring the class dimension of early humanism. Though elites had traditionally used the ancient past to legitimize their power, Romans of varied backgrounds began acquiring classical educations and writing history. The Anonimo romano, Giovanni Cavallini, and, most seriously, Cola di Rienzo, who incorporated ancient rhetoric, political theory, and learning into his political persona, all challenged elite dominance through extensive classical learning.
Cola's ritualized murder and Charles IV's subsequent imperial coronation at Rome reveal the profoundly changing political landscape after Cola. The imperial ideal suddenly disappeared from political rhetoric, Romans forgot Cola, and the Felice Societa' inaugurated a period of stable popular government predicated on a culture of oblivion.Cornell University Department of History, Institute for European Studies

url: http://hdl.handle.net/1813/2187
date: 2005-09-12
creator: Bryan, Linda;Koltay, Zsuzsa;Patterson, Mary;Powell, Jill
viewed: 1569
title: Creating an Integrated Public Services Desk - A Piece of Cake?
abstract: This was presented on May 23, 2005 for Professional Development Week of Cornell University Library. The panel discussed the integration of access and reference services into a single public services desk. The speakers presented the goals and objectives for unifying the desks, methods of team building among the staff, and the impact of desk scheduling.Professional Development Committee, Cornell University Library

url: http://hdl.handle.net/1813/2189
date: 2005-09-13
creator: Mueller, Jacob

viewed: 2053
title: EVOLUTIONARY, STRUCTURAL AND FUNCTIONAL ANALYSIS OF DROSOPHILA MELANOGASTER SEMINAL FLUID PROTEINS
abstract: During mating, Drosophila melanogaster males transfer accessory gland proteins (Acps) in the seminal fluid, along with sperm, to their mates. Acps mediate behavioral and physiological changes in mated females. These changes include increases in oogenic and egg-laying rates; and decreases in lifespan, sperm storage, and female's propensity to remate. A previous evolutionary EST screen in D. simulans identified a large candidate set of Acps. I organized a lab-wide annotation and male-expression confirmation of these candidate Acps in D. melanogaster, thus generating a collection of 52 stringently-selected Acps. Comparative structural modeling was then performed on 28 Acps which fall into several protein classes, including regulators of proteolysis, lipid modification, immunity/protection and cysteine-rich secretory proteins. Many of these same protein structural classes are found in the seminal fluid of mammals, suggesting a conservation of seminal protein roles. A cross-species evolutionary analysis was also performed on the 52 Acps, which identified many rapidly evolving Acps (an excess of non-synonymous/synonymous substitutions, absence of homologs in D. pseudoobscura, and low codon bias). To address the functions of Acps two reverse genetic techniques were utilized. First, ectopic expression lines were generated for 22 Acps and unmated females ectopically expressing individual Acps were tested for functions in egg-laying, receptivity, lethality, and antibacterial activity. These analyses identified two Acps that are toxic upon ectopic expression and three that enhance a females? immune defense. Though ectopic expression provides a high-throughput analysis of individual Acp function, it does not provide as rigorous a test of function as a knockout. A knockout of Acp62F, a protease inhibitor, was generated via homologous recombination. Protease inhibitors have been suggested to function in multiple reproductive processes, such as protecting sperm or regulating seminal proteins processing. I found that the sperm of Acp62F null males are less effective in preventing displacement of a subsequent male?s sperm than normal males. Acp62F, which localizes to the sperm storage organs, may thus play an important role in competition between sperm from multiple males within the female.National Institutes of Health Department of Education

url: http://hdl.handle.net/1813/2190
date:
creator:
viewed: 4
title:
abstract:

url: http://hdl.handle.net/1813/2191
date: 2005-09-13
creator: Ladau, Joshua
viewed: 2022
title: Robust Statistical Tests for Detecting the Effects of Interspecific Competition on Ecological Communities
abstract: For seventy years ecologists have debated to what extent competition affects the composition of ecological communities. At one extreme, species have been proposed to assemble independently of each other, while at the other extreme, competition and other interspecific interactions have been proposed to account almost solely for the composition of communities. Although the debate bears broadly on applied and basic ecology, it has been challenging to resolve.
The most practical approach toward resolving the debate has been null model testing. The testing begins by assuming a null hypothesis that is reflective of an absence of competitive effects, which is then used to make a statistical prediction about the observed data. If observations are inconsistent with the prediction, then

the null hypothesis is rejected, and effects of competition are inferred.
Unfortunately, as I show here, all existing null model tests are biased or non-robust. Although both qualities are problematic, the non-robustness is particularly troubling, because it means that when assumptions of the tests cannot be verified ? as is usually the case ? the tests will incorrectly indicate competitive effects unacceptably often. Thus, the tests are unreliable.
To fix the problem, I derive robust tests. Letting i and j denote the ith and jth colonists to arrive at a site, respectively, and W(i,j) the event that i and j belong to the same ?unit? (e.g., functional group, genus), I derive how partitions of colonists into units will be distributed if for all i and j, W(i,j) is conditionally independent of whether i and j share unit membership with the other colonists. Because the distribution can be derived without parametric assumptions, it can be used to test robustly for competitive effects.
I conclude by applying one of the tests to seven large data sets. In no cases does this test suggest effects of competition, although it does sometimes suggest effects of other interspecific interactions (e.g., facilitation). Overall, the predicted distribution accounts for over 95% of the variation in frequencies of partitions. Hence, the results suggest that although interspecific interactions may discernibly affect the composition of communities, those effects are generally minor.National Science Foundation Graduate Research Fellowship Program

url: http://hdl.handle.net/1813/2193
date: 2005-09-14
creator: Isbell, Billie Jean
viewed: 1941
title: Culture Confronts Nature in the Dialectical World of the Tropics
abstract: As an anthropologist, I would like to suggest that the tropics provide a perceptual environment that promotes and enhances a particular 'science of the concrete, whereby perceived order in the environment is the basis for systems of classifications, epistemological structures, and cosmologies. In the American tropics, the science of the concrete takes on a particular character that results in epistemologies founded in what I will call dialectical, reversible dualism.

url: http://hdl.handle.net/1813/2195
date: 2005-09-14
creator: Isbell, Billie Jean
viewed: 4274
title: Violence in Peru: Performances and Dialogues
abstract: I wish not only to influence my readers' perceptions of the political violence that has shaken Peru in the last decade and a half, but also to transform the relationship of researchers to such events and the rules of academic discourse about such events. The protest songs and art will not be analyzed in terms of subaltern art and hegemonic texts or in any of the usual oppositions such as traditional-modern, but rather in terms of hybridization in the exchange of ideological and cultural goods.

url: http://hdl.handle.net/1813/2196
date: 2005-09-14
creator: Isbell, Billie Jean
viewed: 3314
title: Public Secrets from Peru
abstract: A play about political violence in Peru.In deciding to create a drama about violence in Peru, I have moved away from the usual academic discourse into the arena of performance. I have made this move for a number of reasons: foremost is my desire that English-speaking audiences (and readers) hear the words of those whose stories I and my colleagues have recorded because I know that tales of terror engender denial on

the part of the listener. Perhaps dramatic form can provide a tolerable means of communication as a product of imagination, a fantasy, and to borrow a phrase that Taussig used in 1993 at a lecture at Cornell. It captures the 'reality of the really made up.' My hope is that by the end of this play, my interlocutor will have a new sense of the complex motivations of victimizers and victims caught in an increasing spiral of violence.

url: http://hdl.handle.net/1813/2197
date: 2005-09-15
creator: Zinchenko, Yuriy A.
viewed: 3115
title: THE LOCAL BEHAVIOR OF THE SHRINK-WRAPPING ALGORITHM FOR LINEAR PROGRAMMING
abstract: James Renegar, ORIE
Sidney Resnick, ORIE
Louis Billera, MathematicsHyperbolic polynomials and their associated hyperbolicity cones have origins in partial differential equations. Recently, these structures have drawn considerable attention in the optimization community as well. It turns out that most of interior point methods (IPM) theory applies naturally to the class of conic programming problems arising from hyperbolicity cones. In particular, linear programming (LP), second-order conic programming (SOCP) and positive semi-definite programming (SDP) are themselves instances of conic programming problems of this kind.
The thesis consists of two parts. The first part is devoted to the structure of a particular family of hyperbolicity cones which give a sequence of relaxations to the nonnegative orthant. The second part contains analysis of the newly proposed algorithm for LP based on these relaxations.
While one can easily construct a logarithmic self-concordant barrier (SCB) functional for the hyperbolicity cone K_p associated to an arbitrary hyperbolic polynomial p, little is known about its dual cone ${K_p}_*$. This problem is closely related to LP itself: for the case of $p(x)=E_n(x)=\prod_{i=1 \ldots n} x_i$ the (closure of the) hyperbolicity cone is self-dual and is, in fact, $\Re^n_+$. Elementary symmetric polynomials can be thought of as derivative polynomials (in a certain sense) of $E_n(x)$, and are building blocks for hyperbolic polynomials themselves, their associated hyperbolicity cones giving a natural sequence of relaxations for $\Re^n_{++}$. We give an algebraic characterization for the dual cone associated with $p'(x)=E_{n-1}(x)=\sum_{1 \leq i \leq n} \prod_{j \neq i} x_j$ which was previously unknown and show how one can easily construct a SCB functional for this cone. We comment on possible extensions of this result.
Recently a new paradigm for LP has been proposed (J. Renegar). It relies on the consecutive relaxations of the nonnegative orthant using hyperbolicity cones associated with elementary symmetric functions. In a way this gives a generalization to the notion of a central path in IPM. We analyze the local behavior of the newly proposed algorithm in the neighborhood of the optimal LP solution demonstrating that the resulting sequence of iterates will converge at least super-linearly to the solution (under some non-degeneracy assumptions).

url: http://hdl.handle.net/1813/2198
date: 2005-09-15
creator: Yotov, Kamen
viewed: 2030
title: On the Role of Search in Generating High-Performance BLAS Libraries
abstract:

url: http://hdl.handle.net/1813/2199
date: 2005-09-16
creator: Viele, Pat
viewed: 2506

title: Mining the Internet
abstract: This brief review of good starting places for web searches was later publised in Physics Education's Reviews section as Web Watch: Mining the Internet.
Physics Education: 40(1): 96-98 January, 2005

url: http://hdl.handle.net/1813/2200
date: 2005-09-21
creator: Norman, Stephen
viewed: 2504
title: Essays on Econometric Models of Relative Prices
abstract: The first chapter addresses the degree to which models which exhibit nonlinear mean reversion, such as the smooth transition autoregressive model, present a resolution to the purchasing power parity puzzle (see Rogoff, 1996). A key contribution of this paper is the development of a method of estimating a representative distribution of half lives which is based upon the observed distribution of shocks in a given time series. This approach is implemented with data on four real exchange rates. The results suggest that while NMR may produce half lives lower than the three year benchmark, half lives shorter than two years are relatively uncommon. In the second chapter, the tests of Kapetanios, Shin, and Snell (2003) and Bec, Salem, and Carrasco (2004), which are designed to detect nonstationarity verses globally stationary ESTAR nonlinearity, are extended to allow transition variables with delay parameters greater than one. It is shown that both test statistics have the same asymptotic distribution compared with the case when the delay parameter is equal to one. The application of these generalized tests is illustrated in an empirical exercise using data on a set of 105 real exchange rates and 15 real interest rates. The third chapter investigates the small sample properties of threshold parameter estimation in the self exciting threshold autoregressive (SETAR) model. While it has been shown that the conditional least squares estimator in the SETAR model behaves poorly in general (see Kapetanios, 2000), this paper identifies systematic small sample biases that results when the distribution of observations between regimes is uneven. The importance of this issue is illustrated with Monte Carlo experiments based on estimating ?commodity points? in a law of one price framework. The fourth chapter combines approaches focusing on the role of distance and market heterogeneity to study what factors contribute to spatial violations of the law of one price. Using data on disaggregated cost of living indices for a cross section of 211 cities in the United States, evidence is provided that suggests that not controlling for market heterogeneity could produce misleading estimates of the role of distance on price differentials.

url: http://hdl.handle.net/1813/2201
date: 2005-09-26
creator: Roudbari, Shawhin
viewed: 2428
title: Self Adaptive Finite Element Analysis
abstract: From the behavior of steel under thermal loads to the response of organic tissue to various stimuli, engineering research strives to develop constitutive models that allow us to understand and predict the physical world around us. Characterizing and understanding the constitutive behavior of materials is a pursuit limited by the expense and time associated with conducting and interpreting laboratory experiments. The focus of this thesis is to extend the development of an innovative computational method that aims to help circumvent the need for extensive tests as a basis for obtaining accurate and precise material response models.
Specifically, this research involves the Autoprogressive training of Neural Networks for the inverse estimation of heat transport material models. This methodology, the Self Adaptive Finite Element Analysis (SAFEA), combines a Neural Network based Constitutive Model (NNCM) with a nonlinear Finite Element Program in an algorithm which uses very basic conductivity measurements to produce a constitutive model of the material under study: Through manipulating a series of Neural Network embedded Finite Element Analyses,

it is demonstrated that an accurate constitutive model for a highly nonlinear material can be evolved and retained as an object to be used in the analysis of any problem involving the material under study.
This thesis details the theoretical development of the SAFEA algorithm and provides a simulation of the SAFEA program through a steady-state non-linear heat transfer problem. The SAFEA program, coded in MATLAB, is included in appendix.

url: http://hdl.handle.net/1813/2202
date: 2005-09-26
creator: Randriamamonjy, Josee
viewed: 1776
title: The socioeconomic correlates of HIV/AIDS knowledge and condom use in Madagascar
abstract: We estimate the determinants of HIV/AIDS knowledge and related behavior (use of condoms)among women in Madagascar, a country where prevalence remains low but conditions are ripe for a rapid increase in infections. In both rural and urban areas, more educated and wealthier women are more likely to know about means of preventing infection, less likely to have misconceptions about transmission, and more likely to use condoms. Community factors such as availability of health centers and access to roads also lead to greater HIV knowledge. However, most of the large rural-urban difference in mean knowledge is due not to location per se but to differences in schooling and wealth; rather than simply being geographically targeted, AIDS education efforts must be designed to target and be understood by uneducated and poor subpopulations.-
USAID - Cornell Institute for African Development (IAD) - the Ithaca Presbyterian Church

url: http://hdl.handle.net/1813/2203
date: 2005-09-27
creator: Bissonnette, Dennis Michael
viewed: 2689
title: TWINS, THE B/PR55 REGULATORY SUBUNIT OF PROTEIN PHOSPHATASE IIA, IS NECESSARY FOR PHOTORECEPTOR FATE SPECIFICATION AND MORPHOGENETIC FURROW INITIATION IN THE DROSOPHILA MELANOGASTER EYE
abstract: The Ras/MAPK pathway plays an essential role in the development and differentiation of eukaryotic organs. During Drosophila eye development, the cells of each unit, or ommatidium, of the eye are specified from a field of undifferentiated cells. As the morphogenetic furrow passes across the eye field, the Ras/MAPK pathway is reiteratively activated in cells posterior to the furrow to recruit first the eight photoreceptors, then the four cone cells, and finally the pigment cells. Understanding Ras/MAPK?s regulation is essential to knowing how its activation can generate so many cellular outcomes.
The enzyme protein phosphatase 2A (PP2A) is critical for successfully transducing the Ras/MAPK signal. PP2A is composed of three subunits, the associated A and catalytic C subunits compose the core enzyme, and a variable B subunit which regulates the activity of the enzyme. The Drosophila gene twins encodes the B/PR55 regulatory subunit of PP2A. Mutations in twins have previously been shown to affect the development of peripheral sensory organs in the adult fly. Large patches of mechanosensory organs are missing from the thorax of the fly, while those that remain have duplicated bristles and sockets at the expense of the mechanosensors? neuron and sheath cells. Additionally, notal tissue is sometimes transformed to wing at the posterior edges of the notum.
To better understand the role of twins in Ras/MAPK signaling during eye development, a genetic approach utilizing loss of function mutants and ectopic twins expression was used. Hypomorphic twins mutants were missing R7 photoreceptors, cone cells, and had disorganized pigment cells. Furthermore, these twins mutations were found to suppress the egfrE1 mutation, a hypermorphic allele of the Ras/MAPK receptor EGFR. Ectopic expression of twins was able to rescue the morphogenetic furrow inhibition caused by loss of EGFR function, suggesting that twins functions downstream of EGFR in Ras/MAPK signalling.

Additionally, twins suppressed furrow inhibition caused by ectopic wg, but not that caused by the loss of Notch activation, supporting twins role in regulating Ras/MAPK positively. These results suggest that twins is a positive regulator of Ras/MAPK, necessary for a subset of Ras/MAPK dependent ommatidial developmental events.

url: http://hdl.handle.net/1813/2204
date: 2005-09-28
creator: Yang, Shin-Yi
viewed: 3120
title: SOCIALISM, GLOBALISM, AND PLAYFUL SABOTAGE
abstract: This dissertation examines four contemporary Chinese artists? selected installations, performances, and video works created from 1993 to 2003. The artists who are the subjects of this dissertation are Xu Bing, Zhang Peili, Yang Zhenzhong, and Xu Zhen. Particular attention is given to several political and cultural phenomena of the time that dramatically show the tension between socialist forces and the emerging capitalist and globalist forces in China. At this moment of great change and socialist appropriation of capitalist and globalist vehicles, a great energy was provided, which inspired a creative dynamism in art. It also shaped the artists? visions in the media used. A common strategy used by these artists was one of playful sabotage, a strategy by which these artists tried to deal with the opposing forces of socialism and consumerism and then attempted to affirm the self in their new world in art.

url: http://hdl.handle.net/1813/2205
date: 2005-09-28
creator: Schmidt, Joshua
viewed: 3003
title: Orthorhombic Gamma-Brasses in the Pd-Cd System: Their Long c Axis and Composite Crystal Description, Chemical Twinning and Atomic Site Preferences.
abstract: This dissertation presents single crystal studies of Pd.213Cd.787 and Pd.235Cd765, synchrotron powder studies of Pd1-xCdx, 0.755 >= x >= 0.800, and LDA-DFT and extended Hueckel (eH) calculations on these or related phases. The two single crystal structures have a, b, and c axis lengths of respectively 9.9013, 14.0033, 37.063 and 9.9251, 14.0212, 60.181 angstroms. Their structures are in respectively Ccme and F2mm (solved as (3+1)-dimensional crystals their most convenient superspace group is Xmmm00gamma)s00). The structures have two different structural components each with their own separate axis parameters. Powder data shows that the ratio of these separate axes, S/L, varies from 1.615 to 1.64, values near the golden mean (1.618). For Pd.213Cd.787, different Pd and Cd site occupancies lead to variation in the R-factor from 2.6-3.6%. The site occupancy pattern with the lowest R-factor (among the 26,820 variants studied) is the exact site occupancy pattern predicted by LDA-DFT parameterized eH Mulliken charge populations. The phases can be understood through a chemical twinning principle found in gamma-brass, the parent structure for the above phases (a relation with the MgCu2 Laves phase is also noted). This twinning principle can be used to account for Cd and Pd site prefences. At the same time there is a clean separation among the Cd and Pd atoms for the two separate chain types at height b=0 and 1/2. These results indicate that Cd:Pd stoichiometry plays a role in phase stability.
The second chapter presents the single crystal structures of Pd.211Cd.789 and Pd.204Cd.796 in an abbreviated form. It explicitly details the results of the synchrotron powder diffraction study in chapter one as well as the 4-dimensional refinements of Pd.213Cd.787 and Pd.235Cd.765. In addition, a variable temperature, synchrotron powder x-ray diffraction study is given for Pd.210Cd.790.This work was funded by the National Science Foundation through grants DMR-007358 and DMR-0504703 as well as the Deutscher Akademisher Austaush Dienst.

url: http://hdl.handle.net/1813/2209
date: 2005-09-30
creator: Pritts, Marvin P.; Scott, Donna L.; Gravani, Robert B.; Bihn, Elizabeth A.; Rangarajan, Anusuya
viewed: 2214
title: Food Safety Begins on the Farm: A Grower's Guide
abstract:

url: http://hdl.handle.net/1813/2210
date: 2005-09-30
creator: Vidal, Jose R.; Pritts, Marvin P.; Scott, Donna L.; Gravani, Robert B.; Rangarajan, Anusuya; Bihn, Elizabeth A.
viewed: 3817
title: La Seguridad de los Alimentos Empieza en el Campo: Una Guia para el Productor
abstract:

url: http://hdl.handle.net/1813/2212
date: 2005-10-04
creator: Price, David;McConkey, Gladys;Berth, Donald
viewed: 3096
title: Engineering: Cornell Quarterly: The First Ten Years of the College Magazine
abstract: A ten-year cumulative index [ENGINEERING: CORNELL QUARTERLY The First Ten Years of the College Magazine] was published in 1976 (v11n2)

url: http://hdl.handle.net/1813/2213
date: 2005-10-04
creator: Allavena, Andr?
viewed: 3392
title: On the Correctness of Gossip-based Membership Protocols
abstract: The importance of scalability and fault-tolerance in modern distributed systems has led to considerable research in multi-cast protocols using gossip. In a gossip protocol, each node forwards messages to a small set of ``gossip partners'' chosen at random from the entire group membership. By discarding the strong reliability guarantees of traditional protocols in favor of probabilistic guarantees, gossip protocols can deliver greater scalability and fault tolerance. In early gossip algorithms, partners were chosen uniformly at random from the entire membership, limiting scalability because of the resources required to store and maintain complete membership views at each node. Later protocols avoided this issue by storing much smaller random subsets of the membership at each node, and choosing gossip partners only from these local views. Such protocols are subtle: at least some local views must change in response to group membership changes in order to preserve connectivity and performance guarantees. While these protocols have been the subject of much simulation and analysis, formal proofs of key properties - in particular the probability of partitioning - have remained elusive.
In this thesis we give a new scalable gossip-based algorithm for local view maintenance, together with a proof that the expected time until a network partition is at least exponential in the view size and the size of the departing set. We develop probabilistic bounds on the in-degree (hence the load) of individual nodes, and argue that protocols lacking our reinforcement component eventually converge to star-like networks, whose connectivity depends on a small set of overloaded nodes. We argue that the undirected connectivity graph is an expander, for which application-level gossip multi-cast protocols will converge rapidly. An analysis of the membership system under heavy churn yields a lower bound on the amount of communications required per round. Finally, we offer some arguments supporting the experimental fact that the elements of the local

views - although not a uniformly random sampling of the set of nodes in the system - have a high degree of randomness and suggesting that the state of the system after O(ln n) iterations is independent of the initial state.

url: http://hdl.handle.net/1813/2214
date: 2005-10-04
creator: Berth, Donald;Erickson, William;Smith, Howard;Moyer, Donald;Schultz, Andrew Jr
viewed: 1916
title: Engineering: Cornell Quarterly, Vol.01, No.1 (Spring 1966): Engineering Education Today
abstract: This issue contains:
"College and Engineering Education" by Andrew Schultz, JR ... "Today's Applicant: Some Admission Problems" by Donald H. Moyer ... "The Freshman and Sophmore Years" by Howard G. Smith ... "Cornell's New College Programs" by William H. Erickson ... Register of New Engineering Faculty 1965-1966 ... Faculty Publications ... Editorial

url: http://hdl.handle.net/1813/2215
date: 2005-10-04
creator: Berth, Donald;Gordon, William;Burton, Malcolm;Owen, Walter
viewed: 2082
title: Engineering: Cornell Quarterly, Vol.01, No.2 (Summer 1966): Engineering New Materials
abstract: In this issue: "Materials Science: An Engineering-Science Interface" by Walter S. Owen ... "Vantage" (a tour of the Materials Science Department) ... "An Eye and Ear to Space" by Dr. William S. Gordon ... Register ... Faculty Publications ... Editorial

url: http://hdl.handle.net/1813/2216
date: 2005-10-04
creator: Berth, Donald;Adams, Mac;Kantrowitz, Arthur;Bowles, Kenneth;Bueche, Arthur;Marble, Frank
viewed: 2901
title: Engineering: Cornell Quarterly, Vol.01, No.3 (Fall 1966): A Look into the Future
abstract: In this issue: "A Look into the Future" by Frank E. Marble, Arthur M. Bueche ... Kenneth L. Bowles ... Arthur R. Kanrowitz ... "The Next Twenty Years in Aeronautics and Space" by Mac. C. Adams ... Register ... Faculty Publications ... "Two Decades" by Donald F. Berth.

url: http://hdl.handle.net/1813/2217
date: 2005-10-04
creator: Berth, Donald;Haddad, Jerrier;Smith, Julian;Schultz, Andrew Jr
viewed: 3081
title: Engineering: Cornell Quarterly, Vol.01, No.4 (Winter 1967): CES-Continuing Engineering Studies
abstract: In this Issue: "Mutual Interests in Continuing Education" by Andrew Schultz, Jr ... "Osolescence: Rx CES" by Julian C. Smith ... "Developing Tomorrow's Engineer Today" by Jerrier A. Haddad ... "Guidepost: by Donald F. Berth ... "Vantage (phot essay on Venezuelan Engineering Educators visiting Cornell).

url: http://hdl.handle.net/1813/2218
date: 2005-10-04
creator: Berth, Donald;Fisher, Gordon;Gates, Charles;Henkel, David;White, Richard;McGuire, William
viewed: 2340
title: Engineering: Cornell Quarterly, Vol.02, No.1 (Spring 1967): Improving Man's Environment
abstract: In this Issue: "Engineering for Human Needs" by William McGuire ... "New Concept in Nuclear

Reactor Housing" by Richard N. White ... "Land Resource Utilization and Planning" by David J. Henkel ... "Water Shortage, No ... Sound Managemen, Yes" by Charles D. Gates ... "Systems Engineering and Human Environment" by Gordon P. Fisher ... Faculty Publications ... Editorial.

url: http://hdl.handle.net/1813/2219
date: 2005-10-04
creator: Luce, Alexander;Wehe, Robert;Berth, Byron;Saunders, Byron;McManus, Howard
viewed: 2529
title: Engineering: Cornell Quarterly, Vol.02, No.2 (Summer 1967): Teaching Engineering Design
abstract: In this Issue: "State of the Art" by Howard N. McManus, Byron W. Saunders, Donald F. Berth ... "Students Design Lunar Land Rover Components" by Robert L. Wehe ... "Design Realism for the Classroom" by Alexander W. Luce ... "Vantage (photo essay: Cornell Dynamitron)" ... Register ... Faculty Publications.

url: http://hdl.handle.net/1813/2220
date: 2005-10-04
creator: Berth, Donald;Olson, Judith;Strong, Everett;Stringham, L.K.
viewed: 1367
title: Engineering: Cornell Quarterly, Vol.02, No.3 (Autumn 1967): Co-Op=Vitalized Engineering Education
abstract: In this Issue: "Cooperative Education: The Industrial Perspective" by L. K. Stringham ... "Cooperative Education: The University Perspective" by Everett M. Strong ... "Cooperative Education: The Student Perspective" by Judith E. Olson ... "Vantage (600 engineering freshman begin their college careers)" ... Register ... Faculty Publications ... Editorial.

url: http://hdl.handle.net/1813/2221
date: 2005-10-04
creator: Berth, Donald;Lawrence, Alonzo;Bryant, Nelson;Edwards, Victor;Finn, Robert;Block, Henry
viewed: 1561
title: Engineering: Cornell Quarterly, Vol.02, No.4 (Winter 1968): Some Engineering-Biological Interfaces
abstract: In this Issue: "Bionics and Robots" by Henry D. Block ... "Living Chemical Factories" by Robert K. Finn and Victor H. Edwards ... "Education in Bioengineering" by Nelson H. Bryant ... "Ecology: Key to Water Quality Management" by Alonzo Wm. Lawrence ... Faculty Publications.

url: http://hdl.handle.net/1813/2223
date: 2005-10-05
creator: LeBlanc, Jim;Chandler, Adam
viewed: 2412
title: Exploring the Potential of a Virtual Undergraduate Library Collection Based on the Hierarchical Interface to LC Classification (HILCC)
abstract: The Hierarchical Interface to Library of Congress Classification (HILCC) is a system developed by the Columbia University Library to leverage call number data from the MARC holdings records in Columbia's online catalog to create a structured, hierarchical menuing system to provide subject access to the library's electronic resources. In this paper, the authors describe a research initiative at the Cornell University Library to discover if the Columbia HILCC scheme can be used as developed by Columbia, or in modified form, to create a virtual undergraduate print collection outside the context of the traditional online catalog. Their results indicate that, with certain adjustments, a HILCC model can indeed be used to represent the holdings of a large research library's undergraduate collection of approximately 150,000 titles, but that such a model is not infinitely scalable and may require a new approach to browsing such a large information space.

url: http://hdl.handle.net/1813/2231
date: 2005-10-05
creator: Calhoun, Karen
viewed: 2930
title: Being a Librarian: Metadata and Metadata Specialists in the Twenty-first Century
abstract: Discusses the role of metadata and metadata specialists in libraries over the next decade.

url: http://hdl.handle.net/1813/2232
date: 2005-10-05
creator: Calhoun, Karen
viewed: 2064
title: Integrated Framework for Discovering Digital Library Collections, An
abstract: Information seekers are generally on their own to discover and use a research library's growing array of digital collections, and coordination of these collections' development and maintenance is often not optimal. The frequent lack of a conscious design for how collections fit together is of equal concern because it means that research libraries are not making the most of the substantial investments they are making in digital initiatives. This paper proposes a framework for a research library's digital collections that offers integrated discovery and a set of best practices to underpin collection building, federated access, and sustainability. The framework's purpose is to give information seekers a powerful and easy way to search across existing and future collections and to retrieve integrated sets of results. The paper and its recommendations are based upon research undertaken by the author and a team of librarians and technologists at Cornell University Library. The team conducted structured interviews of forty-five library staff members involved in digital collection building at Cornell, studied an inventory of the library's more than fifty digital collections, and evaluated seven existing OAI and federated search production or prototype systems. Discusses the author's team's research and the rationale for their recommendations to: present a cohesive view of the library's digital collections for both browsing and searching at the object level; take a programmatic (rather than project-based) approach to digital collection building; require that all new digital collections conform to library-developed and agreed-upon OAI best practices for data providers; and implement organizational structures to sustain the library's digital collections over the long term.

url: http://hdl.handle.net/1813/2233
date: 2005-10-05
creator: Calhoun, Karen
viewed: 2475
title: Bird's Eye View of Authority Control in Cataloging, A: Workshop on Taxonomic Authority Files
abstract: Discusses the rise of cooperative authority control in cataloging and how authority control can be developed further.

url: http://hdl.handle.net/1813/2234
date: 2005-10-10
creator: Ustunel, Hande
viewed: 2667
title: Quantitative Prediction of Elastic and Anelastic Phenomena on the Nanometer Scale
abstract: In the past two decades, nanometer scale devices have become increasingly important in various scientific and technological applications such as sensors, actuators and storage devices. This thesis presents a theoretical exploration of some of the vibrational properties of such devices, with an emphasis on quality factor, the fraction of energy lost per period of oscillation in a vibrating system.

The thesis introduces a new method for obtaining the ground state structure of defects by looking at their mechanical response. This method involves calculation of the activation volume tensor of the defect using reliable ab initio techniques. As an application, results are presented for the activation volume tensor of a divacancy in silicon, a defect commonly introduced in the fabrication stages of silicon actuators. Comparison of the activation volume tensor to experimental values leads to an unambigious identification of the ground state of this defect, which has proved elusive in the literature to date. Finally, the calculation of the mechanical energy loss caused by divacancies in a silicon oscillator is given.
The thesis then turns to the calculation of the electronic mean-free path in carbon nanotubes under high-bias. Electron-phonon interactions have been found to have a considerable effect in the determination of the electron mean-free path. We determine the mean-free path of the nanotubes in the presence of various phonon modes that cause scattering of electrons. The thesis concludes with a consideration of the vibrations of suspended nanotubes, exploring first the dependence of the vibration frequencies on such factors as downward force and built-in slack in the nanotube and then turning to a fundamental loss mechanism intrinsic to any system, namely loss due to phonon-phonon interactions.MRSEC program of the NSF(No. DMR-0079992) NSF NIRT program Cornell Center for Materials Research

url: http://hdl.handle.net/1813/2235
date: 2005-10-11
creator: Kulin Ban
viewed: 3740
title: The Charter of Kulin Ban, 1189
abstract: 1 pageThis brief charter of the ban of Bosnia from 1189 is a gesture of peace to the prince and people of Dubrovnik.

url: http://hdl.handle.net/1813/2236
date: 2005-10-11
creator: Sessler, Richard J
viewed: 2623
title: STUDIES ON THE MECHANISMS OF LIGAND-INDUCED NUCLEAR LOCALIZATION OF CELLULAR RETINOIC ACID BINDING PROTEIN TYPE II
abstract: Retinoic acid (RA), a derivative of vitamin A, is well know for its ability to act as a transcriptional modulator, and it is critically involved in a number of cellular processes. The cellular retinoic acid binding proteins (CRABP-I and II) are small cytosolic proteins that bind to RA with a high affinity, and they are thought to play a role in the biological activities of RA. The expression of CRABP-II has been shown to selectively enhance the activity of a group of ligand-inducible transcription factors known as the retinoic acid receptors (RARs), and CRABP-II has also been shown to accumulate in the nucleus in response to RA treatment. CRABP-II is thought to enhance RAR activity by enhancing the movement of RA into the nucleus, where RAR functions as a transcription factor. The question addressed in this work was that of the mechanism by which CRABP-II accumulates in the nucleus in response to RA. Abolishing nuclear localization of CRABP-II, and the resulting effects on RAR activity were addressed. CRABP-II was tagged to a nuclear export signal (NES), which actively excludes a protein from the nucleus. Subsequently, the NES functionality was verified by fluorescence microscopy. Functional assays for RAR activity were performed, and it was determined that accumulation of CRABP-II in the nucleus was necessary for it to enhance the activity of RAR. To address possible mechanisms for the nuclear localization of CRABP-II, analysis of its primary and tertiary structures were performed. No nuclear localization signals could be identified in the primary sequence of CRABP-II. Comparisons of the electrostatic surface potentials of apo- and holo- crystal structures of CRABP-II identified a region of the protein that appeared to become more basic in response to RA binding. Three basic residues in the region were identified as potentially important for the change in the

surface potential. Further analysis identified the residues as being very similar in orientation to a classical primary nuclear localization signal. The three basic residues of CRABP-II were converted to alanines by mutagenesis, and the recombinant mutant was purified from E. Coli. Using the purified WT and mutant proteins, it was determined that mutation of the residues did not significantly change the proteins? sensitivity to urea-induced denaturation, and that the mutations did not significantly disturb the ability of CRABP-II to bind RA. The three basic residues were then mutated in mammalian expression vectors, and the effects of mutating them were evaluated by microscopy. It was determined that the three basic residues are required for RA induced nuclear localization of CRABP-II. Further, it was determined that Leptomycin-B (LMB), an inhibitor of nuclear export, had no effect on the RA-mediated localization of the WT or the mutant protein, suggesting that CRABP-II nuclear localization is mediated by an import machinery. Functional assays for RAR activity were used to address the functional significance of the three basic residues. It was determined that the mutant protein was unable to enhance the activity or RAR to the same degree as WT, and further that the enhancement by the mutant was similar to that obtained using the NES-tagged WT protein. Further research was done to identify the proteins involved with the RA induced nuclear import of CRABP-II. Recombinant CRABP-II-GST was shown to interact with importin?, a known nuclear import-related protein, in an RA dependent fashion. The NLS CRABP-II mutant did not interact with importin? even in the presence of RA, further supporting the hypothesis that RA induced nuclear localization requires the three NLS residues. Overall, this work suggests a unique mechanism for nuclear import, in which a non-classical NLS emerges in CRABP-II in response to RA binding.

url: http://hdl.handle.net/1813/2237
date: 2005-10-11
creator: Berger Ricca, Andres
viewed: 2251
title: ROOT DEVELOPMENT AND SOIL NITROGEN AVAILABILITY AS DRIVERS OF MAIZE-WEED COMPETITION
abstract: A mechanistic understanding of crop-weed interaction has been used in dynamic simulation models of the growth of crop-weed mixtures to estimate the outcomes of competition, including yield losses, and predict the effects of management practices. In the case of an annual crop such as maize, when plants in mixtures begin to compete for light during the early growing season, the relative position of the leaves of the crop and weeds determine the light captured by the plant and its subsequent growth and yield. Thus the total area and distribution of leaves, and factors that can change those characteristics will impact crop competitiveness. Below ground resources such as nitrogen or water availability, are thought to be among those factors that influence leaf area and distribution. However due to the complexity of studying competition for below ground resources, little information has been gathered to support this assumption.
The specific objectives of the present study are: i) to characterize early season root system growth for maize and four weed species and to determine the effects of above and belowground maize competition on maize and weed root system development; ii) characterize, in comparison with maize, the early and exponential growth phases of four weed species; iii) identify and quantify the changes induced by nitrogen stress in plant architecture and morphology that could be important in determining weeds and maize success in compete for resources in a mixed maize-weed stand. To achieve the first objective, this study utilized an herbicide injection technique to assess the comparative root geometries and temporal development patterns for redroot pigweed (Amaranthus retroflexus L.) and velvetleaf (Abutilon theophrasti Medic.) in association with maize (Zea mays L.); and redroot pigweed, velvetleaf, maize, common lambsquarters (Chenopodium album L.) and giant foxtail (Setaria faberi Herm.) in monoculture. The second and third objectives were addressed in a separate glasshouse experiment where maize, A. retroflexus, A. theophrasti, S. faberi and C. album where grown in sand culture at varying soil solution nitrogen levels (0.2, 0.5, 2, 5 mM L-1 NO3).
Root system vertical and lateral growth was more variable among species than between different soil types,

suggesting that root development in the absence of important soil physical impediments is a plant intrinsic characteristic. For A. theophrasti and A. retroflexus, root system volume was proportional to plant above-ground biomass. Thus, plants growing under a competitive environment and having reduced above-ground biomass have a proportionally smaller root system, potentially compromising their ability to capture and compete for soil resources with their neighbors. This study also provides insights into the likelihood of belowground competition occurring between plants based on the likelihood of root system overlapping and exploring the same soil regions. Increasing levels of soil nitrogen significantly increased relative above-ground plant biomass in a similar fashion for maize and the three broadleaf weeds, but S. faberi was comparatively unresponsive to higher levels of soil nitrogen. Diverse growth sensitivities to soil nitrogen may in part explain the variability of competitive relationships commonly observed under field conditions. Our results demonstrate that species do not respond uniformly to changes in soil nitrogen status and those differential responses must be addressed when considering the impact of soil fertility on competitive outcomes in agricultural systems. Furthermore, the root development study indicated that the chance of a crop-weed mixture exploiting a common region of soil or finding an enriched patch of soil are low at the early growth stages, suggesting that localized differences in nitrogen availability could drive the competitive relationship in favor of the crop or the weeds.

url: http://hdl.handle.net/1813/2238
date: 2005-10-12
creator: Viele, Pat
viewed: 3877
title: BOCES workshop Science Web Sources
abstract: Recently I demonstrated some starting places for teachers to find good science information on the Internet. Categories of sites include: professional societies, government agencies, instititutions offering professional development for science teachers, public television, and digital libraries among others.

url: http://hdl.handle.net/1813/2251
date: 2005-10-20
creator: Berth, Donald;Cady, K. Bingham;Auer, Peter;Sporn, Philip
viewed: 2129
title: Engineering: Cornell Quarterly, Vol.03, No.1 (1986-1969): Electrical Power Prospects
abstract: In this Issue: The Power Industry Looks Ahead /2 (Noted power industrialist Philip Sporn examines the power industry in terms of generation, transmission, and distribution and predicts what its state will be in 1980.) ... Prospects for Controlled Fusion /12 (What are plasmas? How can they be controlled? What is their significance for the power industry? Peter L. Auer, professor of aerospace engineering and director of Cornell's Laboratory of Plasma Studies, answers these questions.) ... University Research in Nuclear Power /24 (K. Bingham Cady, associate professor of engineering physics, and Frank Feiner, visiting professor during the academic year 1967-68, discuss the ways in which universities can participate in research and development efforts to further the growth of nuclear power.) ... Register /32 (Nephi A. Christensen and Wilbur E. Meserve, named professors emeritus by the Cornell Board of Trustees, are honored in this issue.) ... Faculty Publications /35 ... Editorial /40

url: http://hdl.handle.net/1813/2252
date: 2005-10-20
creator: Berth, Donald;Rodriguez, Ferdinand;Winding, Charles
viewed: 1627
title: Engineering: Cornell Quarterly, Vol.04, No.1 (Spring 1969): Chemical Engineering Perspectives
abstract: In this Issue: Cornell's Fourth Decade of Chemical Engineering Education /2 (Charles C. Winding,

Director of the School of Chemical Engineering, discusses chemical engineering education, past and present, at Cornell: its origins in chemistry, the five-year professional degree program, changing areas of concentration, and curriculum development.) ... Research Directions in Chemical Engineering /12 (Innovative research in chemical engineering is occurring at the interfaces of chemical engineering: chemistry, engineering, and biology. Professor Ferdinand Rodriguez of the School of Chemical Engineering explores the promising areas and determinants of research and the resultant orientation of today's chemical engineering faculty.) ... Vantage /25 (Through the appointment of Mr. Donald B. Gordon as director of industrial liaison, the College of Engineering is accelerating its efforts to increase the interplay between industry and the classroom.) ... Register /29 (An introduction to the newly appointed Joseph P. Ripley Professor of Engineering and chairman of the Department of Theoretical and Applied Mechanics, Professor Bruno A. Boley. New and visiting faculty for the academic year 1968-69 are also presented.) ... Faculty Publications /33

url: http://hdl.handle.net/1813/2253
date: 2005-10-20
creator: Berth, Donald;McNair, Arthur;Liang, Ta;Belcher, Donald
viewed: 2206
title: Engineering: Cornell Quarterly, Vol.04, No.2 (Summer 1969): Optimizing Land Resources
abstract: In this Issue: "Seeing" the Big Picture /2 (The impact of large-scale construction projects on the environment is great. Frequently, the physical consequences of these projects are of greater concern to engineers than the actual problems of design and construction. Professor Donald J. Belcher, director of the Center for Aerial Photographic Studies, examines the engineer's need to predict and control complex factors in the environment and his resultant reliance on gaining a larger perspective than that obtainable from the ground. Aerial photography provides such a perspective and allows for optimum design at the maximum savings in cost.) ... The Use of Airphotos in Tropical Development /12 (Professor Ta Liang of the Department of Geotechnical Engineering offers his special insight into the unique ground conditions and problems associated with the tropics and their development. He draws from his extensive experience with aerial photography in central Africa, South America, and western Australia to illustrate the kinds of development projects that are heavily dependent on airphoto interpretation for their success.) ... Photogrammetry: Recent Developments and Applications /18 (Photogrammetry and satellites; . . . and mapping; . . . and calibration; . . . and sculpture; . . . and architecture; . . . and medicine. The list of fields with which photogrammetry can be teamed to provide more efficiently and accurately the data needed by modern engineers is seemingly endless. Professor Arthur J. McNair of the Department of Geotechnical Engineering, discusses in detail some of these applications of photogrammetric methods.) ... Register /29 (A University salute to former trustee and chairman of the Engineering College Council, J. Carlton Ward, Jr.) ... Faculty Publications /32 ... Editorial /40

url: http://hdl.handle.net/1813/2254
date: 2005-10-20
creator: Berth, Donald;Perkins, James;Burton, Malcolm;Cranch, Edmund
viewed: 2420
title: Engineering: Cornell Quarterly, Vol.04, No.3 (Autumn 1969): The College Looks Ahead
abstract: In this Issue: Guidelines for the Future /2 (Associate Dean of Engineering at Cornell Edmund T. Cranch discusses emerging research areas and their implications for engineering education. Bioengineering, ocean engineering, geophysical problems, and technology and urban quality are the areas he projects as vital ones for study at Cornell.) ... September 1970 /17 (In the academic year 1970-71, the College of Engineering will introduce a new core curriculum for freshmen and sophomores. Malcolm S. Burton, professor of materials science and engineering and chairman of the Policy Committee which proposed the changes in the curriculum, explains the reasons for them and the greater flexibility they allow.) ... Commentary /27 (This new section of Engineering: Cornell Quarterly will feature periodic "commentary" by prominent educators and practicing

engineers on various aspects of engineering education. Dr. James A. Perkins, retired president of Cornell University, expresses his concern for the future of the professional schools. His remarks are taken from an address he gave at the 1969 annual meeting of the American Society for Engineering Education.) ... Register /32 (Joseph O. Jeffrey was recently appointed professor of materials science and engineering emeritus. He is honored in this issue, and biographical sketches of new and visiting faculty are given.) ... Faculty Publications /36 ... Editorial /40

url: http://hdl.handle.net/1813/2255
date: 2005-10-20
creator: Berth, Donald;Schultz, Andrew Jr
viewed: 2498
title: Engineering: Cornell Quarterly, Vol.04, No.4 (Winter 1970): The Quiet Revolution
abstract: In this Issue: The Quiet Revolution: From "Scientific Management' to "Operations Research" /2 (Andrew Schultz, Jr., dean of the College of Engineering, describes the emergence of operations research as a scientific discipline in this country and at Cornell. In doing so, he defines the modern industrial engineer.) ... Kaleidoscope: Cornell's OR Faculty /11 (The editors examine the diversity and character of the operations research faculty at Cornell.) ... Vantage /22 (A photoessay depicting winter activities at Cornell.) ... Commentary /27 (Cornell's newly appointed president and former provost Dale R. Corson discussed the Problem of allocation of resources within colleges and universities at the Sixth Institute for Engineering Deans at Monterey, California in March 1969. Excerpts from his remarks on this subject and the topic of engineering education in general are presented.) ... Register /33 (Walter S. Owen, Thomas R. Briggs Professor of Engineering and director of the Department of Materials Science and Engineering from 1966 to 1970, has been named dean of the Technological Institute at Northwestern University. The editors explore with him the future of materials science research, education, and practice in the United States.) ... Faculty Publications /38 ... Editorial /44

url: http://hdl.handle.net/1813/2256
date: 2005-10-20
creator: Berth, Donald;Henkel, David;Gergely, Peter;Turcotte, Donald
viewed: 1465
title: Engineering: Cornell Quarterly, Vol.05, No.1 (Spring 1970): The Moving Earth
abstract: Continental Drift /2 (Plate tectonics?what is it and how has it inlineneed our knowledge ot the earth? In his article on continental drift, Donald L. Turcotte, professor of aerospace engineering, deals with the plate model of the dynamic behavior of the earth.) ... Earthquake Engineering /10 (Peter Gergely associate professor of structural engineering, examines the nature of the threat earthquakes pose for structures and the design problems structural engineers face in atternpting to ?engineer for earthquakes.?) ... Landslides /18 (Landslides, volcanic eruptions, and earthquakes are the three naturally induced phenomena that make of this a truly moving earth. Quarterly editor Donald F. Berth interviewed noted soils specialist David J. Henkel, who explores the causes and character of landslides and their implications for structures.) ... Vantage /27 (A photoessay on the ?Meet the Professors? freshman engineering program at Cornell.) ... Faculty Publications /33 ...Editorial /40

url: http://hdl.handle.net/1813/2257
date: 2005-10-20
creator: Moore, Franklin K.;Rippel, Wally;Groninger, Vicki;Seebass, A. Richard
viewed: 2015
title: Engineering: Cornell Quarterly, Vol.05, No.2 (Summer 1970): Our Polution Quagmire
abstract: America's SST: Fallouts /2 (A long-time proponent of American development of the SST, A. Richard

Seebass, who is associate professor of aerospace engineering at Cornell, nevertheless presents an unbiased review of the proponents' and opponents' viewpoints concerning American development of the supersonic aircraft. The article concentrates on the pollutant aspects of the SST and the economic arguments for its development.) ... Electricity: Tomorrow's Car Fuel? /12 (In an interview with Quarterly associate editor Vicki Groninger, Wally Rippel, a graduate student in the School of Electrical Engineering at Cornell, presents some of his views on the need for development of electrical power systems as an alternative to pollutionridden combustion process for driving automobiles.) ... The Ultimate Pollution /16 (Professor Franklin K. Moore, Chairman of the Department of Thermal Engineering at Cornell, presents an engineering strategy for controlling thermal pollution. He discusses approaches to achieving high thermal efficiencies at power plants and methods of getting heat into the atmosphere with as little disturbance to the environment as possible.) ... Vantage /26 (A photo feature depicting summer in Ithaca.) ... Faculty Publications /30 ... Editorial /36

url: http://hdl.handle.net/1813/2258
date: 2005-10-20
creator: Dickason, Donald G.
viewed: 2974
title: Engineering: Cornell Quarterly, Vol.05, No.3 (Autumn 1970): Seeking Tomorrow's Engineers
abstract: In this Issue: Seeking Tomorrow's Engineers /2 (Who are tomorrow's engineers, how do they differ from earlier "generations," how and where should they be sought, how is their education changing, how might they influence the profession? These are among the questions discussed by Donald G. Dickason, Cornell's director of engineering admissions and student personnel.) ... The New Breed: Conversations with Cornell Students /11 (What are today's engineering students like? What are their plans and expectations, and how do they regard engineering as a profession? Thirteen Cornell students, from the freshman to the graduate level, comment on their educational outlook and experiences.) ... Register /22 (Kenneth B. Bischoff, the new director of the School of Chemical Engineering at Cornell, is featured in the Register, which also includes biographical sketches of Charles C. Winding, who is returning to full-time teaching after completing a term in the School's directorship, and of new and visiting faculty members of the College of Engineering.) ... Faculty Publications /29 ... Editorial /32

url: http://hdl.handle.net/1813/2259
date: 2005-10-20
creator: Berth, Donald;Farley, Donald;Brice, Neil
viewed: 1486
title: Engineering: Cornell Quarterly, Vol.05, No.4 (Winter 1971): Understanding Our Atmosphere
abstract: In this Issue: Our Outermost Atmosphere: Examining Some Mysteries /2 (Auroral displays and radio blackouts are the observable indications of activity in the ionosphere, a region whose phenomena are discussed by Cornell's Neil M. Brice, associate professor of electrical engineering. Professor Brice, an authority in the general area of atmospheric phenomena, is spending the current academic year in Washington, D.C., as program director of the solar-terrestrial physics area for the National Science Foundation.) ... Incoherent Scattering: Radar Experiments in the Ionosphere /11 (Both science and technology are essential to research in the upper atmosphere, and Donald T. Farley, professor of electrical engineering at Cornell, considers both the scientific and the technological aspects of his speciality in his article on incoherent scattering. Professor Farley has participated in experimental work in this field for the past decade, almost from the beginning of the development of radar as a powerful tool for ionospheric studies. He has worked at both of the two major radar observatories in the world, first at Jicamarca in Peru and subsequently at Cornell's facility in Arecibo, Puerto Rico, where he maintains an active research program.) ... Vantage /23 (Design projects are an essential part of the Master of Engineering professional degree program at Cornell, and are frequently a focal activity of undergraduates during their senior year. Some of the recent projects, most of them sponsored by

industrial companies or governmental agencies, are illustrated in this photo feature.) ... Faculty Publications /29 ... Editorial /32

url: http://hdl.handle.net/1813/2260
date: 2005-10-20
creator: McConkey, Gladys;Berth, Donald
viewed: 1782
title: Engineering: Cornell Quarterly, Vol.06, No.1 (Spring 1971): Ingenuity in the Classroom
abstract: In this Issue: Ingenuity in the Classroom /2 (As the engineer finds himself faced with shifting priorities and the need for broader insights into his daily responsibilities, so too do the educators. At Cornell ingenuity in meeting these challenges takes various forms -- new teaching "hardware," new strategies and course formats, revitalization of traditional courses, greater curriculum flexibility, and, most notably, new attitudes about the functions of education. Here we report on some interesting departures from classroom norms.) ... MINI COURSES (Professors Doing Their Own Thing) /5 ... SOCIAL AWARENESS (A New Priority for Engineers) /10 ... TEACHING ATTITUDES (Thermodynamics with Meaning) /l5 ... NEW TEACHING TOOLS (Technology Enters the Classroom) /20 ... BROADENING THE PERSPECTIVES (Law and Environmental Control) /25 ... Register /28 (Jack E. Oliver, newly appointed Irving Porter Church Professor of Engineering and chairman of a new intercollege Department of Geological Sciences, is featured in the Register. Other sketches are of faculty members who have been appointed to new positionswithin the College of Engineering.) ... Faculty Publications /33

url: http://hdl.handle.net/1813/2263
date: 2005-10-21
creator: McConkey, Gladys;Berth, Donald
viewed: 1968
title: Engineering: Cornell Quarterly, Vol.06, No.3 (Autumn 1971): Capstones of Century I
abstract: It was a small class, this first one in engineering at Cornell University, but the seven Bachelors of Civil Engineering who graduated in June of 1871 were the vanguard of 25,000 Cornell engineers who have contributed to the technological development of the United States and the world during the past one hundred years. The story of this century of engineering education is a part of the history of a great institution, a compound of noble ideas, imaginative leadership, commitment, hard work, philanthropic support -- and a bit of luck from time to time. The record of engineering at Cornell is long and distinguished, and what follows represents only a quick brush stroke over a century of progress.

url: http://hdl.handle.net/1813/2264
date: 2005-10-24
creator: Clark, Stephen
viewed: 1649
title: COLLOIDAL CDSE/ZNS, PBSE AND PBS QUANTUM DOTS FOR USE IN APPLICATIONS
abstract: DissertationColloidal semiconductor quantum dots are novel materials whose electronic and optical properties can be greatly enhanced from the bulk semiconductor properties by quantum confinement. A brief introduction to colloidal quantum dots and the effect of size on its electronic and optical properties will be given. CdSe/ZnS, PbS, and PbSe quantum dots will be described in more detail with regards to the research done in this dissertation. CdSe/ZnS quantum dots have luminescence that can be tuned in the visible, making them particularly suited for fluorescent labels in biological applications. In particular, their potential use as voltage sensors to detect cell membrane potentials and sphingosine phosphorylation will be discussed. PbS and PbSe quantum dots emit in the near infrared, wavelengths that are important to telecommunications. Their small third-order nonlinearity and relatively long (microsecond) lifetimes will

be discussed in terms of dielectric screening. Fluoresence resonant energy transfer between PbS quantum dots will also be discussed.

url: http://hdl.handle.net/1813/2268
date: 2005-10-24
creator: Paulson, Joy;Stewart, Linda
viewed: 2741
title: The Core Historical Literature of Agriculture: Agricultural History Rejuvenated for Today's Users
abstract: This article has been accepted for publication by the Journal of Food and Agricultural Information, Haworth Press, 2005.

url: http://hdl.handle.net/1813/2269
date: 2005-10-24
creator: Price, Jason;Davis, Philip M.
viewed: 2293
title: eJournal interface can influence usage statistics: implications for libraries, publishers, and Project COUNTER.
abstract: The design of a publisher's electronic interface can have a measurable effect on electronic journal usage statistics. A study of journal usage from six COUNTER-compliant publishers at thirty-two research institutions in the United States, the United Kingdom and Sweden indicates that the ratio of PDF to HTML views is not consistent across publisher interfaces, even after controlling for differences in publisher content. The number of fulltext downloads may be artificially inflated when publishers require users to view HTML versions before accessing PDF versions or when linking mechanisms, such as CrossRef, direct users to the full text, rather than the abstract, of each article. These results suggest that usage reports from COUNTER-compliant publishers are not directly comparable in their current form. One solution may be to modify publisher numbers with 'adjustment factors' deemed to be representative of the benefit or disadvantage due to its interface. Standardization of some interface and linking protocols may obviate these differences and allow for more accurate cross-publisher comparisons.

url: http://hdl.handle.net/1813/2270
date: 2005-10-24
creator: Franquemont, Edward M.;Franquemont, Christine;Isbell, Billie Jean
viewed: 3092
title: Awaq nawin: el ojo del tejedor, la practica de la cultura en el tejido
abstract:

url: http://hdl.handle.net/1813/2271
date: 2005-10-24
creator: Roncalla, Fredy Amilcar;Isbell, Billie Jean
viewed: 3243
title: The Ontogenesis of Metaphor: Riddle Games among Quechua Speakers Seen as Cognitive Discovery Procedures
abstract: The research for this paper was conducted in the Department of Ayacucho during 1975 and 1976 under the sponsorship of The National Institute of Mental Health grant number MH26118-02 and a grant from the Social Science Research Council. Billie Jean Isbell is responsible for the theoretical formulations in the paper, which she wrote in English. Fredy Amilcar Roncalla Fernandez, the coauthor, collected nearly all of the data. He is a native speaker of Quechua and without his native intuitions and careful translations, this paper would not have been written.Metaphor, it is argued, plays an important function in cognitive and

semantic development of Quechua-speaking children who engage in riddle games. It appears that riddling among the Quechua functions as a discovery procedure as children expand their cognitive operative structures and semantic domains.The National Institute of Mental Health grant number MH26118-02; Social Science Research Council

url: http://hdl.handle.net/1813/2272
date: 2005-10-24
creator: Atkins, Paul;Specter, Susan;Young, Joshua;McKee, Kumiko;Lento, Thomas;Wong, Mien;Fang, Tang;Bethe, Monica;Brazell, Karen;Global Performing Arts Consortium
viewed: 3484
title: Japanese Performing Arts Resource Center, September 2005
abstract: To view this archival copy of the site, download the zipped folder, extract the files, and open the "index.html" file in a browser.This is an archive copy, from September 2005, of the Japanese Performing Arts Resource Center prototype.

The Global Performing Arts Consortium (GloPAC) is beginning to develop Performing Arts Resource Centers (PARCs), which combine scholarly content with technological sophistication to create interactive, innovative, and interpretive Web-based learning environments designed to advance the teaching and study of the performing arts. Each PARC will have a specific focus, which may be geographic (Japan), temporal (turn of the 20th century), ethnic (Afro-American), thematic (feminist theatre), or audience oriented (teens). The resources on these sites will use individual materials that are stored and fully described in the Global Performing Arts Database (GloPAD), which will provide further opportunity for contextual research.

The Japanese Performing Arts Resource Center (JPARC) contains resources for the study of the traditional theatres of Japan and is GloPAC's initial prototype PARC. It was originally developed in 1999 by Karen Brazell, GloPAC Director and Goldwin Smith Graduate Professor of Japanese Literature and Theatre at Cornell University; Monica Bethe, GloPAC consultant and Professor at Otani University, Tokyo; and Cornell student assistants Tang Fang '99, architecture; Mien Wang, BFA '99 in painting and printmaking; and Thomas Lento '00, Asian studies. Joshua Young and Kumiko McKee, GloPAC Research Associates, have added to and edited certain pages within the site since its initial set up.

JPARC currently includes an interactive play script, a digital video of a biwa performance, a dynamic slide show on costuming, and a 3-D noh stage, as well as a multi-layered glossary and an index of translations, and primarily focuses on noh theatre at this time. An advisory committee has been formed to develop a more sophisticated JPARC, one that incorporates more advanced technologies, in-depth scholarly content, and Japanese performance genre.This JPARC copy and the archiving of it was made possible through the support of Atlantic Philanthropies by way of a grant administered by J. Robert Cooke, Cornell University professor of biological and environmental engineering.

url: http://hdl.handle.net/1813/2274
date: 2005-10-27
creator: Wheeler, Richard;Viele, Pat
viewed: 3436
title: Internet Assignments Physics 213
abstract: These assignments were 5% of the grade for Physics 213 taught at Cornell during the summer of 2005.

url: http://hdl.handle.net/1813/2275
date: 2005-10-28
creator: Berth, Donald;Lynn, Walter;Eastman, Lester;Dalman, G. Conrad
viewed: 2149

title: Engineering: Cornell Quarterly, Vol.06, No.2 (Summer 1971): The New Electronics
abstract: IN THIS ISSUE: The New Electronics: The Design and Operation of Microwave Devices /2 (Despite cutbacks in federal support, growth prospects for the electronics industry remain good. Particularly promising are new solid state microwave devices, discussed technically and in terms of their potential applications by Professor G. Conrad Dalman, who has been a research leader in this field since it began opening up in the 1960s.) ... The New Electronics: Crystals for Microwave Communication /9 (Professor Lester F. Eastman, of the long-standing "Dalman and Eastman" researchteam at Cornell, discusses the development of an imminent new era in electronics, comparable in scope to that of transistor applications. Cornell contributions to the advancement of the "new electronics" are highlighted.) ... Commentary /15 (The responsibility that engineering schools must assume in the area of environmental and other social concerns is discussed by Walter R. Lynn, director of the School of Civil and Environmental Engineering at Cornell.) ... Vantage /21 (Academic Rush Week, student-to-student counseling, the Engineering Counseling Center, Cornell News Briefs, faculty workshops ? all new and part of the College's expanded advising and counseling services for freshmen and sophomores ? are shown in a photoessay.) ... Register /26 (Four retiring engineering professors are saluted, and D. Ray Fulkerson is welcomed as the incoming Maxwell M. Upson Professor of Engineering in the Department of Operations Research.) ... Faculty Publications /30 ... Editorial /36

url: http://hdl.handle.net/1813/2276
date: 2005-10-28
creator: Berth, Donald;Schultz, Andrew Jr
viewed: 3390
title: Engineering: Cornell Quarterly, Vol.06, No.4 (Winter 1972): Celebration in Perspective
abstract: IN THIS ISSUE: Securing the Future: Centennial-Year Message from the Dean /2 (Andrew Schultz, Jr., takes a long-range view of the College's status, problems, and plans.) ... Looking Ahead: Ideas from Alumni Engineers /15 (Thoughts and recommendations that emerged from Engineering Convocation work-group meetings and executive sessions are informally reviewed.) ... A New Tradition for a New Century /20 (The first Engineering Awards, which were inaugurated at the centennial Convocation, honor fourteen benefactors of the College and a former dean.) ... (Vantage: Centennials are for Celebrating /24 (The planning and experiencing of a combined celebration and conference from the viewpoint of one who helped plan it. Donald F. Berth explores the Engineering Convocation in words and pictures.) ... Register /31 (New and visiting professors augment the College of Engineering faculty.) ... Faculty Publications /36 ... Editorial /40

url: http://hdl.handle.net/1813/2277
date: 2005-10-28
creator: Berth, Donald;Gallagher, Richard;White, Richard;Winter, George
viewed: 1887
title: Engineering: Cornell Quarterly, Vol.07, No.1 (Spring 1972): Structures for Today
abstract: IN THIS ISSUE: Thin-Walled Steel for Modern Structures: Thirty Years of Industry-Sponsored Research at Cornell /2 (Professor George Winter, who has been on the scene since 1939, reviews a long-term project that is the result of an unusual cooperative arrangement between the American Iron and Steel Institute and the University.) ... Structural Modeling in Research, Design, and Education /13 (A pragmatic approach to structural engineering research is discussed by Professor Richard N. White.) ... Consulting the Computer: A New Resource for Structural Engineers /21 (The huge field of civil engineering structural design is now responding to the "computer revolution." Professor Richard H. Gallagher explains some new techniques and considers their effects.) ... Vantage: Arbor Day at Hollister Hall /31 ... Register /34 (Honors go to retiring professors Howard N. Fairchild and Trevor R. Cuykendall and to distinguished alumnus Thomas J. Kelly, a 1972 recipient of the College's Engineering Award.) ... Faculty Publications /37

url: http://hdl.handle.net/1813/2278
date: 2005-10-28
creator: Franson, Mary Ann Huber;Carr, Carson Jr;Schultz, Andrew Jr
viewed: 1577
title: Engineering: Cornell Quarterly, Vol.07, No.2 (Summer 1972): Meeting the Manpower Crisis
abstract: IN THIS ISSUE: Editorial /2 (The Coming Crisis in Engineering Manpower, contributed by guest editorialist Andrew Schultz, Jr., dean of the Cornell College of Engineering, provides a national perspective in the Quarterly's look at some aspects of the engineering manpower picture.) .. Engineering at Cornell for Minority Students /4 (An innovative project is discussed by Carson Carr, Jr., director of student personnel at the College of Engineering, who is working actively in the development of a program for students from racial minority groups.) ... The New Woman and the New Engineering /13 (The potential of another underdeveloped source of engineering talent is discussed by Mary Ann Huber Franson, a technical publications consultant who holds two engineering degrees from Cornell.) ... Commentary /22 (Contributors to a Seminar on Women in Engineering are four young Cornell women engineers who present their views of the rewards and difficulties of careers in engineering and related fields for women.) ... Faculty Publications /34

url: http://hdl.handle.net/1813/2279
date: 2005-10-28
creator: Berth, Donald;Seidman, David;Siegel, Benjamin;Sass, Stephen;Silcox, John
viewed: 1753
title: Engineering: Cornell Quarterly, Vol.07, No.3 (Autumn 1972): Seeing with Electrons and Ions
abstract: IN THIS ISSUE: The Chemical Nature of Atoms: A New Subject for Electron Microscopy /2 (John Silcox, director of the School of Applied and Engineering Physics at Cornell, describes the development of instrumentation and techniques that can provide a new kind of information on the structure of materials.) ... Electron Microscopy in the Study of Materials /9 (The director of Cornell's electron microscope facility at the College of Engineering, Stephen L. Sass, shows how the microscopic examination of specimens is used in studying the physical properties of materials.) ... High-Resolution Microscopy of Biomacromolecules: Present Limitations and Future Possibilities /14 (Cornell research that is extending the high-resolution capabilities of electron microscopy is discussed by Benjamin M. Siegel, professor of applied physics, in an article on the application of this technique to studies of biological interest, in particular the delineation of the ultrastructure of macromolecules.) ... Seeing With Ions: High-Resolution Magnification Without Lenses /21 (A high-resolution microscope in which ions rather than electrons create the image is discussed by David N. Seidman, associate professor of materials science and engineering. The field ion microscope, an instrument without lenses, permits the observation of individual atoms on the surface of a metal.) ... Register /30 (The appointment of Edmund T. Cranch to succeed Andrew Schultz, Jr., as College of Engineering dean is featured, and other staff and faculty appointments are covered.) ... Faculty Publications /41

url: http://hdl.handle.net/1813/2280
date: 2005-10-28
creator: Auer, Peter L.;Sangrey, Dwight A.;Gates, Charles D.;McConkey, Gladys J.;Edwards, Victor H.;Doan, Herbert D.
viewed: 1787
title: Engineering: Cornell Quarterly, Vol.07, No.4 (Winter 1973): Wastes: Nuisance or Resource?
abstract: IN THIS ISSUE: Using Waste Materials: A Challenge for Engineers /2 (An industrialist and chemical engineer explores the economic as well as social reasons for in-plant utilization of waste materials rather than disposal. Herbert D. Doan, a member of the board of directors and former president of the Dow Chemical Company, is a Cornell graduate and serves on the Engineering College Council.) ... Food From Organic Refuse /8 (The production of microbial protein by growing it on organic wastes and the concept of the "urban farm"

are among subjects discussed by Victor H. Edwards, assistant professor of chemical engineering at Cornell, in an interview with Quarterly editor Gladys J. McConkey.) ... Recover, Reuse, Recycle: New Approaches to the Solid Waste Problem /18 (Charles D. Gates, professor and acting chairman of Cornell's Department of Environmental Engineering, discusses the technological and economic feasibility of solid waste management systems and what needs to be done to encourage resource recovery.) ... Engineering Landfill for Reuse of Sites /24 (Not only solid wastes themselves but the land on which they are buried represent resources that can be recovered and reused. The reclamation of landfill sites is discussed by Dwight A. Sangrey, an associate professor at the Cornell College of Engineering and a specialist in soils and geotechnical engineering.) ... Commentary /29 (The nation's critical energy requirements as they impinge on the need for preservation of the environment are discussed by Peter L. Auer, Cornell professor of aerospace engineering and director of the Laboratory of Plasma Studies. His remarks are excerpted from his summary address at the Cornell Workshop on Energy and the Environment, at which leading United States authorities considered the issues and formulated proposals for future energy supply and management.) ... Faculty Publications /37

url: http://hdl.handle.net/1813/2281
date: 2005-10-28
creator: McConkey, Gladys;Berth, Donald;Johnson, David;Gardner, Robert;Cranch, Edumnd
viewed: 1379
title: Engineering: Cornell Quarterly, Vol.08, No.1 (Spring 1973): Trends in Engineering Education
abstract: IN THIS ISSUE: Engineering Today: Some Views of Cornell's New Dean /2 (The expanding roles of engineers and accompanying changes in engineering curricula are discussed by Edmund T. Cranch, dean of the College of Engineering, in an interview with the editor of the Quarterly.) ... Widening the Professional Spectrum /10 (An increasing interest in undergraduate engineering education as preparation for graduate study in nonengineering professions is explored by Robert E. Gardner, director of the Engineering Advising and Counseling Center at Cornell.) ... Transfer to Cornell: A New Route to Engineering /79 (By 1976 one out of six upperclass students in the College of Engineering may be a transfer from a two-year community college. The dramatic rise of the community college and its effect on higher education, particularly in engineering, is discussed by David C. Johnson, chairman of the College's Transfer Admissions Committee.) ... Vantage /26 (An innovative way of teaching a traditional aspect of engineering is depicted in a photo-essay on a new intensive course in civil and environmental engineering design.) ... Faculty Publications /29

url: http://hdl.handle.net/1813/2282
date: 2005-10-28
creator: McConkey, Gladys;Berth, Donald;Bonnichsen, Bill;Bloom, Arthur;Isacks, Bryan;Bird, John;Oliver, Jack
viewed: 1753
title: Engineering: Cornell Quarterly, Vol.08, No.2 (Summer 1973): Geology: New Thrust in an Old Science
abstract: IN THIS ISSUE: Geology at Cornell: An Adventure Story /2 (The diversity and vitality of the Department of Geological Sciences, which is expanding at a time of new impetus in the discipline, is discussed by department chairman Jack Oliver.) ... The Changing Mosaic of Oceans and Continents: Plate Tectonics as a Unifying Model of the Earth /10 (Ocean-floor exploration and the study of mountain building are among aspects of the geological sciences discussed by Professor John M. Bird in a comprehensive assessment of plate tectonics.) ... The Descent of Crustal Rock into the Earth's Interior: Seismological Studies of Convection /27 (Aspects of Cornell research on earthquakes are interpreted by Bryan L. Isacks, associate professor of geological sciences.) ... Studying Ice Ages in the South Pacific /27 (A record of sea-level changes caused by the advance and retreat of glaciers is preserved in coral reefs of the South Pacific. Arthur L. Bloom, associate professor of geological sciences, explains a mode of research with obvious attractions.) ... Finding New Sources for Metals: A Challenge for Geologists /32 (Problems associated with the rapidly increasing demand for metals

are discussed by Bill Bonnichsen, assistant professor of geological sciences.) ... Vantage /39 (Geology Day this spring provided members of the local community an opportunity to see what is going on in the geological sciences at Cornell.) ... Register /44 ... Faculty Publications /49

url: http://hdl.handle.net/1813/2283
date: 2005-10-28
creator: McConkey, Gladys;Berth, Donald;Lewis, David;Pottle, Christopher;Salton, Gerard;Conway, Richard
viewed: 1847
title: Engineering: Cornell Quarterly, Vol.08, No.3 (Autumn 1973): The Science of Information
abstract: IN THIS ISSUE: The Nature of Information: The Province of Computer Science in the University Today /2 (Not machines but knowledge about information itself is the main concern of computer science departments. The functions of Cornell's department and the professional interests of university computer scientists are discussed by Professor Richard W. Conway.) ... Approaches to the New Library /8 (A world authority on information storage and retrieval, Gerard Salton, describes how automatic techniques can be used in the development of new systems to meet the "library crisis." Professor Salton is chairman of Cornell's Department of Computer Science.) ... The Computer as Laboratory Instrument /17 (From the Apollo mission to the undergraduate laboratory, computers are essential components of experimental equipment. This increasingly important aspect of information science is discussed by Christopher Pottle, associate professor of electrical engineering.) ... Commentary /25 (How the computer is affecting society and its members and what can or should be done about it is considered by Visiting Assistant Professor David Lewis, a Cornell Ph.D. in computer science who is directing an interdisciplinary Cornell seminar, The Computerized Society.) ... Register /28 (New members of the College of Engineering faculty are introduced.) ... Faculty Publications /33

url: http://hdl.handle.net/1813/2284
date: 2005-10-28
creator: McConkey, Gladys;Berth, Donald;Wilson, Wallace;Rosson, Joseph;McLean, William;de Boer, P. C. T.;Gouldin, Frederick;Resler, E. L. Jr
viewed: 2198
title: Engineering: Cornell Quarterly, Vol.08, No.4 (Winter 1974): Options for Engines
abstract: IN THIS ISSUE: Cornell's Low-Pollution Internal Combustion Engine /2 (Ingenious and workable ways to reduce pollutants in internal-combustion-engine exhausts have come from the Sibley School of Mechanical and Aerospace Engineering. E. L. Resler, Jr., director of the School, describes how he and a Ph.D. student have developed modifications that would enable the automobile-manufacturing industry to meet emission standards without abandoning current technology.) ... The Gas Turbine as a Vehicle Engine /14 (It may have to remain in second place for a while, but the gas turbine engine is potentially a superior choice for automotive use. This is the view advanced by Frederick C. Gouldin. assistant professor of mechanical and aerospace engineering at Cornell, who is conducting research in this area.) ... Hydrogen: Fuel of the Future For Transportation Engines /23 (The inevitable and imminent exhaustion of petroleum supplies on Earth gives special importance to the emergence of hydrogen as a potential fuel. Its use in transportation vehicles is discussed by Professors P. C. T. de Boer and William McLean of the Sibley School, who are collaborating in research on engineering aspects of this application.) ... Cornell's Electric Car: The Development of an Urban Vehicle With No Emissions /31 (The electric car has a promising future as a specialized vehicle for urban use, and teams of Cornell mechanical engineering students are developing practical models in a continuing project at the School of Electrical Engineering. Professor Joseph L. Rosson describes the educational benefits of this project as well as the design and performance characteristics of the Cornell car.) ... Automotive Power Plants: The Long-Term Outlook /39 (A General Motors vice president presents his view of the outlook for

various kinds of automobile engines. Wallace E. Wilson is a member of the Cornell University Engineering College Council.) ... Faculty Publications /45

url: http://hdl.handle.net/1813/2285
date: 2005-10-28
creator: Hoke, Gregory D.
viewed: 1852
title: The Influence of Climate and Tectonics on the Geomorphology of the Western Slope of the Central Andes, Peru and Chile
abstract: This thesis explores the geomorphic evolution of the western Andean mountain front with respect to climate and tectonics for the area between 10?S and 33?S latitude. Much of the area I studied lies within the Atacama Desert, the most arid environment known on earth today.

The development of a disequilibrium (or polyphase) landscape between 18?S and 22?S with the youngest phase of landscape development dominated by deep canyons suggests a progresson through time toward conditions favoring the development and preservation of groundwater sapping features. I interpret the shift to be related to uplift of the adjacent Altiplano Plateau, with consequent reduction in precipitation on the western Andean slope. In support of this, an estimated 1000 m of post-10 Ma uplift of the central Andes is determined by modeling the former downstream projections of knick-point bounded river segments in the rivers draining the area between 18? and 22?S (Northernmost Chile).

The impact of climate on landforms is explored in detail by the relationships between mean annual precipitation (MAP), slopes measured from a 90 m DEM, and erosion rates. At the scale of the entire mountain front, there is a significant correlation between average slope at the hillslope scale and the modern climatology of the western Andean Mountain front between 10? and 33?S latitude. Detailed examination of the distribution of slopes at the hillslope scale for eight distinct mountain front regions reveal the consequences of allochthonous versus autochthonous mountain front moisture sources. At Approximately 100 mm/yr mean annual precipitation, slope distributions begin to reflect the dominance of fluvial landscapes. Reconstruction of a regionally extensive ~ 10 Ma depositional surface permitted the determination of erosional mass loss for the rivers that drain the western mountain front. Erosion rates were determined for 2 areas, on in a zone with a pronounced vertical precipitation gradient (18?S-22?S) and the other in an area with a strong latitudinal precipitation gradient (25?S-29.5?S). Landform data for the southern region show strong correlations between MAP, average slope and erosion rate. The northern area does not have strong correlations most likely due to the strong impact of allochthonous water sources.National Aeronautical and Space Administration Earth System Science Fellowship; National Science Foundation EAR-0208130

url: http://hdl.handle.net/1813/2286
date: 2005-10-28
creator: Issar, Sukriti
viewed: 1894
title: AMBIGUITY AND ANXIETY IN THE PROCESSING OF HEALTH RISK MESSAGES
abstract: This study looks at the effects of manipulating the ambiguity of health risk messages on worry and perceived susceptibility. In view of literature that indicates robust emotion-congruent effects of anxiety on the interpretation of ambiguous information, a procedure was used to manipulate levels of state-anxiety for a treatment group.

Fifty-two participants completed an experimental task involving the reading of six health risk messages on different topics. Each message was followed by a short questionnaire to assess levels of worry, risk perception and attributional confidence. In addition, the participant?s familiarity with the message as well as his/her risk profile for the particular health risk in the message was assessed to provide context for their response to the messages. The experiment followed a 2 (within-group variables, ambiguous vs. unambiguous) x 2 design

(between-group variables, state-anxiety induction vs. control group).
It was hypothesized that anxious readers would report higher worry than non-anxious readers, and that worry would be higher for disambiguated messages. Results indicated partial support. A significant interaction effect was found between state-anxiety induction and ambiguity, such that high state-anxious readers reported higher worry than non-anxious readers, for unambiguous messages only.
It was also hypothesized that risk profile information would predict worry. This hypothesis was supported.

url: http://hdl.handle.net/1813/2287
date: 2005-10-28
creator: Para, Pilar A.;Pfeffer, Max J.
viewed: 2901
title: Immigrants and the Community: Former Farmworkers
abstract: Many upstate New York communities have experienced population loss and decline in the last decade. Increasing numbers of immigrants have settled in many of these communities, which poses possible community development challenges and opportunities. As we reported earlier (Immigrants and the Community: Farmworkers with Families), a growing proportion of farmworkers with families is settling in rural communities. This trend may create both opportunities and problems for rural communities, but how can we anticipate what those might be? In an effort to understand the integration of new immigrants into rural communities, we interviewed former farmworkers and other community members in five upstate townships. A look at the experiences of former farmworkers who have resided in the community for some time can provide some valuable insights. Because each community must address these issues in its own way, this report is intended to make communities aware of changes in their populations and highlight issues they may choose to address.
Description: Third in a series based on the research project "Integrating the Needs of Immigrant Workers and Rural Communities," which attempts to inform New York communities about the nature and consequences of increasing immigrant settlement.

url: http://hdl.handle.net/1813/2288
date: 2005-10-28
creator: Parra, Pilar A.;Pfeffer, Max J.
viewed: 2540
title: Immigrants and the Community: Community Perspectives
abstract: As related in our previous reports, the populations of many rural New York communities are becoming more ethnically diverse. This diversification became especially noticeable in the 1990s with the upsurge in Mexican migration. When agricultural production is found in or near communities, immigrants often first come there as farmworkers. As indicated in our previous report, our research has shown that after a fairly short time (less than 10 years), many of the workers leave seasonal farm employment for more steady work in agriculture or other industries. For these workers a departure from agricultural employment often does not mean that they leave the communities where they work. In fact, many of them told us they would like to settle here provided they can find work. The increasing tendency for Mexican immigrants to settle in the U.S. has been observed in many regions and in urban as well as rural areas. Diversifying communities are faced with a range of opportunities and challenges associated with this population change. However, this situation may be a source of confusion in communities that have only recently experienced increased immigrant settlement. The purpose of our study has been to document changes associated with the ethnic diversification of rural communities and to provide a factual foundation for community deliberations about how to capture opportunities and address challenges associated with this population change.
Description: Fourth in a series based on the research project "Integrating the Needs of Immigrant Workers and

Rural Communities," which attempts to inform New York communities about the nature and consequences of increasing immigrant settlement.

url: http://hdl.handle.net/1813/2289
date: 2005-11-01
creator: Jackson, Stephen
viewed: 2976
title: Changing the bargain: The stability and change of centralized wage bargaining in open liberal economies
abstract: The methodology used in the dissertation is a paired comparison of Ireland (?Social Partnership? 1987-2005) and Australia (?The Accord? 1983-1996), with reference to other cases of central wage bargaining in liberal economies. The primary research question is, what explains the stability of Irish central wage bargaining in comparison to the decentralization of wage bargaining experienced in Australia in the late 1980s and early 1990s?

There are two conditions that must be sustained in order that central wage bargaining is stable in open liberal economies. First, public sector wages must be kept under strict control and large wage drift must be avoided. Second, export sector employers must be able to exercise pay flexibility. Pay flexibility is defined as encompassing an outcome dimension (exporters should be allowed to give pay increases above or below the centrally agreed wage bargain increase) and a process dimension (exporters should be allowed to set wages with a minimum of interference from third parties, be they wage setting institutions or trade unions).

The two necessary conditions of public sector wage control and export sector pay flexibility are found in the Irish case explaining central wage bargaining stability, but not in the Australian case, explaining its wage bargaining decentralization. In Ireland after 1987, the stability of the system has been enabled by a concerted effort by policy-makers to de-couple pay movements between the public and export sectors. This is achieved through allowing export employers pay flexibility, while ending old patterns of public sector relativities-driven wage bargaining. This is in contrast to the late 1970s and early 1980s where large public sector wage drift caused the decentralization of wage bargaining. The Australian system decentralized because wage arbitration institutions created during a closed trade policy regime interfered with the process aspect of pay flexibility of exporters. These institutions intruded into wage setting at the plant level, and enhanced the power of trade unions to influence and alter the wage setting process. This provoked a successful export-employer led offensive on the central wage bargaining system.

url: http://hdl.handle.net/1813/2290
date: 2005-11-01
creator: McConkey, Gladys;Berth, Donald;Cady, K. Bingham;Linke, Simpson
viewed: 2217
title: Engineering: Cornell Quarterly, Vol.09, No.1 (Spring 1974): Planning for Energy R and D
abstract: IN THIS ISSUE: Toward a National Program for Energy Research and Development: A Report on the Cornell Workshops /2 (Groundwork for the government's announced $10 billion program was laid at the Cornell Workshops on the Major Issues of a National Energy Research and Development Program, held in Washington last fall under auspices of the Atomic Energy Commission. A summary article reports on the findings and recommendations of some eighty leadingexperts from government, industry, research organizations, and the universities.) ... The Hydrogen Economy: Solution to the Energy Problem? /13 (Prospects for the future of hydrogen as the basis of a national energy-supply system are analyzed by Simpson Linke. professor of electrical engineering, who organized the Cornell International Symposium and Workshop on the Hydrogen Economy, sponsored by the National Science Foundation and held last summer on the campus.) ... The Environmental Impact of Nuclear Energy /23 (The quantitative assessment of nuclear hazards is discussed by K. Bingham Cady, associate professor of nuclear science and engineering, who advocates the inclusion of

biological and environmental as well as production costs in analyses of energy producing industries. Cady, a specialist in nuclear physics and engineering, participates research connected with the Cornell Energy Project, which is sponsored by NSF/RANN.) ... Commentary /34 (Issues and options of energy policy were explored by representatives of governmental, industrial, and research groups in a spring lecture series sponsored by the College of Engineering.) ... Register /39

url: http://hdl.handle.net/1813/2291
date: 2005-11-01
creator: McConkey, Gladys;Berth, Donald;Burton, Malcolm S.
viewed: 1987
title: Engineering: Cornell Quarterly, Vol.09, No.2 (Summer 1974): Toward Engineering Practice
abstract: IN THIS ISSUE: Professional Orientation for the Engineering Undergraduate /2 (Today's undergraduates may be less outspoken than those of the 1960s, but students--and faculty and administrators--are still highly conscious of the need for clearly defined educational objectives. Malcolm S. Burton, associate dean of the College, discusses the various reasons why students enroll in engineering and, in particular, what the College is doing to help them understand and assess engineering practice as a career.) ... The Education of Professionals: New Impetus in Cornell's M.Eng. Program /10 (A current emphasis on professional education at the College includes efforts to bring practicing engineers into the classrooms and laboratories. A discussion of the development of the Master of Engineering degree program is followed by student assessments of their design projects.) ... Vantage /26 (Events of the 1973-74 academic year included new efforts to promote interaction between the College and the professional world of engineering.) ... Register /32 (Three retiring professors assume emeritus status this summer.) ... Faculty Publications /34

url: http://hdl.handle.net/1813/2292
date: 2005-11-01
creator: McConkey, Gladys;Berth, Donald;McGuire, William;Levine, Gilbert;Liang, Ta;Belcher, Donald;Irwin, Lynne H.;Slate, Floyd O.;Ahimaz, Franklin J.
viewed: 3304
title: Engineering: Cornell Quarterly, Vol.09, No.3 (Autumn 1974): Engineering in Developing Nations
abstract: IN THIS ISSUE: Engineering Education in Developing Nations: A Concern of a Multidisciplinary Cornell Program /2 (Aspects of Cornell's Program on Policies for Science and Technology in Developing Nations are described by Franklin J. Ahimaz, assistant director of the Program and assistant dean of engineering.) ... Low-Cost Housing for Developing Countries /13 (Problems of housing the world's poor and Cornell work in this area are discussed by Floyd O. Slate, professor of structural engineering.) ... Transportation and National Development /20 (How to meet the transportation needs of developing regions is considered by highway engineering specialist Lynne H. Irwin of the agricultural engineering department.) ... Airphoto Interpretation and Remote Sensing: International Aids in Land and Resource Planning /27 (Internationally recognized techniques developed at Cornell are being adopted by developing nations to help assess their resources and plan the development of their lands. Professors Donald J. Belcher and Ta Liang discuss the help that Cornell is providing.) ... Cornell's Activity in Tropical Water Management /35 (A crucial factor in famine prevention is water supply. Cornell activities in helping to develop workable water management systems in the less developed parts of the world are described by agricultural engineering professor Gilbert Levine, a specialist in tropical irrigation.) ... Commentary: American Universities and Developing Countries /41 (William McGuire, professor of structural engineering, considers the development of educational programs in science and technology in less advanced nations.) ... Vantage /46 (The recent dedication of the upgraded radio-radar telescope operated by Cornell at Arecibo, Puerto Rico, recalls the major role of Cornell engineers in the development, operation, and use of the world's largest facility of its kind.) ... Register /50 ... Faculty Publications /53

url: http://hdl.handle.net/1813/2293
date: 2005-11-01
creator: McConkey, Gladys;Berth, Donald;Bischoff, Kenneth B.;Purdy, David L.;Stevenson, James F.;Bartel, Donald
viewed: 1815
title: Engineering: Cornell Quarterly, Vol.09, No.4 (Winter 1975): Medical Uses of Engineering Research
abstract: IN THIS ISSUE: Mechanical Analysis and Design in Orthopedics /2 (Mechanical engineers working with physicians and veterinarians are making advances in such areas as the design of prostheses and orthopedic surgery. Donald L. Bartel, assistant professor of mechanical engineering, discusses his cooperative research program in biomechanics.) ... You Can Make an Artificial Kidney Out of a Cow's Hide /10 (A joint medical and engineering research project at Cornell is developing a natural material, collagen, for such applications as artificial kidney membranes, corneal grafts, and burn dressings. James F. Stevenson, assistant professor of chemical engineering, describes various aspects of the research.) ... The Development of an Isotopic Cardiac Pacer /16 (A Cornell mechanical engineering graduate was recently granted a patent for a longlived heart pacemaker with a radioactive power source. David L. Purdy, president of Coratomic, Inc., discusses the design and testing of the device in contract work for the Atomic Energy Commission.) ... How Drugs Work in the Body: A New Problem for Chemical Engineers /23 (Pharmacokinetics, the mathematical description of drug distribution in the body, is one of the areas of bioengineering research that are opening up to engineers. Kenneth B. Bischoff, director of Cornell's School of Chemical Engineering, discusses his research, including work on an anti-cancer drug, conducted in collaboration with the National Institutes of Health.) ... Register /28 ... Faculty Publications /33

url: http://hdl.handle.net/1813/2299
date: 2005-11-01
creator: McConkey, Gladys;Berth, Donald;Lance, Richard H.;Wang, Kuo-King
viewed: 1157
title: Engineering: Cornell Quarterly, Vol.10, No.4 (Winter 1976): Working with Industry
abstract: IN THIS ISSUE: Research Associated with Industry: Cornell's Injection Molding Project, Part of a New National Effort /2 (An unusual NSF-supported project involving cooperative research by investigators from Cornell and a group of industrial firms is described by Kuo-King Wang, associate professor of mechanical engineering.) ... Beyond the Campus: Engineering Education and the "Real World" /10 (The ways in which the Cornell College of Engineering interacts with industry, and the educational importance of this kind of contact, are discussed from the dual viewpoint of administrator and educator by Richard H. Lance, associate dean of the College and associate professor of theoretical and applied mechanics.) ... Beyond the Campus: The "Outside" Professional Activities of Cornell Engineering Professors /19 (A recent survey shows that sabbatic leave and consulting activities of Cornell engineering faculty members generate a substantial amount of interaction with industry.) ... Vantage /22 (Practicing engineers come to Cornell as consultants for projects in which Master of Engineering (Civil) students prepare designs for actual engineering works.) ... Register /26 (Industrialist Joseph Silbert is honored by the College with its Engineering Award; and Cornell Ph.D. Warren E. Walker wins the coveted Lanchester Prize of the Operations Research Society of America.) ... Faculty Publications /29

url: http://hdl.handle.net/1813/2300
date: 2005-11-01
creator: McConkey, Gladys;Berth, Donald;Turcotte, Donald L.;Karig, Daniel E.;Bird, John M.;Kaufman, Sidney
viewed: 2091

title: Engineering: Cornell Quarterly, Vol.11, No.1 (Spring 1976): Prospecting with Geophysicists
abstract: IN THIS ISSUE: Exploring the Earth's Basement /2 (Seismic reflection profiling is the technique used in an ambitious cooperative study of the earth's deep crust and upper mantle. Sidney Kaufman, professor of geological sciences, discusses the method, its scientific and economic potential, and some preliminary results.) ... Plate Tectonics and the Origins of Ore Deposits /11 (John M. Bird, professor of geological sciences, explains how plate tectonic models have led to a new understanding of the genesis of ore deposits and may help in efforts to locate them. His particular interest is in the origin of ore bodies in mountain belts.) ... Clues from Marine Geology in the Search for Oil and Minerals /21 (Field studies on an Indonesian arc island are part of a Cornell study of marine geologic processes. The research and its implications are discussed by Daniel E. Karig, associate professor of geological sciences.) ... Hot Springs, Geysers, and Geothermal Energy /30 (The prospect of tapping new sources of geothermal energy has provided impetus to research into the complex processes that occur in geothermal areas. Donald L. Turcotte, professor of geological sciences, considers both scientific and economic aspects of current research in this field.) ... Vantage /35 (A Cornell research group headed by Arthur F. Kuckes, professor of applied physics, is studying electrical conductivity in the earth's deep crust, an indication of geothermal activity.) ... Faculty Publications /37

url: http://hdl.handle.net/1813/2301
date: 2005-11-01
creator: McConkey, Gladys;Berth, Donald;Tang, C. L.;Dalman,G. Conrad;Smith, Howard G.
viewed: 2984
title: Engineering: Cornell Quarterly, Vol.11, No.2 (Summer 1976): A Century of Electrical Engineering
abstract: IN THIS ISSUE: When the Sparks Began to Fly: A Century of Electrical Engineering at Cornell /2 (In the spirit of centenary (if not bicentennial) celebration, the College of Engineering focuses on Cornell's part in the growth of electrical engineering from its beginnings to the huge, complex, and immensely important technology it is today. Donald F. Berth, director of special projects, and Howard G. Smith, professor of electrical engineering, emeritus, collaborated on the research and writing for this historical survey.) ... Electrical Engineering at Cornell Today /25 (Where the history has led is assessed by G. Conrad Dalman, director of the School of Electrical Engineering, in a survey of the scope and significance of the educational and research functions of the College's largest unit.) ... Communication with Lightwaves: The Potential of Optics and Optoelectronics in Electrical Engineering Technology /35 (An example of current Cornell electrical engineering research is provided by Professor C. L. Tang, who explains why he believes optics technology is at the threshold of a revolutionary development.) ... Register /40 ... Faculty Publications /45 ... ENGINEERING: Cornell Quarterly--The First Ten Years of the College Magazine /49 (An anniversary is noted with publication of an index of Volumes 1 through 10.)

url: http://hdl.handle.net/1813/2302
date: 2005-11-01
creator: McConkey, Gladys;Berth, Donald;Masin, Laura;Wyatt, Alan;Conta, Bart;Shepherd, Dennis G.
viewed: 2084
title: Engineering: Cornell Quarterly, Vol.11, No.3 (Autumn 1976): Alternatives for Technology
abstract: IN THIS ISSUE: What Price Wind Power? /2 (From the point of view that alternative sources of energy will have to be developed in the near future and that economics is the key to which options are feasible, Professor Dennis G. Shepherd assesses the potential of wind power.) ... Intermediate Technology: Its Place in Our World Today /12 (Biggest is not always best, any more than small is always beautiful, maintains Professor Bart Conta in a discussion of how an intermediate level of capitalization is often more appropriate than high technology in terms of both economics and the quality of life.) ... Rural Domestic Energy Self-Sufficiency: A Cooperative Student Research Project /19 (A Student Originated Studies grant from NSF enabled a group of fourteen students to spend the summer investigating ways in which a rural household in Tompkins County,

New York, could become more energy self-sufficient. Results and implications of the case study are discussed by Alan Wyatt and Laura Masin.) ... Commentary: National Prospects for Solar Energy Use /27 (ERDA representative William R. Cherry discussed current and possible applications of solar energy in one of a fall series of lectures for freshman engineers.) ... (Vantage: Water Power from Fall Creek in Cornell's Past-and Perhaps-its Future /30 (A photo-essay on a scenic and practical asset.)... Register /36 ... Faculty Publications /44 ... Editorial /48

url: http://hdl.handle.net/1813/2303
date: 2005-11-01
creator: McConkey, Gladys;Berth, Donald;Moon, Francis C.;Irwin, Lynne H.;Schuler, Richard E.;Cesario, Frank J.;Meyburg, Arnim H.
viewed: 2836
title: Engineering: Cornell Quarterly, Vol.11, No.4 (Winter 1977): Shaping Our Transportation System
abstract: IN THIS ISSUE: The Role of Mass Transit in Urban Transportation Systems /2 (Basic mobility for all can be achieved with balanced urban transportation systems that include both private automobiles and mass transit facilities, in the view of Arnim H. Meyburg, associate professor of civil and environmental engineering.) ... Saving Transportation Energy: Issues in the Analysis of Alternatives /11 (Policy decisions on how to save fuel should be based on improved methods of analysis, according to Frank J. Cesario, assistant professor of civil and environmental engineering, who offers suggestions on how fallacies and shortcomings of recent analyses can be avoided.) ... Transportation, Economics, and the Shaping of Urban America /19 (Which comes first??nsportation planning or economic development? The need to integrate economic analysis into planning strategies is discussed by Richard E. Schuler, assistant professor of economics and of civil and environmental engineering.) ... Railroad Abandonment: Can the Local Road System Take the Impact? /24 (Consequences of decisions to eliminate rail facilities, especially the impact on agriculture, are examined by Lynne H. Irwin, assistant professor of argicultural engineering, who offers recommendations for national policy revision.) ... Magnetic Levitation of Trains and Related Possibilities in Magneto-Mechanics /32 (Although currently sidetracked in the United States, MAGLEV trains are being developed and will offer "fantastic" high-speed rides in the future. Francis C. Moon, associate professor of theoretical and applied mechanics, describes MAGLEV-related Cornell research and its potential.) ... Register /42 ... Faculty Publications /44

url: http://hdl.handle.net/1813/2304
date: 2005-11-01
creator: McConkey, Gladys;Berth, Donald;Finn, Robert K.;Shuler, Michael L.;Jewell, William J.;Price, Donald R.;Robinson, Kenneth L.
viewed: 2503
title: Engineering: Cornell Quarterly, Vol.12, No.1 (Spring 1977): Using Our Agricultural Resources
abstract: IN THIS ISSUE: Hope for the World's Hungry /2 (Although the world population is certain to increase for the next twenty to twenty-five years, starvation is not inevitable, maintains Kenneth L. Robinson, professor of agricultural economics at Cornell. If population control is combined with agricultural expansion and improvement and if sufficient low-cost energy for fertilizer production is available, food production could increase at rates comparable to population growth.) ... Food and Energy: Their Interdependence /8 (Changes in agricultural methods could enormously reduce the current agricultural dependence on fossil fuels, points out Donald R. Price, associate professor of agricultural engineering.) ... Natural Gas from Agricultural Wastes /14 (Anaerobic fermentation of agricultural wastes such as cow manure can provide a renewable source of clean energy as well as a solution to a waste-disposal problem. The technology and its implications are discussed by William J. Jewell, associate professor of agricultural engineering.) ... Chicken Manure to Chicken Feed: A Recycling of Agricultural Chicken Manure Nutrients /25 (The development at Cornell of a waste-to-protein conversion scheme by a controlled microbial process is explained by Michael L.

Shuler, assistant professor of chemical engineering.) ... Fermentation Alcohol: A New Look at an Old Process /32 (The prospects for production of ethanol from agricultural materials rather than from petroleum, and for the use of ethanol as liquid fuel, are discussed by Robert K. Finn, professor of chemical engineering, who is directing research on improved fermentation processes.) ... Faculty Publications /39

url: http://hdl.handle.net/1813/2305
date: 2005-11-01
creator: McConkey, Gladys;Berth, Donald;Johnson, David C.
viewed: 1939
title: Engineering: Cornell Quarterly, Vol.12, No.2 (Summer 1977): Finding the Right Job
abstract: IN THIS ISSUE: Getting Out Where the Action Is through Cornell's Engineering Coop Program /2 (Students and alumni add to a discussion of the unique and expanding work-study program in engineering at Cornell.) ... The Big Transition: From Cornell to Industry /21 (On-campus recruitment may provide the best chance students will ever have to encounter a variety of employment opportunities, according to David C. Johnson, head of Cornell's Engineering Placement Office.) ... Register /28 (Items include Dale R. Corson as former engineering dean and Cornell president; two alumni active in national professional engineering societies; and "highlights and sidelights" of 1976-77.) ... Vantage /36 (You have to run to keep up with Cornell engineering professors??least at midday, when some people have lunch.) ... Faculty Publications /41

url: http://hdl.handle.net/1813/2306
date: 2005-11-01
creator: McConkey, Gladys;Berth, Donald;Auer, Peter L.;Fleischmann, Hans H.;Nation, John A.;Kusse, Bruce R.;Wharton, Charles B.;Sudan, Ravindra N.
viewed: 2729
title: Engineering: Cornell Quarterly, Vol.12, No.3 (December 1977): Prospects for Fusion Power
abstract: IN THIS ISSUE: A Decade of Pioneering Research in Plasma Studies at Cornell /2 (Ravindra N. Sudan, director of the University's Laboratory of Plasma Studies, takes a look at Cornell's accomplishments in plasma physics research.) ... Hotter than the Sun: Reaching Ignition Temperature in a Controlled Thermonuclear Reactor /10 (One of the chief problems in making fusion reactors workable is how to heat the plasma sufficiently to initiate thermonuclear burn. Ways of accomplishing this are discussed by Professor Charles B. Wharton, a pioneer researcher in plasma heating.) ... Heating Toroidal Plasma with Electron Beams /15 (A special problem of electron-beam heating in tokamak reactors and an ingenious way of overcoming it are discussed by Professor Bruce R. Kusse.) ... New Sources of Very High Power /20 (How ion beams and pulses of microwaves may provide the extremely high power needed for controlled thermonuclear fusion and other applications is explained by Professor John A. Nation, who is directing research in this area at Cornell.) ... An Ion Ring Bottle for a Fusion Reactor /26 (Professor Hans H. Fleischmann discusses the concept of containing plasma in a magnetic confinement system with the help of rings of high-energy orbiting ions.) ... Commentary /32 (An overview from the national and world perspectives is presented in "Fusion Power?? Promises and Prospects," an abstract of a lecture given by Peter L. Auer at the American Association for the Advancement of Science meeting.) ... Register /39

url: http://hdl.handle.net/1813/2307
date: 2005-11-01
creator: McConkey, Gladys;Berth, Donald
viewed: 1764
title: Engineering: Cornell Quarterly, Vol.10, No.2 (Summer 1975): Paying for Higher Education
abstract: IN THIS ISSUE: Financial Aid Packages: Sunival Kits for Students and Colleges Today /2 (The importance of financial aid, what it consists of, and how it is awarded are explored in a survey article by the

editor of the Quarterly.) ... Coming to Cornell on a Scholarship: Profiles of Some Engineering Students /12 (Brief sketches of nine scholarship recipients suggest the meaning of financial aid to many contemporary undergraduates.) ... McMullen /17 (The story of John McMullen, who never went to college, and his bequest that has provided scholarships for Cornell engineering students for half a century, is recounted by Donald F. Berth, director of special projects at the College of Engineering.) ... Vantage /25 (Photographs from the College of Engineering files for 1974-75 reveal some highlights and sidelights of the academic year.) ... Faculty Publications /34

url: http://hdl.handle.net/1813/2308
date: 2005-11-01
creator: McConkey, Gladys;Berth, Donald;Rhodin, Thor N.;Lee, Charles A.;Batterman, Boris W.;Buhrman, Robert A.;Frey, Jeffrey;Ballantyne, Joseph M.
viewed: 2131
title: Engineering: Cornell Quarterly, Vol.12, No.4 (December 1978): The New Submicron Facility
abstract: IN THIS ISSUE: The Electronics Revolution and the Potential of the New Submicron Facility at Cornell /2 (Cornell's role as host institution for the National Research and Resource Facility for Submicron Structures is discussed by Joseph M. Ballantyne, professor of electrical engineering and acting director of the facility.) ... Integrated Circuits: The Expanding Technology of Shrinking Structures /12 (How advances in integrated circuit technology result in lower prices is explained by Jeffrey Frey, associate professor of electrical engineering.) ... Superconductor Microelectronics: Key to a New Class of Computers /17 (The potential of the Josephson junction and the use of submicron fabrication technology in research on "weak-link" microelectronic devices are discussed by Robert A. Buhrman, assistant professor of applied and engineering physics.) ... X-Ray Lithography and Microscopy for Submicron Structures /21 (Boris W. Batterman, director of the School of Applied and Engineering Physics, writes about x-ray techniques for the production and examination of submicron structures, and the unique source of x-radiation that Cornell will have.) ... Introducing Impurity: Ion Implantation and its Role in Microelectronics /27 (Electrical Engineering Professor Charles A. Lee discusses an important technique for the fabrication of integrated circuit components.) ... A Submicron View of Surfaces and Interfaces /32 (Thor N. Rhodin, professor of applied and engineering physics, looks at some of the equipment to be available in the submicron facility, and how it can be used for the microanalytical characterization of electronic devices and materials.) ... Register /41 ... Faculty Publications /47

url: http://hdl.handle.net/1813/2309
date: 2005-11-01
creator: McConkey, Gladys;Berth, Donald;Dworsky,Leonard B.;Gates,Charles D.;Loucks,Daniel P.
viewed: 2624
title: Engineering: Cornell Quarterly, Vol.10, No.3 (Autumn 1975): Managing Our Water Resources
abstract: IN THIS ISSUE: Planning Water Resource Systems /2 (Better methods of planning our water resource systems depend on better knowledge of the physical, biological, chemical, economic, political, and social processes that are involved, according to Daniel P. Loucks, chairman of the Department of Environmental Engineering and a specialist in systems analysis.) ... Water Quality Control: High on the List of National Priorities /9 (The importance and means of quality control of the nation's water resources are discussed by Charles D. Gates, professor of civil and environmental engineering.) ... Resources Management of the Great Lakes: The Interaction of Engineering and Public Policy /16 (How individuals and universities can instigate action in public affairs is illustrated by Professor Leonard B. Dworsky in his case study of the Cornell project on Great Lakes management.) ... NEWRIT: Water Resources Information Retrieval Center at Cornell /24 (How a computer can do the literature search for water resources and other scientific and technological studies is described in an article on a valuable service available at Cornell.) ... Register /28 ... Faculty Publications /37

url: http://hdl.handle.net/1813/2310
date: 2005-11-01
creator: Harrison, Ellen, Z.;Bonhotal, Jean
viewed: 3175
title: Marketing Composts and Meeting Consumer Needs
abstract: Cornell Cooperative Extension, New York State Energy Research and Development Authority, and Cornell University's College of Agriculture and Life Sciences

url: http://hdl.handle.net/1813/2311
date: 2005-11-01
creator: Harrison, Ellen Z.;Bonhotal, Jean
viewed: 1166
title: Regulation and Certification of Composts
abstract: Cornell Cooperative Extension, New York State Energy Research and Development Authority, and Cornell University's College of Agriculture and Life Sciences

url: http://hdl.handle.net/1813/2312
date: 2005-11-01
creator: Harrison, Ellen Z.;Bonhotal, Jean
viewed: 2624
title: Improving and Maintaining Compost Quality
abstract: Cornell Cooperative Extension, New York State Energy Research and Development Authority, and Cornell University's College of Agriculture and Life Sciences

url: http://hdl.handle.net/1813/2313
date: 2005-11-01
creator: Harrison, Ellen Z.;Bonhotal, Jean
viewed: 1971
title: Testing Composts
abstract: Cornell Cooperative Extension, New York State Energy Research and Development Authority, and Cornell University's College of Agriculture and Life Sciences

url: http://hdl.handle.net/1813/2314
date: 2005-11-01
creator: Harrison, Ellen Z.;Bonhotal, Jean
viewed: 3586
title: Compost Bulking Materials
abstract: Cornell Cooperative Extension, New York State Energy Research and Development Authority, and Cornell University's College of Agriculture and Life Sciences

url: http://hdl.handle.net/1813/2316
date: 2005-11-02
creator: White, Andrew Dickson
viewed: 3829
title: A History of the Warfare of Science with Theology (Vol.1)
abstract: This extraordinary and scarce work by Andrew Dickson White (1832-1918), a professor and co-founder of Cornell University, is a unique study of the progress of humankind under two duelling forces: theology and science. White traces the evolution of human thought through a series of contrasts of ancient

and modern theories of the world to show the impact of scientific research on the outmoded attitude of biblical literalism. Taking in an enormous range of subjects--including geography, astronomy, geology, chemistry, physics, medicine, psychology and economics--White illustrates the victory of empiricism over superstition, of scientific method and 'reason' over fundamentalism. White's aim was to show that the Church's attacks on scientific progress resulted in 'the direst evils both to religion and to science' and, more broadly, his study points up the dangers inherent in the religious control of higher education (at a time when nearly all universities in the USA and Europe were still under ecclesiastical control). Cornell University was established on the principle that education should not be under the control of political parties or religious sects--an idea greeted at the time with hostile accusations of Darwinism and atheism. But White was in fact deeply religious and his hope was to strengthen and purify theology by eliminating its antiscientific concerns. This excellent treatise finds special relevance today when academic freedom is once again under pressure from political and religious groups. It should now find a place in the libraries of all theologians, philosophers and historians.

url: http://hdl.handle.net/1813/2317
date: 2005-11-02
creator: White, Andrew Dickson
viewed: 2952
title: A History of the Warfare of Science with Theology (Vol.2)
abstract: This extraordinary and scarce work by Andrew Dickson White (1832-1918), a professor and co-founder of Cornell University, is a unique study of the progress of humankind under two duelling forces: theology and science. White traces the evolution of human thought through a series of contrasts of ancient and modern theories of the world to show the impact of scientific research on the outmoded attitude of biblical literalism. Taking in an enormous range of subjects--including geography, astronomy, geology, chemistry, physics, medicine, psychology and economics--White illustrates the victory of empiricism over superstition, of scientific method and 'reason' over fundamentalism. White's aim was to show that the Church's attacks on scientific progress resulted in 'the direst evils both to religion and to science' and, more broadly, his study points up the dangers inherent in the religious control of higher education (at a time when nearly all universities in the USA and Europe were still under ecclesiastical control). Cornell University was established on the principle that education should not be under the control of political parties or religious sects--an idea greeted at the time with hostile accusations of Darwinism and atheism. But White was in fact deeply religious and his hope was to strengthen and purify theology by eliminating its antiscientific concerns. This excellent treatise finds special relevance today when academic freedom is once again under pressure from political and religious groups. It should now find a place in the libraries of all theologians, philosophers and historians.

url: http://hdl.handle.net/1813/2404
date: 2005-11-07
creator: McConkey, Gladys
viewed: 2319
title: Engineering: Cornell Quarterly, Vol.20, No.5 (Summer 1986): The High-Energy Synchrotron Source
abstract: IN THIS ISSUE: Focus on CHESS: The Cornell High Energy Synchrotron Source (Editorial) /2 (Information about an important national laboratory at the University is given in this special issue of the Quarterly, prepared as a supplement to the Spring 1986 issue, "Using X-Rays from Cornell's Synchrotron.") ... The CHESS Facilities /3 (Equipment and services available to CHESS users are surveyed.) ... Technical Memoranda /11 (Papers dating from 1978 document the technical capabilities of CHESS.) ... Publications by CHESS Staff Members /16 (The number of publications about research involving experiments at CHESS has steadily grown each year as the laboratory's program has developed. References dating from 1977 are listed.) ... Publications Involving Data Collected at CHESS /18 (Papers written by users from laboratories

outside of Cornell demonstrate the importance of CHESS to a wide range of experiments.) ... Recent Research Proposals /25 (The nature and diversity of research at CHESS are illustrated by the proposals submitted since the spring of 1984.)

url: http://hdl.handle.net/1813/2405
date: 2005-11-07
creator: McConkey, Gladys;Lucas, William F.;Schruben, Lee W.;Muckstadt, John A.;Schultz, Andrew, Jr.;Nemhauser, George L.
viewed: 2149
title: Engineering: Cornell Quarterly, Vol.13, No.1 (July 1978): Operations Research Comes of Age
abstract: IN THIS ISSUE: Operations Research /2 (George L. Nemhauser, director of the School of Operations Research and Industrial Engineering at Cornell, presents a perspective of a field still not well understood by the general public, and discusses the program at Cornell.) ... A War Baby Comes of Age: The Story of Operations Research at Cornell /7 (Andrew Schultz, Jr., a long-time professor of operations research and industrial engineering, surveys the development of the discipline and of the academic program here.) ... Interfacing with Industry /12 (Two faculty members of the Cornell School of Operations Research and Industrial Engineering, John A. Muckstadt and Lee W. Schruben, describe a new emphasis on project work for graduate students.) ... Dividing Up the Pie /17 (Professor William F. Lucas, well known for his work in game theory, shows how operations research techniques can be applied in a new problem area.) ... Vantage /22 (A reunion held on campus last spring was attended by almost half the total number of Cornell Ph.D. graduates in operations research.) ... Register /25 ... Faculty Publications /31

url: http://hdl.handle.net/1813/2406
date: 2005-11-07
creator: McConkey, Gladys;Drake, Frank D.;Kelley, Michael C.;Farley, Donald T.;Gordon, William E.
viewed: 2091
title: Engineering: Cornell Quarterly, Vol.13, No.2 (October 1978): Probing Our Atmosphere and Beyond
abstract: IN THIS ISSUE: Waves in the Oceans and in the Atmosphere /2 (William E. Gordon, now dean of the School of Natural Sciences at Rice University, was a professor of electrical engineering at Cornell when he conceived and supervised the construction of the world's largest radio-radar telescope at Arecibo, Puerto Rico, and served as first director of the observatory there. His current research includes radar study of high-altitude motion.) ... Turbulence in Space: Probing Outdoor Plasmas with Radar /8 (Donald T. Farley, Cornell professor of electrical engineering, considers how clues to the mysteries of nuclear fusion, as well as of the aurora, may be provided by ionospheric radar experiments combined with computer simulation.) ... The Earth's Electric Field /15 (Michael C. Kelley, a leader in the relatively new study of the electric field around the earth, discusses the use of rockets, satellites, balloons, radar, and ground-based sensors for electric-field measurements. He is an associate professor of electrical engineering at Cornell.) ... Communication with Other Intelligences /24 (Frank D. Drake, pioneer in the search for extraterrestrial intelligence, discusses the technique of radio communication and assesses the chances for success in contacting other civilizations in space. A Cornell engineering graduate, he is the Goldwin Smith Professor of Astronomy at the University and director of the National Astronomy and Ionosphere Center, which Cornell operates for NSF.) ... Faculty Publications /36

url: http://hdl.handle.net/1813/2407
date: 2005-11-07
creator: McConkey, Gladys;Kuckes, Arthur F.;Turcotte, Donald L.;Bloom, Arthur L.;Thomas, Peter;Veverka, Joseph;Burns, Joseph A.
viewed: 1893

title: Engineering: Cornell Quarterly, Vol.13, No.3 (December 1978): Planets and their Satellites
abstract: IN THIS ISSUE: Exploring New Worlds in Space: The Other Moons /2 Joseph A. Burns, associate professor of theoretical and applied mechanics, and Joseph Veverka, associate professor of astronomy, discuss what has been learned about the natural satellites of the solar system and what may be anticipated from the Voyager and Galileo missions.) ... Phobos: A Captured, Fractured Asteroid? /11 (A Cornell Ph.D. dissertation in geological sciences, a photointerpretive study of Viking Orbiter pictures of the moons of Mars, is the basis of this article. Peter Thomas, now a research associate at Cornell's Center for Radiophysics and Space Research, wrote the thesis; Arthur L. Bloom, professor of geological sciences, was chairman of his graduate committee.) ... Clues to an Understanding of Volcanism /18 (Studies of volcanism on Earth may profit from comparative studies of volcanism on other planets and their satellites, as well as on Earth's Moon, according to Donald L. Turcotte, professor of geological sciences.) ... Cold Skin and a Warm Heart: A Model for Earth's Moon /26 (Arthur F. Kuckes, professor of applied and engineering physics, explains his study of magnetometer data obtained in the Apollo program, and his conclusions about convection in the Moon.) ... Register /33 ... Vantage /41 (Engineering strength in soccer and football is recognized in a prejudiced look at this year's Cornell teams.) ... Faculty Publications /44

url: http://hdl.handle.net/1813/2408
date: 2005-11-07
creator: McConkey, Gladys;O'Rourke, Thomas D.;Irwin, Lynne H.;Ingraffea, Anthony R.;Goodman, Richard E.;Sangrey, Dwight A.;Kulhawy, Fred H.;Schiffman, Robert L.
viewed: 2581
title: Engineering: Cornell Quarterly, Vol.13, No.4 (April 1979): Building on the Surfaces of the Earth
abstract: IN THIS ISSUE: Perspectives in Geotechnical Engineering /2 (A Cornell graduate, Robert L. Schiffman, takes a broad view of his specialty field. He is now professor of civil engineering at the University of Colorado at Boulder.) ... Foundation Engineering: New Skills in an Ancient Art /7 (Rock, soil, and seafloor sediment present different problems in foundation engineering. Fred H. Kulhawy, associate professor at Cornell, discusses how the field is responding to the requirements of larger and more specialized structures.) ... Marine Geotechnology: Adventure in Engineering /13 (Underwater projects, including offshore oil and mineral extraction, place heavy demands on geotechnical engineers. The challenge is described by Dwight A. Sangrey, a Cornell professor in the geotechnical engineering area.) ... Engineering Geology: A Combination of Inseparable Fields /21 (Study in geology (at Cornell) and civil engineering prepared Richard E. Goodman for work in his specialty field of engineering geology. A professor at the University of California at Berkeley, Goodman wrote this article while he was a visiting professor at Cornell last fall.) ... Fracture Mechanics: A New Tool for the Geotechnical Engineer /26 (Geotechnical engineers may have to induce rock fracture or contend with it; in either case, they need a basic understanding of fracture mechanics, explains Anthony R. Ingraffea, assistant professor in Cornell's Department of Structural Engineering.) ... Soil Stabilization: An Answer to Shortages of Road-Building Materials /31 (Agricultural engineering professor Lynne H. Irwin, leader of Cornell's Local Roads Program, explains how soil stabilization techniques can improve the performance and durability of low-volume roads.) ... The Shaping of a Discipline /37 (An historical perspective of the development of geotechnical engineering at Cornell is presented by Thomas D. O'Rourke, who received his undergraduate education in civil engineering here and recently joined the faculty as an assistant professor.) ... Faculty Publications /44

url: http://hdl.handle.net/1813/2409
date: 2005-11-07
creator: McConkey, Gladys;Everhart, Thomas E.;Kohlstedt, David L.;Bassett, William A.;Ruoff, Arthur L.
viewed: 2252
title: Engineering: Cornell Quarterly, Vol.14, No.1 (Summer 1979): Materials at Ultrahigh Pressures

abstract: IN THIS ISSUE: Megabar Pressures in Submicron Volumes /2 (Transformations like the creation of metals from gases and the conversion of insulators to superconductors are possible under ultrahigh pressures. Arthur L. Ruoff, Class of 1912 Professor and director of the Department of Materials Science and Engineering at Cornell, discusses his research and its potential.) ... In the Diamond Anvil Cell: Mineral Samples at High Pressure Give Information on Earths Interior /11 (The geological significance of studying minerals at mantle pressures and temperatures, and laboratory techniques for creating these conditions, are explained by William A. Bassett, Cornell professor of geological sciences.) ... The Flow of Rock /18 (Other high-pressure, high-temperature laboratory techniques are used by David L. Kohlstedt, assistant professor of materials science and engineering, to study thebehavior, including creep, of minerals in Earth's mantle.) ... Commentary /27 (Thomas E. Everhart, Cornell's dean of engineering, is interviewed after three months on the job.) ... Vantage /31 (Cornell rocket experiments during the solar eclipse, and blacksmithing as an avocation for an engineering professor and dean are the subjects of photo features.) ... Register /38 ... Faculty Publications /44

url: http://hdl.handle.net/1813/2410
date: 2005-11-07
creator: McConkey, Gladys;Conta, Bart;Shepherd, Dennis;Berth, Donald F.
viewed: 1330
title: Engineering: Cornell Quarterly, Vol.14, No.2 (Autumn 1979): A Long Look at Mechanical Engineering
abstract: IN THIS ISSUE: Editorial /2 ... ASME at 100: A Reflection on the Founding and on a Favorite Founder /3 (In anticipation of the centennial of the American Society of Mechanical Engineers in 1980, Donald F. Berth, director of development at the Cornell College of Engineering, contributes an historical account centered on Robert Henry Thurston, first president of ASME and early director of the mechanical engineering program at Cornell.) ... A Perspective on the Steam Engine /12 (The steam engine, an important application of mechanical engineering in Thurston's day, is considered in its historical context by Dennis Shepherd, emeritus Cornell professor. Shepherd held the John Edson Sweet chair in engineering, named in honor of an early Cornell professor known for his emphasis on shop skills.) ... The Watershed Years: 1850 to 1900 /22 (A Cornell specialist in the history of technology, Professor Bart Conta, discusses his view that a fundamental shift in the relation of science and technology led to the present dangerous condition of technology responding to the possibilities of science rather than to the needs of people.) ... Mechanical Engineering and the Energy Future /29 (What is the future of energy technology? Professor Franklin K. Moore urges a "continued, even stubborn" emphasis on technical research intended to develop and refine energy options.) ... Vantage /38 (Current research activities in Cornell's Sibley School of Mechanical and Aerospace Engineering are surveyed in a photo-essay on faculty members of the School.) ... Faculty Publications /47

url: http://hdl.handle.net/1813/2411
date: 2005-11-07
creator: McConkey, Gladys;Phelan, Richard M.;Stedinger, Jery R.;Shoemaker, Christine A.;Kim, Myunghwan;Thorp, James S.
viewed: 2084
title: Engineering: Cornell Quarterly, Vol.14, No.3 (Winter 1979-80): Control of Dynamic Systems
abstract: IN THIS ISSUE: Editorial /2 ... Preventing Blackouts /3 (The control of large-scale electric power systems is discussed by James S. Thorp, professor of electrical engineering, who is applying the relatively new concept of guaranteed stability to problems of emergency response in massive power grids.) ... How Control Theory Improves Cancer Therapy /10 (The success of chemotherapy in controlling cancer depends on optimal treatment regimes that destroy or inhibit malignant cells with the least possible effect on normal cells. Research in the area of cell kinetics is discussed by Myunghwan Kim, professor of electrical engineering.)

...Controlling Weevils and Worms: The Use of Optimization Methods in Pest Management /17 (Mathematical modeling and optimization are being used to determine the best control strategies for crops threatened by pests. Christine A. Shoemaker, associate professor, and Jery R. Stedinger, assistant professor of civil and environmental engineering, describe their research.) ... The Beautiful Simplicity of Feedback Control /26 (Physical understanding combined with mathematical analysis makes control theory readily applicable to real-world problems. A theory based on this approach is explained by Richard M. Phelan, professor of mechanical and aerospace engineering.) ... Vantage /36 (Our photographers cover fall events, including the dedication of the Joseph N. Pew, Jr., Engineering Quadrangle, and the key participation of engineers in Big Red athletics.) ... Register /42 ... Faculty Publications /47 ... Letters /52

url: http://hdl.handle.net/1813/2412
date: 2005-11-07
creator: McConkey, Gladys;Baker, L. Dale;George, A. R.;Loucks, Daniel P.
viewed: 2218
title: Engineering: Cornell Quarterly, Vol.15, No.1 (Summer 1980): Noise: the Fourth Pollutant
abstract: IN THIS ISSUE: Noise: The Fourth Pollutant /2 (Systematic approaches to the management of environmental noise, particularly in urban areas, are discussed by Daniel P. Loucks, professor and chairman of the Department of Environmental Engineering.) ... Industry and Aircraft: Major Problem Areas for Noise Control /12 (A. R. George, professor and director of Cornell's Sibley School of Mechanical and Aerospace Engineering, writes about fields in which he specializes.) ... Rural Quiet or Ear Plugs? The Increasing Problems of Agricultural Noise /20 (Extension safety engineer L. Dale Baker of Cornell's Department of Agricultural Engineering discusses the effects of noise on farm workers and country dwellers.) ... Vantage /24 (Engineers try their skills at flying paper airplanes, building and racing concrete canoes, and dropping eggs.) ... Register /28 (Special recognition of College personnel includes the establishment of the Andrew Schultz, Jr. Professorship of Industrial Engineering and the dedication of the John F. McManus C.E. '36 Lounge.) ... Faculty Publications /39 ... Letters /44

url: http://hdl.handle.net/1813/2413
date: 2005-11-07
creator: McConkey, Gladys;Lynn, Walter R.;Slate, Floyd O.;Gergely, Peter;Abel, John F.;Nilson, Arthur H.;White,Richard N.;Billington, David P.
viewed: 1593
title: Engineering: Cornell Quarterly, Vol.15, No.2 (Autumn 1980): Pioneering in Concrete
abstract: IN THIS ISSUE: Pioneering in Concrete (an editorial) /2 ... Profession and Personality: Perspective in a View of S. C. Hollister and his Work in Reinforced Concrete /4 (David P. Billington explores the tension between individual actions and social forces, with reference to the work of Hollister.) ... The Education of a Pioneer /7 (The way Hollister found to acquire an education in reinforced concrete construction in the crucial period before World War I is examined by Richard N. White.) ... Reinforced Concrete for Ships /14 (The fascinating story of Hollister's work in designing concrete ships in the emergency World War I program is told by Arthur H. Nilson.) ... Concrete Structures for America: A Glimpse of Design Practice in the 1920s /23 (John F. Abel and Peter Gergely highlight the famous skew arch bridge over the Chester River in Pennsylvania in an article on Hollister's design practice.) ... The Major Building Material of the Twentieth Century: Concrete and Hollister's Role in its Development /30 (Hollister's contributions in the introduction of new techniques and materials are discussed by Floyd O. Slate.) ... How to Educate an Engineer: Ideas of an Influential Innovator /35 (Walter R. Lynn, a colleague of S.C. Hollister for nineteen years, discusses Hollister's views on engineering education.) ... Solomon Cady Hollister: Notes on an Engineering Leader /38 (Commentaries and reminiscences provide material for a biographical sketch.) ... Vantage /42 ... Faculty Publications /44 ... Letters /48

url: http://hdl.handle.net/1813/2414
date: 2005-11-07
creator: McConkey, Gladys;Berth, Donald F.;Cohen, Claude;Streett, William B.;Gubbins, Keith;Calado, Jorge C. G.
viewed: 1072
title: Engineering: Cornell Quarterly, Vol.15, No.3 (Winter 1980-81): The Molecular Level in Engineering Research
abstract: IN THIS ISSUE: Molecular Thermodynamics: A Compromise That Works /2 (An historical perspective of a current research area in the School of Chemical Engineering at Cornell is given by Jorge C. G. Calado, visiting professor from the University of Lisbon.) ... Predicting Liquid Properties: A Three-Front Assault on a Fundamental and Practical Problem /9 (Keith Gubbins, who led in the development of the research program, discusses its major aspects and significance.) ... Fluids and Their Phases: Experimental Studies at High Pressures /18 (William B. Streett describes his experimental work and points out the industrial and scientific usefulness of phase equilibrium thermodynamics, with special reference to extraction with supercritical gases and to studies of the great gaseous planets in the solar system.) ... Developing Better Polymers: A Job for Molecular Engineers /27 (An application of engineering at the molecular level is discussed by Claude Cohen of the Cornell chemical engineering faculty.) ... Vantage /34 (Now in his forty-sixth year of association with chemical engineering at Cornell, former School director Charles C. "Chuck" Winding is interviewed by Donald F. Berth.) ... Register /39 ... Faculty Publications /44 ... Letters /48

url: http://hdl.handle.net/1813/2415
date: 2005-11-07
creator: Pollock, Ann;McConkey, Gladys;Meyburg, Arnim H.;Lee, Alfred M.;Orloff, Neil;Brown, Stuart M.;Lynn, Walter R.;Seznec, Alain
viewed: 1978
title: Engineering: Cornell Quarterly, Vol.15, No.4 (Spring 1981): Social Issues and the Engineer
abstract: IN THIS ISSUE: Environmental Law in the Eighties /2 (Neil Orloff, a Cornell environmental engineering professor who is also a lawyer, calls for a restructuring of the massive body of environmental law during the coming period of reassessment.) ... Technology Assessment: An Added Responsibility for Engineers /7 (An activity that has developed in response to public concern over possible harmful effects of technology is discussed by Alfred M. Lee and Arnim H. Meyburg of Cornell's Program on Science, Technology and Society (STS).) ... Commentary: On Professionalism and Specialization in Engineering Education /16 (From STS comes this article by Stuart M. Brown, associate director of the program and professor of philosophy, and Walter R. Lynn, program director and professor of civil and environmental engineering.) ... Report from China. /. Notes on the Visit of a Cornell Delegation /22 (Engineering members of the ten-person delegation that made arrangements for personnel exchanges between Cornell and institutions in the People's Republic of China are interviewed by the Quarterly editor. The three from engineering are Thomas E. Everhart, Walter H. Ku, and Frank H. T. Rhodes. ... Report from China. II. Excerpts from a Delegate's Notebook /28 (Alain Seznec, dean of the College of Arts and Sciences, shares some of his observations during the Cornell delegation's visit.) ... A Sundial for the Quad /35 (An "engineering statement" designed by Dale R. Corson, president emeritus of the University, has become the focal point in the Joseph N. Pew, Jr. Engineering Quadrangle. Design features of the accurate timepiece are described in an interview article by the associate editor of the Quarterly.) ... Faculty Publications /44 ... Letters /48

url: http://hdl.handle.net/1813/2416
date: 2005-11-07
creator: Schuler, Richard E.;McConkey, Gladys;Burton, Malcolm S.;Housman, David;Lucas, William

F.;Blumstein, Alfred
viewed: 1843
title: Engineering: Cornell Quarterly, Vol.16, No.1 (Summer 1981): The Demographic Factor
abstract: IN THIS ISSUE: Engineering for Decline: a Challenge in the Eighties /2 (New York State's new public service commissioner, Richard E. Schuler, who is also associate professor of environmental engineering and of economics at Cornell, writes about an issue that has emerged only recently in the United States: declining inner-city populations and accompanying problems in planning and designing public facilities.) ... Trying to Control Crime: Research on the Criminal Justice System /8 (Alfred Blumstein, a Cornell alumnus (Bachelor of Engineering Physics and Ph.D. in Operations Research), who is now a chaired professor at Carnegie-Mellon University, discusses scientific methods for projecting prison populations and assessing the effects of alternative crime-control policies.) ... Apportionment: Reflections on the Politics of Mathematics /16 (Various mathematical procedures??h significant political effects??e been proposed and used in apportioning Congressional seats among the states. The fascinating history of a timely topic is discussed by William F. Lucas, Cornell professor of operations research and industrial engineering, and David Housman, a doctoral candidate in applied mathematics.) ... Commentary: A Common Program with Distinction: An Inside Story /23 (Cornell's undergraduate engineering curriculum, recently revised after months of faculty debate, is explained by Associate Dean Malcolm S. Burton.) ... Register /27 ... Vantage: Sidelights of 1980-81 /33 ... Faculty Publications /38 ... Letters /43

url: http://hdl.handle.net/1813/2417
date: 2005-11-07
creator: Pollock, Ann;McConkey, Gladys
viewed: 1697
title: Engineering: Cornell Quarterly, Vol.16, No.2 (Autumn 1981): Macro Pictures with Micro Detail
abstract: IN THIS ISSUE: An Overview: Cornell's $22.5-Million Program in Engineering Research /2 (With increased funding, more industrial input, and a strong interdisciplinary component, the research side of the College program is flourishing.) ... Design Skills: The Professional Emphasis in Cornell Engineering /10 (Cornell's versatile Master of Engineering program helps bridge the gap between classroom and workplace.) ... Vantage /18 (Two new facilities are dedicated at the College: a LION machine for research in controlled nuclear fusion and the Knight Laboratory for submicrometer research.) ... Commentary: Issues in Semiconductor Electronics /26 (Leaders in government, industry, and education participate in on-campus symposia held in conjunction with the dedication of the Knight Laboratory.) ... Register /33 (New members take their places on the Engineering College Council and the faculty.) ... Faculty Publications /39 ... Letters /48

url: http://hdl.handle.net/1813/2418
date: 2005-11-07
creator: McConkey, Gladys;Taylor, Marshall R.;French, Peter N.;Loucks, Daniel P.;Dill, John C.;McGuire, William;Ingraffea, Anthony R.;Abel, John F.;Greenberg, Donald P.
viewed: 3982
title: Engineering: Cornell Quarterly, Vol.16, No.3 (Winter 1981-82): The Advance of Computer Graphics
abstract: IN THIS ISSUE: How Computer Graphics Works and What It Can Do /2 (Professor Donald P. Greenberg, director of Cornell's Program of Computer Graphics and of the College of Engineering's Computer-Aided Design Instructional Facility (CADIF), explains an important and rapidly developing technology.) ... Computer Graphics for Students: A Fun Way to Learn Faster and Better /15 (With the enthusiastic endorsement of faculty members and students, CADIF is established at the College of Engineering.) ... In the Vanguard of Structural Engineering /23 (Three Cornell professors of structural engineering??n F. Abel, Anthony R. Ingraffea, and William McGuire??lore the potential of computer graphics in their discipline and describe Cornell research in this area.) ... CAD/CAM: Industrial Takeover by Designing Computers /37

(John C. Dill, manager of the computer-graphics instructional facility (CADIF) at the College, draws on his industrial experience with the technology to assess the impact of computer-aided design and manufacture.) ... Friendly Computers With Color Pictures: New Tool for Resource and Environmental Planning /46 (Cornell professor Daniel P. Loucks and his associates Peter N. French and Marshall R. Taylor discuss the significance of computer graphics in their field of research.) ... Editorial /56

url: http://hdl.handle.net/1813/2419
date: 2005-11-07
creator: Price, David;McConkey, Gladys;Auer, Peter;Kulhawy, Fred H.;Linke, Simpson;Corson, Dale R.
viewed: 2562
title: Engineering: Cornell Quarterly, Vol.16, No.4 (Spring 1982): Thinking Big About Our Energy Future
abstract: IN THIS ISSUE: Electric Power from Orbit: A Critique of a Satellite Power System /2 (The DOE/NASA concept of using satellites to collect solar energy on a huge scale and beam it to Earth is described by Dale R. Corson, Cornell University president emeritus and former engineering dean, who headed a national committee to assess the postulated system.) ... Global Hydroelectric Power via Reflector Satellites /9 (An innovative idea for providing a significant part of the world's energy supply is advanced by Simpson Linke, professor of electrical engineering and a specialist in power transmission.) ... Engineering Stamps: A Specialty Field of Philately /18 (Our four-color "centerfold" features United States postage stamps with an engineering theme, from the collection of Professor Fred H. Kulhawy.) ... Fusion: Its Power, Potential, and Prospects /23 (A Cornell specialist in fusion power explains and assesses a still-unproved technology under continuing development. Peter Auer is a professor of mechanical and aerospace engineering.) ... Faculty Publications /34 ... Editorial /40

url: http://hdl.handle.net/1813/2420
date: 2005-11-07
creator: Price, David;McConkey, Gladys;Jewell, William J.;Jirka, Gerhard H.;Cohen, Robert;Thomas, Robert J.
viewed: 3405
title: Engineering: Cornell Quarterly, Vol.17, No.1 (Summer 1982): Thinking Big About Our Energy Future
abstract: IN THIS ISSUE: Wind Power for Electric Utility Systems /2 (The large-scale solar-derived technology that is the most advanced in development is described by Robert J. Thomas, associate professor of electrical engineering at Cornell.) ... Ocean Thermal Energy to Feed the Power Grids /12 (Energy consultant Robert Cohen, a Cornell alumnus, discusses the OTEC program, its progress, and its potential. Cohen organized the original United States development program.) ... Ocean Thermal Energy and the Environment /20 (Gerhard H. Jirka, associate professor of civil and environmental engineering at Cornell, is concerned primarily with problems of external fluid dynamics and environmental consequences in the development of OTEC.) ... Energy from Cornstalks: Local Crop Residues as a Substitute for Imported Oil /27 (A technology that can produce energy from a readily available, renewable source is ready for full-sized demonstration. Cornell agricultural engineering professor William J. Jewell explains his research project and worries about funding cuts.) ... Register /35 ... Vantage: Sidelights of 1981-82 /39 ... Faculty Publications /47 ... Letters /51

url: http://hdl.handle.net/1813/2421
date: 2005-11-07
creator: McConkey, Gladys;Schruben, Lee;Muckstadt, John A.;Maxwell, William L.;Schultz, Andrew, Jr.
viewed: 3105
title: Engineering: Cornell Quarterly, Vol.17, No.2 (Autumn 1982): Productivity and Engineering
abstract: IN THIS ISSUE: Productivity and Engineering /2 (What must be done to achieve much needed increases in United States manufacturing productivity is discussed by Andrew Schultz, Jr., a Cornell operations

research specialist.) ... Toward Revitalized U.S. Industry /10 (Cornell's new program in manufacturing engineering and productivity is outlined.) ... Automated Factories: A Necessity for U.S. Industry /19 (Two members of Cornell's School of Operations Research and Industrial Engineering, William L. Maxwell and John A. Muckstadt, describe the organization of industrial workplaces of the future.) ... Solving Manufacturing Problems Through Simulation /24 (The usefulness of computer modeling in industrial engineering is explained by Cornell's Lee Schruben, an operations research specialist.) ... Register /30 ... Facets /35 (A new department of the Quarterly featuring avocations and outside interests of people at the College is initiated with a feature on philatelist Julian C. Smith.) ... Vantage /38 (Construction begins on a new geological sciences building.) ... Faculty Publications /40 ... Letters /44

url: http://hdl.handle.net/1813/2422
date: 2005-11-07
creator: McConkey, Gladys;Bradt, L. Jack;Dawson, Paul R.;Wang, K. K.
viewed: 1847
title: Engineering: Cornell Quarterly, Vol.17, No.3 (Winter 1982-83): New Directions in Manufacturing Engineering
abstract: IN THIS ISSUE: CAD/CAM in Mechanical Engineering /2 (Professor K. K. Wang of the Sibley School of Mechanical and Aerospace Engineering introduces the second Quarterly issue on subjects relevant to the Cornell Manufacturing Engineering and Productivity Program (COMEPP). Wang is a co-director of COMEPP and heads a research program on injection molding.) ... Forming and Joining: Basic Processes in Manufacturing /10 (Professor Paul R. Dawson discusses an area of mechanical engineering research that is included in the new COMEPP program.) ... Materials: Key to Better Products /16 (A survey of research in Cornell's Department of Materials Science and Engineering reveals many projects relevant to manufacturing engineering.) ... Commentary /26 (A talk by L. Jack Bradt on "The Automated Factory: Myth or Reality?", excerpted here, was presented at Cornell as the third Distinguished Alumni Lecture sponsored by the School of Operations Research and Industrial Engineering. Bradt, a 1953 graduate, is chairman of SI Handling Systems, Inc.) ... Vantage /32 (The College of Engineering welcomes gifts that are providing new equipment and laboratories for teaching and research.) ... Register /35 ... Faculty Publications /39 ... Announcement of an Index /44 (A cumulative index of Volumes 1 through 16 is available upon request.)

url: http://hdl.handle.net/1813/2423
date: 2005-11-07
creator: McConkey, Gladys;Price, David;Cocchetto, Joseph F.;Lewis, Aaron
viewed: 1946
title: Engineering: Cornell Quarterly, Vol.17, No.4 (Spring 1983): Solar and Fuel Cells in Our Energy Future
abstract: IN THIS ISSUE: A Solar Cell Based on a Biological System /2 (A pigment produced by bacteria may have commercial usefulness in solar cells that could convert water to hydrogen and oxygen. Early experimental work is described by Aaron Lewis, associate professor of applied and engineering physics.) ... Fuel Cells: A Clean, Efficient Source of Electricity /11 (Cells suitable for use in power plants can convert fossil fuels to electricity without combustion. The technology is discussed by Joseph F. Cocchetto, assistant professor of chemical engineering, who is conducting research on fuel cells.) ... Commentary: The Dean's State-of-the-CoIIege Report /20 ... Facets /26 (Professor Leonard Dworsky's leisure activities "under the water, up in the air" are featured in an article by the Quarterly's associate editor.) ... Faculty Publications /30 ... Letters /35 ... Editorial /36

url: http://hdl.handle.net/1813/2424
date: 2005-11-07

creator: McConkey, Gladys;Richardson, Robert C.;Ashcroft, Neil W.;Lewis, Aaron;Siegel, Benjamin M.;Isaacson, Michael S.;Rodriguez, Ferdinand;Rettig, Hillary;Wolf, Edward D.
viewed: 1398
title: Engineering: Cornell Quarterly, Vol.18, No.1/2 (Spring 1983): Discovery of the Submicron Domain
abstract: IN THIS ISSUE: Discovery in a New Domain: Research at the National Submicron Facility /2 Edward D. Wolf ... A Walking Tour of Knight Laboratory /7 Hillary Rettig ... Using the Submicron Facility: A Unique Opportunity for Researchers Throughout the United States /15 ... Improved Polymers for Advanced Lithography /19 Ferdinand Rodriguez ... Microstructures and Materials Science at the National Submicron Facility /23 ... Electrons, Ions, and Photons in Submicron Research: 1. Nanolithography with Electron Beams /28 Michael S. Isaacson ... 2. Ion Beams for Very-High-Re solution Lithography /33 Benjamin M. Siegel ... 3. Light Transmission Through Submicron Apertures /36 Aaron Lewis and Michael S. Isaacson ... Microphysics for the Future : 1. Periodic Submicron Structures /41 Neil W. Ashcroft ... 2. Submicron Structures at Very Low Temperatures /44 Robert C. Richardson ... Register /47 .... Vantage /53 ... Faculty Publications /59 ... Letters /64

url: http://hdl.handle.net/1813/2425
date: 2005-11-07
creator: McConkey, Gladys;Buhrman, Robert A.;Ballantyne, Joseph M.;Sonek, Gregory J.;Eastman, Lester F.;Adesida, Ilesanmi;Wolf, Edward D.;Frey, Jeffrey;Krusius, J. Peter;Everhart, Thomas E.
viewed: 2011
title: Engineering: Cornell Quarterly, Vol.18, No.3 (Spring 1983-84): Key to New Technologies
abstract: IN THIS ISSUE: Submicron Structures: A Microcosm of Modern Engineering /2 Thomas E. Everhart ... Ultrasmall Features: Key to the Future Development of VLSI Technology /7 J. Peter Krusius ... Small-Scale Physics for Large-Scale Electronic Circuits /12 Jeffrey Frey ... Dry Processing: New Techniques for Etching Submicrometer Structures /16 Edward D. Wolf and Ilesanmi Adesida ... New Techniques for Growing Compound Semiconductors /20 Lester F. Eastman ... Microfabrication for Guided Wave Optics /28 Gregory J. Sonek and Joseph M. Ballantyne ... Superconductors in Microstructures /32 Robert A. Buhrman ... Multidisciplinary Research: Key to Progress at NRRFSS /37 ... Register /41 ... Faculty Publications /49

url: http://hdl.handle.net/1813/2426
date: 2005-11-07
creator: McConkey, Gladys;Belina, John;Simmons, Ron;Hudson, Ronald;Bolgiano, Ralph, Jr.;Moore, Harriet L.;Orloff, Neil;Everhart, Thomas E.
viewed: 2215
title: Engineering: Cornell Quarterly, Vol.18, No.4 (Spring 1984): Special Programs for Students
abstract: IN THIS ISSUE: Commentary: On the Making of Professionals -- 1. The Province of Engineers /2 Thomas E. Everhart ... 2. Learning the Skills of Judgment /5 Neil Orloff ... Students on the Job in the Co-op Program /9 Harriet L. Moore ... Internship in Engineering: New Option for M.Eng. Students -- 1. Educating Professionals in a High-Tech World /16 Ralph Bolgiano, Jr. ... 2. The Pilot Program in Manufacturing Engineering /19 Ronald Hudson ... Minorities in Cornell Engineering: A Program That Works /22 Ron Simmons ... Cornell Engineers in the Making: The Role of Nonacademic Activities /26 John Belina ... The Cornell Connection and the Cornell Tradition: Alumni Initiatives to Help Students Stay in School and Find Jobs /31 ... Register /34 ... Facets: Diane Duke??eading Lady /44 Faculty Publications /47

url: http://hdl.handle.net/1813/2427
date: 2005-11-07
creator: McConkey, Gladys;Wolga, George J.;Pollock, Clifford R.;Cool, Terrill A.;Tang, C. L.
viewed: 2881

title: Engineering: Cornell Quarterly, Vol.19, No.1 (Summer 1984): The Power of Optics for Technology
abstract: IN THIS ISSUE: Femtosecond Lasers: Key to the Measurement of Ultrafast Processes in Semiconductors and Molecules /2 (According to C. L. Tang, Cornell professor of electrical engineering, faster electronic devices are among the technological benefits made possible by new laser techniques.) ... Lasers for Ultrasensitive Detection of Trace Chemicals /7 (How do fuels burn? Terrill A. Cool, professor of applied and engineering physics, explains how tunable dye lasers can provide information about the dynamics of hydrocarbon combustion and other technologically important chemical reactions.) ... Tunable Infrared Lasers Based on Color Centers /12 (Research on a remarkable and useful kind of laser is described by Clifford R. Pollock, assistant professor of electrical engineering.) ... Acousto-Optics for Process Control /18 (A remotely controlled infrared spectroscopic sensor that can be installed in a smokestack to provide fast analysis of emission gases is described by George J. Wolga, professor of electrical engineering and applied physics.) ... Register /22 ... Vantage /30 ... Faculty Publications /32

url: http://hdl.handle.net/1813/2428
date: 2005-11-07
creator: McConkey, Gladys;Bird, John M.;Cisne, John L.;Bloom, Arthur L.;Kay, Suzanne Mahlburg;Kay, Robert W.;Weathers, Maura S.;Bird, John M.;Bassett, William A.;Karig, Daniel E.;Isacks, Bryan L.;Brown, Larry;Oliver, Jack;Brice, William R.;Turcotte, Donald F.;Rhodes, Frank H. T.
viewed: 2270
title: Engineering: Cornell Quarterly, Vol.19, No.2/3 (Autumn 1984): Geology at Cornell on the Move
abstract: IN THIS ISSUE: Section I. Geology and the Cornell Department: The Ascendency of the Geological Sciences /2 Frank H. T. Rhodes ... Snee Hall: Bigy Beautiful, Friendly, Functional /5 ... Engineering and the Geological Sciences /10 Donald F. Turcotte ... Cornell Geology 1868-1984: A Review /15 William R. Brice ... Geology 2020 /25 Jack Oliver ---- Section II. Understanding Our Planet: Current Studies at Cornell: Exploring the Earth Beneath the Continents /29 Larry Brown ... The Cornell Andes Project: Studies of Mountain-Building Processes in Action /34 Bryan L. Isacks ... The Deformation of Sediments in Mountain Belts /39 Daniel E. Karig ... The Earth's Interior /44 William A. Bassett, John M. Bird, and Maura S. Weathers ... The Growth of Continental Crust /51 Robert W. Kay and Suzanne Mahlburg Kay ... Unanswered Questions about Finger Lakes Geomorphology /57 Arthur L. Bloom ... The Pace of Evolution: New Insights from Fossils /62 John L. Cisne ... Remote Sensing in Geological Sciences /68 John M. Bird ... Faculty Publications /72

url: http://hdl.handle.net/1813/2429
date: 2005-11-07
creator: McConkey, Gladys;Nation, John A.;Ballantyne, Joseph M.;Linke, Simpson
viewed: 2041
title: Engineering: Cornell Quarterly, Vol.19, No.4 (Winter 1984-85): The Centennial of Electrical Engineering
abstract: IN THIS ISSUE: Celebrating a Centennial: Cornell Engineers to Convene at Symposia in Six Cities /2 (The centenary of electrical engineering at Cornell is observed this spring.) ... The Electric Connection: A Century of Electrical Engineering at Cornell /4 (Professor Simpson Linke, who has been on the scene since 1946, contributes a history of the program.) ... People, Programs, Progress: The Outlook for Electrical Engineering at Cornell /24 (Former Director Joseph M. Ballantyne and Director John A. Nation assess the strengths of the School and consider its challenges.) ... A Look into the Future: Predictions of Things to Come by Electrical Engineering Faculty Seers /32 (Cornell professors who are specialists in various areas of electrical engineering forecast developments that are likely to take place during the next few decades.) ... Past Perfect: A Collection of E.E. Cornelliana /45 (Reminiscences of faculty members and alumni give an extra dimension to the story of electrical engineering at Cornell.) ... Register /52 ... Faculty Publications /58

url: http://hdl.handle.net/1813/2430
date: 2005-11-07
creator: McConkey, Gladys;Orloff, Neil;Smith, Julian C.;Parsons, Kermit C.;Streett, William B.
viewed: 1775
title: Engineering: Cornell Quarterly, Vol.20, No.1 (Summer 1985): Building for a New Era
abstract: IN THIS ISSUE: To the Year 2000 and Beyond: A Comprehensive Plan for Engineering at Cornell /2 (A new building and extensive renovations are anticipated by a faculty planning committee working with Dean William B. Streett.) ... Building for Engineering at Cornell /8 (College history from an architectural viewpoint is discussed by Kermit C. Parsons of Cornell's College of Architecture, Art, and Planning.) ... The Rise of Research: Fifty Years of Change in Cornell's Engineering Program /26 (Chemical Engineering Professor Julian C. Smith traces the growth of research at the College from virtually nothing to a program funded at more than $31 million a year.) ... Commentary: Why EPA's Approach to Toxic Chemicals Doesn't Work /37 (A controversial subject is considered by Neil Orloff, attorney, environmental engineering professor at Cornell, and director of the University's Center for Environmental Research.) ... Register /40 (Events at the College include the appointment of William B. Streett as dean.) ... Vantage /52 ... Faculty Publications /54 ... Letters /63

url: http://hdl.handle.net/1813/2431
date: 2005-11-07
creator: McConkey, Gladys;Fish, Michele;Duke, Diane;Solworth, Jon A.;Krafft, Dean B.;Toueg, Sam;Birman, Kenneth P.;Babaoglu, Ozalp;Schneider, Fred B.;Reps, Thomas;Teitelbaum, Tim;Gries, David
viewed: 2347
title: Engineering: Cornell Quarterly, Vol.20, No.2 (Autumn 1985): Twenty Years of Computer Science at Cornell
abstract: IN THIS ISSUE: Twenty Years of Computer Science at Cornell /2 David Gries ... Immediate Computation or How to Keep a Personal Computer Busy /12 Tim Teitelbaum and Thomas Reps ... Reaching Agreement: A Fundamental Task Even in Distributed Computer Systems /18 Fred B. Schneider, Ozalp Babaoglu, Kenneth P. Birman, and Sam Toueg ... Programming Methodology: Making a Science Out of an Art /23 David Gries and Fred B. Schneider ... Robotics and Computer Science /28 Dean B. Krafft ... Computer Architecture: The Software-Hardware Interface /34 Jon A. Solworth ... Setting an Example: Administrative Computing in Cornell's Department of Computer Science /41 Diane Duke and Michele Fish ... Vantage /44 ... Faculty Publications /50 ... Editorial /60 ... Register /46 ... Letters /58

url: http://hdl.handle.net/1813/2432
date: 2005-11-07
creator: McConkey, Gladys;Guckenheimer, John;Lumley, John L.;Leibovich, Sidney;Hubbard, John H.;Holmes, Philip;Moon, Francis C.
viewed: 2453
title: Engineering: Cornell Quarterly, Vol.20, No.3 (Winter 1986): Chaos and Physical Systems
abstract: IN THIS ISSUE: Fractals and Chaos: New Concepts in Mechanics I/2
Francis C. Moon ... Clear Air Turbulence (poem) /12 Philip Holmes ... Chaotic Dynamics /13 Philip Holmes ... Order in Chaos /20 John H. Hubbard ... Complex Fluid Motion: Models and Metaphors /27 Sidney Leibovich and John L. Lumley ... Mathematics of Chaos /36 John Guckenheimer ... Faculty Publications /42 ... Communications /47 ... Editorial /48

url: http://hdl.handle.net/1813/2433
date: 2005-11-07
creator: McConkey, Gladys;Arnold, Edward;Moffat, Keith;Schildkamp, Wilfried;Volz, Karl W.;Bedzyk,

Michael J.;Mills, Dennis M.;Bilderback, Donald;Batterman, Boris W.
viewed: 1886
title: Engineering: Cornell Quarterly, Vol.20, No.4 (Spring 1986): Using X-Rays from Cornell's Synchrotron
abstract: IN THIS ISSUE: Making Good Use of Synchrotron Radiation: The Role of CHESS at Cornell and as a National Facility /3 Boris W. Batterman ... X-Ray Optics: A Vital Aspect of Work with Synchrotron Radiation /14 Donald H. Bilderback ... Catching the Fast Action: Time Resolution in High-Energy X-Ray Studies /23 Dennis M. Mills ... Surface and Interface Science at CHESS /33 Michael J. Bedzyk ... MacCHESS: Cornell's Physics Center for Biochemists /39 Karl W. Volz, Wilfried Schildkamp, and Keith Moffat ... Winning Team from Out of Town: CHESS Helps Purdue Researchers Solve Cold-Virus Structure /44 Edward Arnold ... Register /50 ... Faculty Publications /60

url: http://hdl.handle.net/1813/2434
date: 2005-11-07
creator: McConkey, Gladys;White, Richard N.;Thomas, L. Joseph;Kim, Myungwhan;Tang, Chung;Frey, Jeffrey
viewed: 3835
title: Engineering: Cornell Quarterly, Vol.21, No.1 (Autumn 1986): Looking Toward the East
abstract: IN THIS ISSUE: The Not-So-Far East: Three Cornell Electrical Engineering Professors Discuss Technology in Japan and Korea /2 (Jeffrey Frey, Chung Tang, and Myungwhan Kim are interviewed by the editor of the Quarterly.) ... Lessons From Japan: What a Cornell Study Group Learned About Manufacturing Methods /8 (L. Joseph Thomas of the Johnson School of Management at Cornell writes about a recent visit to Japan by seven Cornell professors, members of the Cornell Manufacturing Engineering and Productivity Program.) ... Seven Weeks in China /15 (Richard N. White of the Department of Structural Engineering reports, with words and photographs, on a "working vacation" taken with his wife Marge.) ... Facets: All of the Family?? Hungs from China Study Materials Science at Cornell /26 (Three members of one Chinese family are researchers in the Cornell department, and the youngest member is beginning her college work.) ... Register /30 ... Vantage /33 ... Faculty Publications /36

url: http://hdl.handle.net/1813/2435
date: 2005-11-07
creator: McConkey, Gladys;Strausser, Pamela G.;Strausser, Michael W.
viewed: 1366
title: Engineering: Cornell Quarterly, Vol.21, No.2 (Winter 1986-87): Keeping on Top of Undergraduate Education
abstract: IN THIS ISSUE: Time for an Update: The Focus on Engineering Education
Nationally and at Cornell /2 (Improvement of facilities for undergraduate laboratories is part of a major effort at the College of Engineering.) ... Computers, Computers, Computers --- 1. Their Role in the Life of Undergraduate Engineers /11 ... 2. Why Cornell Engineers Have Up-to-Date Design Skills /18 ... 3. The New Math for Cornell Engineers /25 (This three-part article explores aspects of a prominent change that is taking place in the undergraduate engineering program at Cornell.) ... Manufacturing Engineering: A Strong Cornell Program in a Crucial Area /27 (A new concentration in undergraduate study crosses the lines of traditional disciplines.) ... Communication Skills: Are They a Missing Ingredient in Engineering Education? /31 (A new proposal calls for the incorporation of writing assignments in technical courses.) ... Commentary /36 (Michael W. and Pamela G. Strausser??ornell electrical engineering graduate and a personnel specialist, respectively??cuss possible causes and solutions for a discerned decline in innovation among engineers.) ... Register /39 ... Faculty Publications /41 ... Letters /48

url: http://hdl.handle.net/1813/2436
date: 2005-11-07
creator: McConkey, Gladys;Stewart, Harry E;McGuire, William;Abel, John F.;White, Richard N.;Grigoriu, Mircea D.;O'Rourke, Thomas D.;Gergely, Peter
viewed: 2726
title: Engineering: Cornell Quarterly, Vol.21, No.3 (Spring 1987): Research in Earthquake Engineering
abstract: IN THIS ISSUE: The New National Center for Earthquake Engineering Research /2 (Cornell's Peter Gergely, a co-principal investigator in the center's program, discusses the research and Cornell's part in it. Gergely is director of the School of Civil and Environmental Engineering and chairman of the Department of Structural Engineering.) ... Safeguarding the Lifelines /7 (Provision for the maintenance of essential services such as fire protection, utilities, and transportation in the event of an earthquake is the subject of this article by Thomas D. O'Rourke and Mircea D. Grigoriu of the structural engineering faculty.) ...
Understanding the Seismic Response of Structures: The Role of Experimental Research /15 (Mathematical modeling is not yet adequate for predicting what will happen to a structure as the result of an earthquake. Professor Richard N. White discusses Cornell's program of experimental research in this area.) ... Computer-Aided Earthquake Engineering /22 (The development of simulation techniques for earthquake-resistant design is discussed by Cornell structural engineering professors John F. Abel and William McGuire.) ... Soil Dynamics in Earthquake Engineering /28 (The behavior of soil, as well as of a structure built on it, is an important consideration in design for earthquake resistance. Professor Harry E. Stewart, a specialist in geotechnical engineering, explains why.) ... Register /34 ... Vantage /41 ... Faculty Publications /43

url: http://hdl.handle.net/1813/2437
date: 2005-11-07
creator: McConkey, Gladys;Cady, K. Bingham
viewed: 2698
title: Engineering: Cornell Quarterly, Vol.21, No.4 (Summer 1987): Projects and Prospects for M.Eng. Students
abstract: IN THIS ISSUE: Educating Masters of the Engineering Profession /2 (Cornell's professional Master of Engineering degrees are discussed by Professor and Associate Dean K. Bingham Cady, who has just completed a term as director of the M.Eng. program committee.) ... Testing Race-Car Models in Cornells Wind Tunnel /8 (The aerodynamics of air flow beneath a venturi-type race car is studied by a student in the M.Eng. (Aerospace) program.) ... Measuring the Fractal Geometry of Turbulent Flames /10 (M.Eng. (Engineering Physics) students use laser light in experiments of interest in the design of combustion systems such as those in automobiles and gas turbines.) ... "Real" M.Eng. (Chemical) Projects Draw on Current Technology /12 (Modern techniques are used in student design projects.) ... M.Eng. Designers Plan Local Waste-Disposal Systems /15 (A system for Cornell is among those considered by M.Eng. (Mechanical) students.) ... On Birdsong and Elephant Calls /19 (Devices to make high-frequency or low-frequency animal sounds more audible to humans are developed in M.Eng. (Electrical) projects.) ... How a Group of Students Becomes a "Real" Structural Design Team /23 (Working with a consultant whose firm is doing the actual design, M. Eng. (Civil) student teams plan a 33-story building to be constructed in Boston.) ... Using Cornell Software to Assess Manufacturing Productivity /26 (Company engineers serve as consultants for M.Eng. (OR and IE) design projects.) ... Register /29 ... Faculty Publications /31

url: http://hdl.handle.net/1813/2438
date: 2005-11-07
creator: McConkey, Gladys;Kusse, Bruce R.;Fleischmann, Hans H.;Wharton, Charles B.;Lovelace, Richard V. E.
viewed: 1302

title: Engineering: Cornell Quarterly, Vol.22, No.2 (Winter 1987-88): Pioneering in Plasma Studies
abstract: IN THIS ISSUE: Pioneering in Plasma Studies is the second of a two-part series on Cornell research in plasmas. The Autumn 1987 issue featured articles by seven members of the faculty. This Winter 1987-88 issue comprises a report on the symposium that was held in celebration of the twentieth anniversary of the Laboratory of Plasma Studies, and four more articles by Cornell professors. --- The Laboratory of Plasma Studies: Coming of Age /2 ... Black-Hole Pumps /5 Richard V. E. Lovelace ... Intense Relativistic Electrons: Their Interactions with Matter and with Waves /9 Charles B. Wharton ... Compact-Tor old Fusion and High-Energy Particle Rings /15 Hans H. Fleischmann ... Inertial Confinement Fusion and Cornell's Part in its Development /21 Bruce R. Kusse ... Register /25 ... Faculty Publications /28

url: http://hdl.handle.net/1813/2439
date: 2005-11-07
creator: McConkey, Gladys;Staples, Richard C.;Hoch, Harvey C.;Eastman, Lester F.;Tasker, Paul J.;Shealy, J. Richard;Ast, Dieter G.;Mayer, James W.;Phillips, James R.;Tiberio, Richard C.;Wolf, Edward D.
viewed: 1486
title: Engineering: Cornell Quarterly, Vol.22, No.3 (Spring 1988): Nanofabrication: Where Smaller is Better
abstract: IN THIS ISSUE: Ten Years Old and Going Strong: A Commemoration of a Decade of Research at Cornells National Nanofabrication Facility /2 Edward D. Wolf ... Fabricating Transistors in the Nanometer Domain /8 Richard C. Tiberio and Edward D. Wolf ... Links to the Outside World in Submicron-Sized Silicon Devices /11 James R. Phillips and James W. Mayer ... A New Flat Panel Display: Poly-Si-Based Thin-Film Transistors for Large-Area Electronics /15 Dieter G. Ast ... A Red Semiconductor Laser: An Efficient Microscopic Source of Visible Light /21 J. Richard Shealy ... Speeding Up the Electrons in Semiconductor Transistors /24 Paul J. Tasker and Lester F. Eastman ... How a Fungus Recognizes Surface Topography: A Problem Solved through Microfabrication /30 Harvey C. Hoch and Richard C. Staples ... Vantage /35 ... Faculty Publications /39

url: http://hdl.handle.net/1813/2440
date: 2005-11-07
creator: McConkey, Gladys;Shuler, Michael L.;Koch, Donald L.;Cohen, Claude;Panagiotopoulos, Athanassios Z.;Gubbins, Keith E.;Anton, Brad;Scheele, George F.;Gubbins, Keith E.;Smith, Julian C.
viewed: 2243
title: Engineering: Cornell Quarterly, Vol.22, No.4 (Summer 1988): The Chemical Engineering School: 50 Years Old and Going Strong
abstract: IN THIS ISSUE: The First Fifty Years of Cornell's School of Chemical Engineering /2 Julian C. Smith ... Strong and Looking Ahead: The School of Chemical Engineering Today /10 Keith E. Gubbins and George F. Scheele ... Reactive Surface Chemistry: A Fundamental Side of Applied Science /18 Brad Anton ... Molecular Simulation /23 Keith E. Gubbins and Athanassios Z. Panagiotopoulos ... Materials: A High-Priority Area in Chemical Engineering Research /30 Claude Cohen ... Fluid Dynamics in Multiphase Systems /35 Donald L. Koch ... Building the Basis for Biotechnology /41 Michael L. Shuler ... Register /47 ... Faculty Publications /52

url: http://hdl.handle.net/1813/2441
date: 2005-11-07
creator: McConkey, Gladys;Pollock, Clifford R.;Bilardi, Gianfranco;Tang, C. L.;Torng, H. C.;Schimmel, David E.;Luk, Franklin T.;Weinzierl, Steven R.;Al-Omar, Abdul-Azeez;Krusius, J. Peter;Shealy, J. Richard
viewed: 1910
title: Engineering: Cornell Quarterly, Vol.23, No.1 (Autumn 1988): A New Thrust in Electronics Research
abstract: IN THIS ISSUE: Cornell and JSEP: A New Thrust in a Major Program of Electronics Research /2

... Growing Crystalline Layers for New High-Speed Electron Devices /4 J. Richard Shealy ... Supercomputer Simulation for Understanding and Designing Ultra-High-Speed Semiconductor Devices /8 J. Peter Krusius, Abdul-Azeez Al-Omar, and Steven R. Weinzierl ... VLSI Arrays for Signal Processing /15 Franklin T. Luk and David E. Schimmel Innovations in Computer Architecture for Real-Time Signal Processing and Other Applications /18 H. C. Torng ... Measuring the Unimaginably Fast: Femtosecond Spectroscopy of Semiconductors and Large Molecules /22 C. L. Tang ... Area Vs. Time: A Tradeoff in a VLSI Computer /26 Gianfranco Bilardi ... Ultrafast Sampling with a Soliton Laser /31 Clifford R. Pollock ... Register /36 ... Faculty Publications /43

url: http://hdl.handle.net/1813/2442
date: 2005-11-07
creator: McConkey, Gladys;Susnitzky, David W.;Carter, C. Barry;Burlitch, James M.;Kohlstedt, David L.;Dieckmann, Rudiger;Johnson, Herbert H.;Giannelis, Emmanuel P.;Raj, Rishi;Ruoff, Arthur L.
viewed: 2381
title: Engineering: Cornell Quarterly, Vol.23, No.2 (Winter 1989): A New Era of Ceramic Materials
abstract: IN THIS ISSUE: The Cornell Ceramics Program /2 Arthur L. Ruoff ... A New Era of Ceramic Materials /7 Rishi Raj ... Molecular Engineering of Ceramics: Chemical Approaches to the Design of Materials /15 Emmanuel P. Giannelis ... Ceramic Fibers for Advanced Composites: A New Approach Using Integrated-Circuit Technology /19 Herbert H. Johnson ... Point Defects in Ceramic Oxides: How They Affect Material Properties and the Kinetics of Solid-State Reactions /24 Rudiger Dieckmann ... Crystalline-Amorphous Materials: Important in the Earth and in Industry /29 David L. Kohlstedt ... Gluing Metals to Ceramics: The Chemistry of Metal-Ceramic Adhesion /34 James M. Burlitch ... Ceramic Interfaces and Reactions /39 C. Barry Carter and David W. Susnitzky ... Register /46 ... Faculty Publications /47

url: http://hdl.handle.net/1813/2443
date: 2005-11-07
creator: McConkey, Gladys;Goldbaum, Sari Lynn;Mink, Kate;Pottle, Christopher
viewed: 1931
title: Engineering: Cornell Quarterly, Vol.23, No.3 (Spring 1989): Computer Graphics in the Education of Engineers
abstract: IN THIS ISSUE: Punch Cards to Color Graphics: The Story of Educational Computing at Cornell /2 (Christopher Pottle, the associate dean for computing at the College of Engineering, reviews the rapid development of instructional computing in the undergraduate curricula, and considers its future development.) ... The Computer-Aided Design Instructional Facility: 1980's Radical Experiment Is Today's Solid Success /6 (Kate Mink, the coordinator of instructional computing, discusses a unique facility at the College of Engineering and the plans for further integration of computer-aided design in undergraduate engineering education.) ... SOCRATES??puter-Age Teacher at Cornell's Engineering College: A Unique Program Offers Educational Graphic Software to Other Engineering Schools /20 (Sari Lynn Goldbaum, an applications programmer who works with Project SOCRATES, discusses the innovative program and its benefits.) ... Register /30 ... Faculty Publications /38

url: http://hdl.handle.net/1813/2444
date: 2005-11-07
creator: McConkey, Gladys;Subramanian, Devika;Segre, Alberto Maria;Sachse, Wolfgang
viewed: 938
title: Engineering: Cornell Quarterly, Vol.23, No.4 (Summer 1989): Machines that Learn
abstract: IN THIS ISSUE: Machines That Learn and Recall: Their Beginnings in Research on Neural-Like Processing of Signals /2 (Wolfgang Sachse, Cornell professor of theoretical and applied mechanics, discusses

how a neural-like processor can be used to analyze ultrasonic signals in materials testing.) ... Explanation-Based Learning for Machines /8 (A recent development in the field of artificial intelligence is research on machine learning that is deductive in nature and well suited to problem-solving tasks. Alberto Maria Segre, an assistant professor in Cornell's Department of Computer Science, discusses his work in this area.) ... Raising the IQ of a Robot : Reformulation of Symbolic Representations /15 (One representational law that a smart robot has to obey is: Make the fewest distinctions necessary to achieve the goal. A method of automatically obtaining this result is explained by Devika Subramanian, an assistant professor of computer science at Cornell.) ... Register /22 ... Faculty Publications /28

url: http://hdl.handle.net/1813/2445
date: 2005-11-07
creator: McConkey, Gladys;Kline, Ronald;Lewenstein, Bruce V.;Calado, Jorge C. G.;Mayer, James W.;Prausnitz, J. M.;Streett, William B.
viewed: 1666
title: Engineering: Cornell Quarterly, Vol.24, No.1 (Autumn 1989): Engineering in Context
abstract: IN THIS ISSUE: Introductory Comments by the Dean /2 (William B. Streett, dean of the Cornell University College of Engineering, introduces this Quarterly issue on the theme "Engineering in Context".) ... From Apollo to Prometheus: What the Humanities Can Teach Us About Engineering Education /4 (J. M. Prausnitz, a Cornell graduate who is a professor of chemical engineering at the University of California at Berkeley, calls for a broad education and outlook for engineers.) ... Commentary /15 (Five Cornell deans and professors respond to issues raised by J. M. Prausnitz.) ... An Artistic Approach to Materials Science: Interdisciplinary Innovation in the Classroom /23 (A new course offered by James W. Mayer, professor of materials science and engineering, and colleagues in art, English, archaeology, anthropology, and physics, explores the use of scientific techniques in analyzing art works, artifacts, and old books.) ... The Industrial Cauldron: Art, Technology, and Society, 1750-1850 /28 (Jorge C. G. Calado of the Technical University of Lisbon, who is an adjunct professor of chemical engineering at Cornell, writes on a subject in which he has special interest.) ... Frankenstein or Wizard: Images of Engineers in the Mass Media /40 (Bruce V. Lewenstein, a Cornell faculty member who is a specialist in the history and sociology of science and technology, considers public perception of engineering.) ... Manufacturing a Legend: Charles Proteus Steinmetz as Modern Jove /49 (The engineering history behind the popular image of the "Wizard of Science" who created lightning in a General Electric laboratory is explored by Ronald Kline, assistant professor of the history of technology at Cornell's College of Engineering.) ... Register /55 ... Faculty Publications /58

url: http://hdl.handle.net/1813/2446
date: 2005-11-07
creator: McConkey, Gladys;Compton, Richard C.;Krusius, J. Peter;Padamsee, Hasan;Raj, Rishi;Moon, Francis C.;Buhrman, Robert A.
viewed: 1533
title: Engineering: Cornell Quarterly, Vol.24, No.2 (Winter 1990): The Promise of Superconductivity
abstract: IN THIS ISSUE: Building on a Solid Base: Cornell Research in Superconductivity /2 ... Thin Films: Progress in Superconducting Materials /6 Robert A. Buhrman ... The Power of Magnetic Levitation: I. A Nearly Frictionless Superconducting Bearing Invented at Cornell /13 ... II. Is Magnetic Transportation in the Future? /17 Francis C. Moon ... Innovative Processing of Ceramic Superconductors /23 Rishi Raj ... Superconductors and Accelerators /27 Hasan Padamsee ... Superconductors for Faster Computers /36 J. Peter Krusius ... Making Faster Circuits Using Superconductors /42 Richard C. Compton ... Register /47 ... Faculty Publications /52 ... Letters /59

url: http://hdl.handle.net/1813/2447

date: 2005-11-07
creator: McConkey, Gladys;Beebe, Penny
viewed: 2516
title: Engineering: Cornell Quarterly, Vol.24, No.3 (Spring 1990): Special Programs for Undergraduates
abstract: IN THIS ISSUE: The 1990s As the Decade of the Undergraduate (Editorial) /2 (Special programs at Cornell are designed to help prepare the kinds of engineers needed in the coming decade and beyond.) ... Undergrads in the Research Labs /4 (A novel and highly successful program gives Cornell engineering students the chance to participate in productive research.) ... Cornell's Engineering Minority Programs: Developing a Needed Resource /12 (Increasing the enrollment and retention of students from underrepresented minorities is a major aim of the college.) ... Skill with Words: A New Emphasis in the Education of Cornell Engineers /20 (Engineers today need to be effective in writing and public speaking, as well as technically proficient. The work of the college's recently formed Engineering Communications Program is described by Penny Beebe, a member of the program faculty.) ... Co-op: A Vintage Program for Tomorrow's Engineers /26 (Keeping up with the needs of the times is key to the vitality of the long-standing) ... Engineering Cooperative Program at Cornell. Linda Van Ness, the coordinator, discusses how the program functions in today's industrial world.) ... Register /32 (Five faculty members at the college will retire this summer.) ... Faculty Publications /35

url: http://hdl.handle.net/1813/2448
date: 2005-11-07
creator: McConkey, Gladys;Harrison, Ellen Z.;Martin, John H., Jr.;Ditz, Daryl W.;Gouldin, Frederick C.;Raymond, Lyle S., Jr.;Harrison, Ellen Z.;Schuler, Richard E.
viewed: 1638
title: Engineering: Cornell Quarterly, Vol.24, No.4 (Summer 1990): Dealing with Waste
abstract: IN THIS ISSUE: Dealing with Trash: Cornell's Program in Solid Waste Management /2 ... Municipal Solid Waste: Crisis or Opportunity? /4 Richard E. Schuler ... Getting Out the Word on Waste /11 Ellen Z. Harrison ... Ethics in Siting Landfills: A Case Study of a Host-Community Benefits Program /15 Lyle S. Raymond, Jr. Combustion Simulation: A New Tool for the Design of Waste Incinerators /20 Frederick C. Gouldin ... Biological Monitoring of Airborne Pollution /29 Daryl W. Ditz ... The Sewage Sludge Story /34 John H. Martin, Jr. ... Plastics in the Waste Stream: Special Properties, Special Problems /38 Ellen Z. Harrison ... Faculty Publications /43 ... Letters /48

url: http://hdl.handle.net/1813/2449
date: 2005-11-07
creator: McConkey, Gladys;Jewell, William J.;Richard, Tom;Cathles, Lawrence M., III;Kung, K.-J. Samuel;Parlange, J.-Yves;Steenhuis, Tammo S.;Haith, Douglas A.
viewed: 3422
title: Engineering: Cornell Quarterly, Vol.25, No.1 (Autumn 1990): Water in the Ground
abstract: IN THIS ISSUE: Mathematical Models of Nonpoint-Source Pollution /2 Douglas A. Haith ... Preferential Flow in Structured and Sandy Soils /7 Tammo S. Steenhuis and J.-Yves Parlange ... Finding Layers in the Soil: Ground-Penetrating Radar as a Tool in Studies of Groundwater Contamination /15 Tammo S. Steenhuis, K.-J. Samuel Kung, and Lawrence M. Cathles, III ... Composting and Water Quality /20 Tom Richard ... Removing Toxic Organics from Groundwater: Biological Conversion of PCE and TCEI /25 William J. Jewell ... Register /30 ... Faculty Publications /37 ... Editorial /44

url: http://hdl.handle.net/1813/2450
date: 2005-11-07
creator: McConkey, Gladys;Pope, Stephen B.;Silcox, John;Shuler, Michael L.;Walsh, Walsh;Gubbins, Keith E.;Bartel, Donald L.;Brown, Larry D.;Longcope, Dana;Sudan, Ravi;Kolvoord, Robert A.;Burns, Joseph A.

viewed: 2551
title: Engineering: Cornell Quarterly, Vol.25, No.2/3 (Spring 1991): Supercomputing in Engineering Research
abstract: IN THIS ISSUE: Super computing in Engineering Research at Cornell I/2 ... Supercomputer as Observatory? A Search for Moons in Planetary Rings Using the Cornell National Supercomputer Facility I/7 Joseph A. Burns and Robert A. Kolvoord ... Heating of the Solar Corona /14 Ravi Sudan and Dana Longcope ... Exploring the Earth's Interior with the Cornell Supercomputer /21 Larry D. Brown ... Mechanics and Supercomputing in Human Joint Replacement /29 Donald L. Bartel ... Molecular Simulation Using Supercomputers: Techniques for Predicting Fluid Properties /35 Keith E. Gubbins and John M. Walsh ... Computer Modeling in Research on Genetically Modified Bacteria /43 Michael L. Shuler ... The Microstructure of Materials: Studies Using a New Kind of Electron Microscope and a Supercomputer /48 John Silcox ... What a Supercomputer Can Reveal about Turbulence /54 Stephen B. Pope ... Faculty Publications /59

url: http://hdl.handle.net/1813/2451
date: 2005-11-07
creator: McConkey, Gladys
viewed: 1190
title: Engineering: Cornell Quarterly, Vol.25, No.4 (Summer 1991): Silver Anniversary Edition
abstract: IN THIS ISSUE: Our Silver Anniversary /2 (With this issue, Engineering: Cornell Quarterly celebrates twenty-five years of publication; when Vol. 26, No. 1 appears in the fall, the magazine will have a new format and a new editor. Here is a brief look at the Quarterly and the college over the past quarter century.) ... Reflections by Cornell Engineering Professors /7 (Thirty-two Cornell engineering professors and former deans who have been on the scene during the Quarterly's first twenty-five years contribute a varied collection of reminiscences, assessments, and predictions.) ... Register /54 ... Faculty Publications /57

url: http://hdl.handle.net/1813/2452
date: 2005-11-07
creator: Price, David;McConkey, Gladys;Lee, Jean;Sethna, James P.;Kramer, Edward J.;Pollock, Clifford;Geray, Roland;Dieckmann, Rudiger;Desch, Noel;Silcox, John
viewed: 1573
title: Engineering: Cornell Quarterly, Vol.26, No.1 (Autumn 1991): The Materials Science Center: Cornell's Premier Interdisciplinary Laboratory
abstract: IN THIS ISSUE: The Materials Science Center: Cornell's Premier Interdisciplinary Laboratory /2 (The history and functions of the Materials Science Center at Cornell are discussed by the director, John Silcox.) ... Making Equipment Available /6 (The MSC maintains eight Central Facilities for its users. Noel Desch, the associate director of the center, and three of the managers outline the services and expertise offered by these facilities.) ... Heating with Light: Growing Ceramic Single Crystals at Very High Temperature /19 (Custom-made single crystals can be grown in an image furnace in a developing facility at Cornell. Professor Rudiger Dieckmann and Postdoctoral Associate Roland Geray discuss the method and its potential.) ... Adventures with Forsterite /24 (Single crystals grown in Dieckmann's laboratory are being used by Professor Clifford Pollock and his associates to build a previously unattainable laser?? in the spectral range needed for work in fiber optics.) ... Polymers and Polymer Composites: A Study Group of the Materials Science Center /29 (Interdisciplinary collaboration in theory, synthesis, and characterization helps Cornell scientists develop new polymeric materials for specialized applications. Professor Edward J. Kramer discusses a productive MSC study group.) ... Modular Programs for Physical Research /36 (Physics Professor James P. Sethna explains the scientific software packages that are under development at Cornell, and even tells how to access them.) ... The MSC Facilities: A User's Point of View /42 (A graduate student in materials science gives a first-hand account of howr the MSC facilities are used in thesis research. Jean Lee is studying the defect structure of a

ceramic material.) ... Register /48 ... Faculty Publications /50

url: http://hdl.handle.net/1813/2453
date: 2005-11-07
creator: Price, David;Cranch, Edmund T.;Wagoner, J. L. Clifford;George, Albert R.;Belina, John;Petrina, Petru;Phoenix, S. Leigh;Streett, William B.
viewed: 1848
title: Engineering: Cornell Quarterly, Vol.26, No.2 (Winter 1992): M. Eng.: The Degree for the Professional Engineer
abstract: IN THIS ISSUE: The Master of Engineering: A Professional Degree for Today and Tomorrow /2 (Increased emphasis on the Master of Engineering program serves the needs of students, society, and the College of Engineering.) ... Advanced Composites and Engineering Education /8 (The Master of Engineering program provides the framework for educating engineers to participate in a rapidly emerging new specialty.) ... Tried and True: The M.Eng. in Electrical Engineering /15 (For over twenty-five years, the Master of Engineering program has been an integral part of the School of Electrical Engineering.) ... The Manufacturing Option: For a Well-Rounded Manufacturing Engineer /21 (Students learn about manufacturing from many angles in the Master of Engineering program's new Manufacturing Option.) ... The M.Eng. Internship: A Win/Win Option /27 (On-the-job experience during study for the Master of Engineering degree has advantages for both students and employers.) ... The Engineering Master's Degree: Achieving Educational Objectives /33 (A new study shows that master's degrees significantly affect career prospects.) ... Register /38 (Gladys McConkey retires; five professors are appointed to endowed chairs) ... Faculty Publications /43

url: http://hdl.handle.net/1813/2454
date: 2005-11-07
creator: Price, David;McGuire, Stephen C.;Aderhold, Howard C.;Kostroun, Vaclav O.;Cady, K Bingham;Hammer, David;Hossain, Tim Z.;Clark, David D.
viewed: 2199
title: Engineering: Cornell Quarterly, Vol.26, No.3 (Spring 1992): The Diversity of Nuclear Science and Engineering
abstract: IN THIS ISSUE: The Nuclear Frontier: Cornell's Program of Basic and Applied Research /2 (The Program in Nuclear Science and Engineering has deep roots and broad scope.) ... Neutron Activation Analysis: A Sensitive Test for Trace Elements /7 (A simple analytical technique is used for research in many different disciplines.) ... Holding a Bit of the Sun: Progress toward Inertial Confinement Fusion /12 (Steady, careful work leads toward a vast source of energy for the future.) Safe Nuclear Power: Better Design and Simulation /22 (Diminish the Liabilities A new generation of reactors and a new way to run them make nuclear power the best energy option.) ... Atomic Processes in Ionized Matter /28 (The electron-beam ion source makes possible fundamental research into processes that take place in plasmas.) ... Neutron Radiography: Key to Secrets That X-Rays Can't See /34 ... Chips in Space: Developing Microelectronic Structures that Tolerate Ionizing Radiation /39 (Electronic components used in space must be able to withstand massive doses of radiation.) ... Building a Cold Neutron Beam: A Pure Dream Becomes Reality /44 (A facility that will deliver a beam of relatively pure, cold neutrons from Cornell's TRIGA reactor is nearing completion. ... Faculty Publications /50

url: http://hdl.handle.net/1813/2455
date: 2005-11-07
creator: Price, David;Sheraga, Harold A.;Bartel, Donald L.;Shuler, Michael L.;Webb, Watt W.;Madsen, Eugene L.;Jelinski, Lynne W.
viewed: 2798

title: Engineering: Cornell Quarterly, Vol.26, No.4 (Summer 1992): Biophysics and Biotechnology
abstract: IN THIS ISSUE: Biophysics and Biotechnology at Cornell /2 (Lynn W. Jelinski) ... Bioremediation of Environmental Pollutants /7 (Eugene L. Madsen) ... The Biological Physics of Cells: Research in the Developmental Resource for Biophysical Imaging Optoelectronics /12 (Watt W. Webb) ... Surrogate Animals for Laboratory Tests /19 (Michael L. Shuler) ... Polyethylene Components for Hip and Knee Replacements (Donald L. Bartel) ... The Multiple-Minima Problem in Protein Folding (Harold A. Sheraga) ... Register /38 ... Faculty Publications /50

url: http://hdl.handle.net/1813/2456
date: 2005-11-07
creator: Price, David;Turnquist, Mark A.;Landsberger, Samuel;Belina, John;George, Albert R.;Hover, Kenneth C.
viewed: 1942
title: Engineering: Cornell Quarterly, Vol.27, No.1 (Autumn 1992): Ground Transportation Around the Next Corner
abstract: IN THIS ISSUE: Ground Transportattion Around the Next Corner /2 ... Coping with Old Concrete /3 ... Building Winners: How the Formula SAE program makes Good Cars and Great Engineers /9 ... Rebirth of the Electric Car /15 ... Design for Pedal Power /20 ... Vehicles, Goods and Data /25 ... Register /30 ... Faculty Publications /32

url: http://hdl.handle.net/1813/2457
date: 2005-11-07
creator: Price, David;Fish, Michele D.;Thomas, Robert J.;Hale,Richard;Streett, William B.
viewed: 3100
title: Engineering: Cornell Quarterly, Vol.27, No.2 (Winter 1993): Pumps, Not Filters
abstract: IN THIS ISSUE: Pumps, Not Filters /2 (A commitment to changing the freshman experience is making an engineering education more accessible to nontraditional candidates.) ... The Military Influence on American Engineering Education /3 (The development of engineering education at West Point in the early nineteenth century set the pattern for a tradition of extreme rigor and competitiveness.) ... Selecting Engineering Students /11 (Most of the students selected should be able to handle the engineering curriculum, although it is necessary to make some accommodation for differences in preparedness.) ... Engineering in Context /15 (A new course, taught with the latest in electronic courseware, is designed to give freshmen basic engineering literacy.) ... Overcoming Barriers for Women in Engineering /21 (Several initiatives help women overcome the obstacles that have traditionally discouraged them from seeking careers in engineering.) ... Changing a Filter: The Reorganization of Mathematics /27 (Introductory calculus is now taught in small classes instead of the large, impersonal lectures of the past.) ... The Academic Excellence Workshop /31 (An innovative program in cooperative learning really makes a difference.) ... Faculty Publications /36

url: http://hdl.handle.net/1813/2458
date: 2005-11-07
creator: Price, David;Turcotte, Donald L.;White, William M.;Bassett, William A.;Hauser, Ernest C.;Cathles, Lawrence M., III;Bird, John M.;Barazangi, Muawia;Brown, Larry D.;Fish, Michele D.;Thomas, Robert J.;Hale,Richard;Isacks, Bryan L.
viewed: 3907
title: Engineering: Cornell Quarterly, Vol.27, No.3/4 (Spring/Summer 1993): Probing Earth's Processes
abstract: IN THIS ISSUE: Probing Earth's Processes /2 (Cornell geologists travel far and wide, interpreting subtle clues to learn how the earth works.) ... Mountains, Climate, and Global Change /3 (Mountain ranges affect weather and weather affects mountain ranges in a cycle that produces the soil that sustains life.) ...

The Cornell Andes Project: An Interdisciplinary Study of Mountain Building /9 (A major initiative studies the world's best example of a mountain chain pushed up by subducted oceanic crust.) ... Deep Seismic Exploration in Tibet /12 (A collaboration with Chinese geologists is making the first deep seismic transect of the Himalayas.) ... Earthquakes and Oil: Collaborative Research in the Arab World /17 (Studies involving geologists in North Africa and the Middle East lead to better assessments of earthquake hazards.) ... Geological Fieldwork in the Space Age /20 (In the wilds of Alaska, graduate students learn about geology and about themselves.) ... New Meeting Grounds: Collaborative Research in the Urals and Kamchatka /25 (In the wake of the Cold War, international teams study Asia's eastern and western extremes.) ... New Frontiers Close to Home: North America's Central Corridor /27 (Under the flat expanse between the Appalachians and the Rockies lie the remains of former mountains and rifts.) ...Deep-Focus Earthquakes /32 (Laboratory experiments give clues to processes deep in the earth's mantle.) ... Mantle Plumes and Oceanic Volcanism /34 (Independent of plate tectonics, mantle plumes create chains of islands.) ... Fractals in Geology /40 (Drainage systems and other geological phenomena can be modeled with fractals.) ... Register /42 ... Faculty Publications /44

url: http://hdl.handle.net/1813/2459
date: 2005-11-07
creator: Price, David;Krusius, J. Peter;Torrance, Kenneth E.;Avedisian, C. Thomas;Li, Che-Yu;Giannelis, Emmanuel P.;Kraus, Gerald T.;Russell, Michael W.;Stoffel, Nancy C.;Ober, Christopher K.
viewed: 2641
title: Engineering: Cornell Quarterly, Vol.28, No.1 (Autumn 1993): The Electronic Packaging Program
abstract: IN THIS ISSUE: The Electronic Packaging Program /2 (The ongoing miniaturization of electronic products challenges engineers to find better ways of putting them together.) ... The Importance of Polymers in Packaging /4 (The advantages of polymers make them indispensable in electronic packaging; overcoming their shortcomings makes for challenging research.) ...Spin-On Oxides for Microelectronics /9 (A technique developed for preparing photoresists can be used to make thin films of high-dielectric-constant oxides for capacitors.) ... Thermal Management of Electronic Packages /20 (Electronic circuits can be damaged by the heat they generate, so thermal engineers are on the case.) ... Dependable Connections: Getting the Signal In and Out /14 (Careful testing improves technologies for making reliable connections between dense arrays of very small contacts.) ... Simulating System Constraints in Computer Packaging /26 (A simulation program makes it possible to compare different packaging options without having to build real prototypes.) ... Register /31 (Three new members join the faculty, six retire.) ... Faculty Publications /36

url: http://hdl.handle.net/1813/2460
date: 2005-11-07
creator: Price, David;Resler, Edwin L., Jr.;Pope, Stephen B.;Caughey, David A.;Williamson, Charles H. K.;Boyd, Iain D.;Avedisian, C. Thomas
viewed: 3570
title: Engineering: Cornell Quarterly, Vol.28, No.2 (Winter 1994): Aerospace Engineering at Cornell
abstract: IN THIS ISSUE: Aerospace Engineering at Cornell /2 (With a distinguished history and vigorous research, Cornell looks to the future.) ... Experiments in a Microgravity Environment /4 (Experiments conducted in a falling package reveal processes that occur in space.) ... Modeling Secondary Propulsion Systems for Spacecraft /10 (Computer modeling is contributing to the design of more efficient control rockets.) ... On Board for Studies of Wake Vortex Dynamics: Undergraduates in a Research Environment /16 (Students play an active role in experiments at the forefront of fluid dynamics.) ... Computational Methods in Aerodynamic Design: The Difficulties and the Promise /23 (Computer simulations vie with wind tunnels in research aimed at minimizing shock waves over airfoils.) ... Simulating the Performance of Gas-Turbine Combustors /29 (In the development of better gas turbines, simulation is far cheaper than building test models.) ... How Wave Rotors Can Enhance Jet-Engine Performance /35 (It may be possible to increase the efficiency of fan jets

while doubling their power.) ... Register /40 ... Faculty Publications /43

url: http://hdl.handle.net/1813/2461
date: 2005-11-07
creator: Price, David;Schuler, Richard E.;Harrison, Ellen Z.;Resler, Edwin L., Jr.;Philpot, William D.;Barnaba, Eugenia M.;DeGloria, Stephen D.;Porter, Keith S.;Dietert, Rodney R.
viewed: 3203
title: Engineering: Cornell Quarterly, Vol.28, No.3 (Spring 1994): The Center for the Environment: Marketing Green Engineering
abstract: IN THIS ISSUE: The Center for the Environment: Marketing Green Engineering /2 (Practical people seek to fix environmental problems with a mix of teaching, research, and outreach.) ... Training Toxicologists to Be Team Players /4 (To be effective, toxicologists need to know about more than just the effects of poisonous substances.) ... Development and Watershed Protection: Finding the Middle Ground /8 (The rights of watershed residents must be weighted in the balance with New York City's need for water.) ... Mapping Land Use for Local Government /14 (Remote sensing and geographic information systems make it possible to track changing patterns of land use.) ... Recycling Organic Wastes: Research, Engineering, and Outreach /18 (Composting can greatly reduce the volume of municipal solid waste.) ... Reducing Greenhouse Gases: Promoting an International Accord /24 (A program for the voluntary reduction of greenhouse gases can work if it is perceived as flexible and fair.) ... Faculty Publications /30

url: http://hdl.handle.net/1813/2462
date: 2005-11-07
creator: Rosenkrantz, Marcy
viewed: 1627
title: The What, Where, Why, and How of Institutional Repositories
abstract: This presentation was made at the Hawaii Library Association Conference, Nov. 11-12, 2005, Fairmont Orchid Hotel, Kohala Coast, Hawaii, HI see http://www.hlaweb.org/conference2005/ for more information and the conference program.In this talk I present a general definition of an institutional repository and proceed to discuss several instances of them at various institutions. We'll view them as responses to the crisis in scholarly communications, as ways to promote student and faculty research, and we'll discuss the way faculty view such repositories. Following that I'll discuss two such repositories at Cornell and we'll also look at arXiv.org, focusing on why the latter disciplinary repository is so wildly successful and the former two significantly less so. We will also look specifically at CUL's implementation of DSpace and discuss factors such as acceptance, use, implementation, and costs and what they may imply for the use of institutional repositories at other institutions.

url: http://hdl.handle.net/1813/2463
date: 2005-11-07
creator: Stern, Andrew;Mateas, Michael
viewed: 2277
title: Facade
abstract: Facade is an artificial intelligence-based art/research experiment in electronic narrative - an attempt to move beyond traditional branching or hyper-linked narrative to create a fully-realized, one-act interactive drama. Integrating an interdisciplinary set of artistic practices and artificial intelligence technologies, the creators have completed a five year collaboration to engineer a novel architecture for supporting emotional, interactive character behavior and drama-managed plot. Within this architecture the creators have built a dramatically interesting, real-time 3D virtual world inhabited by computer-controlled characters, in which the player experiences a story from a first-person perspective. Facade was publicly released as a freeware

download / cd-rom in July 2005.

url: http://hdl.handle.net/1813/2464
date: 2005-11-07
creator: Cutillo, Monica;Price, Corrinne;Leibowitz, Bronna;Russell, Robert;Wheeler, Shannon
viewed: 1953
title: Development of a Drug Delivery System with a Constant Rate of Release
abstract: You do not have to search long to find someone who is taking orally administered medication on a daily basis. Pharmaceuticals such as antibiotics and pain relievers help us live healthier lives; however the administration of these drugs is more involved than simply the swallowing of a pill. Maintaining a constant level of drug in the body is an important requirement for a variety of medications. The more constant the rate of drug release from a pill, the more effective the drug will be. Our model will compare different crater geometries to demonstrate the effect of crater shape on the release rate of a drug under human body conditions. Our objective is to achieve a constant rate of drug release from a pill. Analysis will demonstrate and allow us to conclude that a hemispherical crater geometry is best to accomplish this objective. We were able to achieve a fairly constant rate of release after approximately 17 minutes and this situation would be beneficial for many pharmaceuticals compared to other, less constant drug delivery systems.

url: http://hdl.handle.net/1813/2468
date: 2005-11-08
creator: Getz, Malcolm
viewed: 3100
title: Incubating Open Journals in Economics
abstract: As open journals become intellectual successes, they will come to substitute for subscription-based journals. The entry of two new journals specializing in economic theory, one a commercial subscription journal and the other an open journal, stimulates the question: What does a new journal require in order to achieve intellectual impact? Regressing the ISI Impact Factor for 141 journals on attributes of the journals estimates their relative importance. The intellectual reputations of the editors and of the authors? prior work along with the number of libraries that hold the title are positively associated with the journal?s Impact Factor. Using the attributes of the new journals in the estimated relationships yields a forecast of the Impact Factor for the new journals. An open journal has the advantage of being immediately as accessible everywhere on the Internet as though held by many libraries. Its forecast impact is comparable to the journals with the highest impact in this specialty. Some open journals are able to attract outstanding editors and authors with the natural advantage of universal access without charge.Vanderbilt University Nashville TN 37235-1819 Malcolm.Getz@Vanderbilt.edu

url: http://hdl.handle.net/1813/2472
date: 2005-11-08
creator: Oren, Timothy;Loria, Rosemary;Jenkins, Jeffrey J.;Arneson, Phil
viewed: 2960
title: Fortran Applescab Simulation
abstract:

url: http://hdl.handle.net/1813/2473
date: 2005-11-08
creator: Arneson, Phil;Goldfarb, Joshua
viewed: 3387
title: Java Applescab Simulation

abstract:

url: http://hdl.handle.net/1813/2474
date: 2005-11-09
creator: Isbell, Billie Jean
viewed: 5810
title: De inmaduro a duro: lo simbolico femenino y los esquemas andinos de generoFrom Unripe to Petrified
abstract: My motivation for writing this chapter is to call attention to a 'Feminine Symbolic' that I believe constitutes the core of Andean conceptualizations of gender. The argument that I will present is as follows: The feminine, as an abstraction, is an unmarked category, whereas the masculine is elaborated, or marked. In addition, androgyny is a primary force in the continual recreation and reproduction of the world motivated by female sex and desire, not by biological reproduction. Such a gender schema provides an alternative to Lacan's symbolic which makes patriarchy seem inevitable. The second half of this analysis deals with ethnographic materials largely drawn from my fieldwork in the village of Chuschi, department of Ayacucho, Peru in the 1970's. I examine gender formation along the life course and into the after-life.

url: http://hdl.handle.net/1813/2475
date: 2005-11-10
creator: Driscoll, Maryjean
viewed: 2128
title: Equine colic
abstract: Series: Senior seminar paper (Cornell University. College of Veterinary Medicine)
Notes: Senior seminar (D.V.M.)--Cornell University, 1977.
Includes bibliographical references (leaves 17-18).The term colic refers to pain in the abdominal cavity. The pain may originate in the digestive organs, or in other organs; it may be caused by a variety of pathological changes which develop from different generalized diseases. The original meaning of the term colic was pain caused by a spasm in the colon. (Delahanty, 1967) However, usage has widened the definition to include pain arising from the stomach and other digestive visera, and even pain which may be observed during the course of other generalized and infectious diseases.
The general heading of colic is often classified into four major divisions: 1. gastric dilatation 2. spasmodic 3. impaction and 4. pathological displacements of the intestine. Examples of this last division may include: volvulus, herniations, intususceptions, and stenosis of the lumen of the bowel by external bands or foreign bodies. Animals with such pathological displacements are often presented as possible surgical candidates. It is the intent of this paper to present a method of evaluating a colic case in order to determine the need for surgery.

url: http://hdl.handle.net/1813/2476
date: 2005-11-10
creator: Tillou, Guy J.
viewed: 2486
title: A case of unilateral renal lymphosarcoma in a cat
abstract: Series: Senior seminar paper (Cornell University. College of Veterinary Medicine) Notes: Senior seminar (D.V.M.)--Cornell University, 1978. Includes bibliographical references (leaf 6).Feline lymphosarcoma is the most common neoplastic disease affecting cats. The clinical manifestation of the disease is extremely variable but it will generally appear in one or more of four pathological patterns: mediastinal, multicentric, abdominal, or leukemic form.
The abdominal form of lymphosarcoma may involve mesenteric lymph nodes, the terminal ileum, liver,

spleen, or kidneys. Cats with the renal form of lymphosarcoma usually have severe involvement of both kidneys.12 Investigators at the Angell Memorial Animal Hospital in Boston corroborate the invariability of bilateral kidney involvement.
The following report presents a case of unilateral renal lymphosarcoma in a cat. The case was unique in that the disease was amenable to surgical Intervention.

url: http://hdl.handle.net/1813/2477
date: 2005-11-10
creator: Feldman, Jean F.
viewed: 2764
title: Equine coat color genetics
abstract: Series: Senior seminar paper (Cornell University. College of Veterinary Medicine)
Notes: Senior seminar (D.V.M.)--Cornell University, 1981.
Includes bibliographical references (leaves 14-16).The effects of the most important coat color genes in horses are reviewed. Teh emphasis is on basic coat colors and patterns and not on the inheritance of markings. White, grey, black, bay, brown, chestnut, palomino, cremello, perlino, buckskin, dun, red dun, grullo, roan, tobiano, overo and silver dapple coat colors are discussed.

url: http://hdl.handle.net/1813/2478
date: 2005-11-10
creator: Tseng, Florina
viewed: 2467
title: Captive breeding of exotic animals
abstract: Series: Senior seminar paper (Cornell University. College of Veterinary Medicine)
Notes: Senior seminar (D.V.M.)--Cornell University, 1981.
Includes bibliographical references (leaves 12-14).Captive breeding of exotic animals has become the primary goal of most zoological parks today. This is due to increasingly stringent export laws which make it difficult to bring certain species from their countries of origin/and, even more importantly, to the growing number of endangered species whose natural habitats are being destroyed. A discussion of general considerations in long term breeding programs is presented, followed by several examples of successful natural breeding programs in captivity. Artificial breeding techniques, Including electroejaculation and artificial insemination, are discussed. Problems with breeding programs, such as inbreeding depression, are illustrated.

url: http://hdl.handle.net/1813/2479
date: 2005-11-10
creator: Wallingford, Susan
viewed: 2982
title: Genetics of feline coat color
abstract: Series: Senior seminar paper (Cornell University. College of Veterinary Medicine)
Notes: Senior seminar (D.V.M.)--Cornell University, 1982.
Includes bibliographical references (leaves 13-14).The purpose of this paper is to provide the small animal practitioner or cat fancier with an introduction to the genetics of feline coat color. It is assumed that the reader has a basic understanding of simple Mendelian genetics. Various coat colors and patterns are discussed including tabbies, solid colors, Burmese, Siamese, tortoiseshells, shaded and tipped colors. There is also a discussion on the genetics of coat length and texture.

url: http://hdl.handle.net/1813/2480
date: 2005-11-10

creator: Harris, Ann C.
viewed: 2191
title: People, pets, problems : social work aspects of the veterinarian-client relationship
abstract: Series: Senior seminar paper (Cornell University. College of Veterinary Medicine)
Notes: Senior seminar (D.V.M.)--Cornell University, 1983.
Includes bibliographical references (leaves 23-25).Through a recent surge of interest and research, society has begun to discover and recognize the meaning and significance of the human?companion animal bond. Knowledge gained concerning the intense and involved relationships between owner and pet has placed new significance upon the role of the veterinarian in maintaining and improving human mental, physical, emotional, and social health and well?being.
The purpose of this manuscript is to review those aspects of ?veterinarian-client? relations that emphasize specifically those situations encountered by the veterinarian in dealings with owners distressed over their pet?s medical condition or death. The nature of the veterinarian?s contribution to human health will be explored by briefly examining the dynamic relationship between veterinarian, pet and pet owner. Case studies will be presented to exemplify and clarify problem situations, and examples of intervention efforts on the part of the veterinarian will be discussed.

url: http://hdl.handle.net/1813/2481
date: 2005-11-10
creator: Lowry, Nancy
viewed: 3472
title: The repair of severely comminuted long bone fractures using stored cortical allografts in conjunction with fresh cancellous autografts
abstract: Series: Senior seminar paper (Cornell University. College of Veterinary Medicine) Notes: Senior seminar (D.V.M.)--Cornell University, 1987. Includes bibliographical references (leaves 14-17).High velocity type injuries to the diaphyseal region of the long bones can often result in the literal explosion of the bone into numerous small fragments. Efforts to anatomically reconstruct such severely comminuted fractures, using only the traditional means of internal fixation, usually requires lengthy and difficult surgery which, in turn, increases both the anesthetic risk and the chance of post?operative infection.
Alternative methods have been used in an effort to simplify and shorten the repair of such fractures. One such method involves the use of a full thickness cortical allograft to actually replace the shattered section of bone. This allograft is then coupled with cancellous autografts to help stimulate both new bone formation and the incorporation of the cortical graft by the host.
An allograft is, by definition, a tissue which is removed from one animal and subsequently implanted into another animal of the same species. Allografts are often collected at the time a donor animal is available and can then be preserved and stored until required for use. An autograft, on the other hand, is obtained from a donor site within the recipient?s own body and is collected just prior to implantation at the recipient site.

url: http://hdl.handle.net/1813/2482
date: 2005-11-10
creator: McCarthy, Rebecca Myers
viewed: 2251
title: Correction of left displacement of the abomasum using a percutaneous bar suture (""toggle pin"")
abstract: Series: Senior seminar paper (Cornell University. College of Veterinary Medicine)
Notes: Senior seminar (D.V.M.)--Cornell University, 1987.
Includes bibliographical references (leaves 13-14).Left displacement of the abomasum (LDA) is an economically important condition commonly encountered by the dairy practitioner. Abomasal displacement was either not present or not diagnosed prior to the early 1950?s, when the first reports appeared. The risk of developing an

LDA is greater in highproducing cows from intensively managed herds, adding LDA to the list of production diseases that plagues the modern dairy cow. The incidence in problem herds may range as high as 20%, and in 80% of cases, affected cows have calved within the past month.

Despite the frequency of occurrence of LDA, its precise etiology remains unclear. The four most popular theories regarding its etiology are: the dietary theory, which correlates a high concentrate, low fiber diet with depression of rumen contractions and eructations as well as increased rurnen acidity, all of which predispose to LDA; the mechanical theory, in which the elevation of the rumen by the pregnant uterus is proposed to allow the abomasum to shift ventrally and leftward, becoming trapped on the left when parturition produces a sudden topographic change in the abdomen; the genetic theory, which argues that genetic seictiori for broader, larger dairy cows has produced animals more prone to LDA development due to greater abdominal capacity; and the hypotonia/atonia theory, which is the most comprehensive and includes the important and generally well? accepted dietary theory. The hypotonia theory maintains that any cause of dcreased abomasal tone can predispose to displacement.

url: http://hdl.handle.net/1813/2483
date: 2005-11-10
creator: Carmichael, James T. Jr.
viewed: 2831
title: The effect of exogenous bovine somatotropin on dairy cattle health
abstract: Series: Senior seminar paper (Cornell University. College of Veterinary Medicine)
Notes: Senior seminar (D.V.M.)--Cornell University, 1990.
Includes bibliographical references (leaves 10-13).The commercial use of bovine somatotropin to increase commercial milk production is a very controversial topic. Concerns have been raised that bovine somatotropin use will adversely affect cow health. Increased incidence of ketosis, increased incidence of milk fever, increased susceptibility to infectious diseases, chronic wasting and infertility were predicted clinical problems resulting from long-term BST use. This review examines the impact of BST on cow health by reviewing clinical health data from twenty-seven bovine soinatotropin production studies. Cows in bovine somatotropin treatment groups had no increased incidence of ketosis or milk fever. Milk somatic cell counts in BST treated cows did not differ significantly from controls. Bovine somatotropin treated animals, like genetically superior high producing cows, had an increased mobilization of body reserves to support increased milk production and reduced reproductive performance.

url: http://hdl.handle.net/1813/2484
date: 2005-11-10
creator: Macri, Nicholas P.
viewed: 4409
title: Canine distemper in a wild raccoon
abstract: Series: Senior seminar paper (Cornell University. College of Veterinary Medicine)
Notes: Senior seminar (D.V.M.)--Cornell University, 1990.
Includes bibliographical references (leaves [10-11]).The raccoon (Procyon lotor) is a member of the Procyonidae family. This group comprises nine genera and eighteen species including the ring?tailed cat (Bassariscus astutus), the central american cacoinistle (Jientinkip suinichrasti), the coatimundi (Nasua nasua), the raccoon (Procyon lotor), the mountain coati (Nasuella. 0. olivacea), the kinkajou (Potus flavus), the olingo (Brassaricyon gabbii), the lesser panda (Ailurus fulgens), and the giant panda (Aliuropoda inelanoleuca).

Widely distributed throughout North America, the raccoon?s range encompasses southern Canada, most of North America and parts of Central America. For habitat, it prefers heavily wooded areas and dense underbrush where it makes dens in trees near sources of water. The encroachment of man on its natural habitat has not significantly effected the raccoon, which can also be found in abundance in suburban and

urban settings feeding on garbage and living in attics, chimneys, parks and cemeteries.
The raccoon is a nocturnal omnivor feeding, in the wild, on a variety of fish, frogs, small mammals, fruits, berries and seeds. Adults range in weight from 1.5 to 22 kg, attain a head- body length of 41.5 to 60.0 cm, and shoulder height of 25.5 to 30.4 cm. The breeding season lasts from January to June. Litter size ranges from one to seven cubs with an average of three to four.

url: http://hdl.handle.net/1813/2485
date: 2005-11-10
creator: Nachbar, Scott G.
viewed: 2975
title: Cervical vertebral instability in a Tennessee walking horse
abstract: Series: Senior seminar paper (Cornell University. College of Veterinary Medicine)
Notes: Senior seminar (D.V.M.)--Cornell University, 1991.
Includes bibliographical references (leaves 10-11).Cervical vertebral instability is a disease of young, rapidly growing horses of any breed which results in dynamic compression of the cervical spinal cord causing weakness and ataxia in all four limbs. Nutritional, genetic, biomechanical, and traumatic factors may all contribute to the development of the disease. Surgical stabilization of the affected intervertebral joint is helpful in selected cases, with improvement evident in most horses within one year.

url: http://hdl.handle.net/1813/2487
date: 2005-11-11
creator: Cathles, Lawrence M.
viewed: 1887
title: Natural Climate Change:A Geological Perspective
abstract: A presentation to the
Seminar on Sustainable Development
NBA 573, BEE 673
Sage Hall B-11If the 4.6 billion years the earth has been in existence is one day of geologic time, all of recorded earth history corresponds to the last one tenth of one second of that day- hardly enough time to form an opinion of what is going on in the room in which you are sitting, and hardly a good basis for forming a perspective on climate change. Geology provides the needed perspective. From direct evidence (glacial striations, ice-rafted drop stones, changes in pollen, ice cover, and sea level) and indirect evidence (changes in the isotopic composition of sediments and ice, and in the dust content of polar ice) geologists infer that the earth may have been alternatively completely frozen (-50C) and very warm (+50C) in Late Proterozoic time (800-600 million years ago). Thereafter the earth was warmer than present except for "ice ages" in Pennsylvanian and Permian time (~320-250 million years ago) and in the Quaternary (last 4 million years). Before the last decline in global temperature, England had a climate similar to that of Indonesia. Fossils of crocodiles and broad leaf tropical plants are preserved in the Eocene (40 million year-old) clays there. Continental glaciers developed in Antarctica ~34 million years ago and in Greenland ~8 million years ago. Starting about 2 million years ago continental glaciers periodically covered North America and Europe. Each glacial cycle was ~120,000 years in duration: 100,000 years of ice growth (ice-house conditions) and 20,000 years of warmer, interglacial, green-house conditions. The end of each interglacial was abrupt. The last glacial cycle started about 130,000 years ago. Ice reached Ithaca, New York about 45,000 years ago. At its maximum extent the ice reached to Long Island, and there was ~ 1 mile of ice over Ithaca. The ice age ended abruptly ~12,000 years ago and the last ice melted in Canada ~5,500 years ago. Our interglacial has probably been more uniform in temperature than previous interglacials, but non-the-less there have been significant and rapid climate changes within it. It was warmer than present during the Holocene Maximum (7000-4000 years ago) and during the Medieval warm period (1000-1400 AD), but colder that present during the Little Ice Age (1400-

1860) when the Dutch skated on their canals and Washington and Jefferson commuted to Washington D.C. by sleigh. Recent geological studies suggest that recent minor climate changes (last 12,000 years) are caused by changes in solar energy output. These natural climate changes provide a context for discussing changes that might be caused by humans and for what can be meant by "sustainable". Of course climate change is real (40 million years ago England had the climate of Indonesia, but in the last few million years it has been subject to ice ages interspersed with interglacials). Human activity may be a factor, but other factors also operate. If we are to take out insurance (by controlling greenhouse gases, for example), we should consider what we wish most to insure against (another ice age or global warming) and how much we are willing to pay. My recommendation is to make commitments deliberately, wait for scientific clarification (which will come quickly), and avoid politicizing science. Objective science will be our best long-term protection.

url: http://hdl.handle.net/1813/2488
date: 2005-11-11
creator: Suh, Jean H.
viewed: 2232
title: THE CELL CYCLE REGULATORS, B-CELL TRANSLOCATION GENE 2 AND CYCLIN D1, ARE TARGETS FOR RETINOIC ACID RECEPTOR SIGNALING IN HUMAN MAMMARY CARCINOMA CELLS
abstract:

url: http://hdl.handle.net/1813/2489
date: 2005-11-11
creator: Lembo, Arthur J Jr
viewed: 5047
title: Spatial SQL
abstract:

url: http://hdl.handle.net/1813/2489
date: 2005-11-11
creator: Lembo, Arthur J Jr
viewed: 5047
title: Spatial SQL
abstract:

url: http://hdl.handle.net/1813/2495
date: 2005-11-18
creator: Cohen, Yurii
viewed: 1957
title: Self-Conceptions and Practical Reasons
abstract: The aim of this project is to make sense of the relationship between practical reasons and self-conceptions (i.e. descriptions that an agent believes to be true of herself or is working to make true of herself). To achieve this aim, I have organized this project around three goals: (1) to offer a precise statement of the relationship between self-conceptions and practical reasons, (2) to describe the nature of this relationship, and (3) to examine its implications. I begin by surveying attempts by Christine Korsgaard and Harry Frankfurt to describe this relationship. After critiquing their views and presenting an account of normative reasons that ties them to desire-independent values rather than desires, I argue for the following conclusions. First, this relationship is one of mutual implication. According to this view, that one has certain normative reasons for action makes it appropriate for one to hold certain self-conceptions, and conversely, that one holds a

self-conception of a certain sort (namely one that is true or characteristically associated with activities that promote objective values) entails that one has certain normative reasons for acting. The upshot is that every time an agent acts for a normative reason, we can say something interesting about the relationship between this reason and her self-conceptions (since either the reason will be grounded in an antecedent self-conception, or the reason will have important implications for the appropriateness of holding certain self-conceptions).
Second, our intuitions that there is an important relationship are explained by the fact that there is a conceptual connection between practical reasons and categories of possible respondents to them, whereby all practical reasons must be understood as addressed to agents falling under certain descriptions. This claim is itself implied by the view that reasons are essentially functions relating agents under certain descriptions to the world of possible actions. Third, this conceptual necessity has a number of interesting implications. For example, attending to the connection between its terms opens new avenues for (a) evaluating proposed actions, (b) streamlining the deliberative process, (c) justifying the practice of grounding moral claims in appeals to self-conceptions, and (d) realizing important values.

url: http://hdl.handle.net/1813/2496
date: 2005-11-21
creator: Ticknor, Barr;Arneson, Phil
viewed: 2031
title: C Resistan Simulation
abstract:

url: http://hdl.handle.net/1813/2497
date: 2005-11-21
creator: Arneson, Phil
viewed: 2326
title: Fortran Resistan Simulation
abstract:

url: http://hdl.handle.net/1813/2498
date: 2005-11-21
creator: Goldfarb, Joshua;Arneson, Phil
viewed: 2956
title: Java Resistan Simulation
abstract:

url: http://hdl.handle.net/1813/2499
date: 2005-11-21
creator: Arneson, Phil;Goldfarb, Joshua;Bruck, R. I.;Bruhn, J. A.;Doster, M. A.;Milgroom, M. G.;Fry, W. E.
viewed: 3591
title: Java Lateblight Simulation
abstract:

url: http://hdl.handle.net/1813/2500
date: 2005-11-21
creator: Arneson, Phil;Ticknor, Barr;Bruck, R. I.;Bruhn, J. A.;Doster, M. A.;Milgroom, M. G.;Fry, W. E.
viewed: 3941
title: C Lateblight Simulation
abstract:

url: http://hdl.handle.net/1813/2501
date: 2005-11-21
creator: Kurth, Martin
viewed: 1906
title: Catalogers Wanted: Metadata Practice in the Web Era
abstract: Paper presented at the NELINET Annual Bibliographic Services Conference, Worcester, Massachusetts, November 18, 2005.

url: http://hdl.handle.net/1813/2502
date: 2005-11-21
creator: Killampalli, Aravind
viewed: 3015
title: Interface formation and thin film deposition for molecular and organic electronics
abstract: Organic materials are playing an increasing role in modern microelectronic devices-beyond their traditional role as photoresists. Emerging applications such as low-? dielectrics, semiconductors and components in molecular electronics demand excellent control of the interface between organic and inorganic materials. To date, almost all work concerning the formation of inorganic-on-organic structures on pre-existing organic layers has involved elemental evaporation of metal thin films. An alternative approach has been examined via the reaction of an organo-transition metal complex, tetrakis(dimethylamido)titanium, Ti[N(CH3)2]4, with self-assembled monolayers (SAMs) terminated by -OH, -NH2 and -CH3 groups, using X-ray photoelectron spectroscopy (XPS). This is the first detailed study which clearly correlates the reactivity of Ti[N(CH3)2]4 with the functionality and density of molecules in a self-assembled monolayer. Extent of reaction, stoichiometry at the interface, ligand loss and decomposition have also been investigated in this study.
A second area of research has involved the formation of organic-on-inorganic structures. Supersonic molecular beams have been employed as sources for deposition of thin films of pentacene, an organic semiconductor, on bare SiO2 and SiO2 modified with hexamethyldisilazane (HMDS). Organic materials are often bound by rather weak dispersion (van der Waals) forces and crystallize in different phases, separated in total energy by a few kBT. Consequently, considerable promise exists in the use of these energy tunable molecular beams for the deposition of organic thin films. Experiments have provided significant insight into fundamental phenomena involved in nucleation in the monolayer regime, and both the kinetics of thin film deposition and the microstructure in the multilayer regime, evidenced by results from ellipsometry and atomic force microscopy (AFM). Promising performance characteristics have been obtained for organic thin film transistors (OTFTs) fabricated from these pentacene films which can be correlated to film microstructure. Finally, modification of the dielectric surface with hexamethyldisilazane (HMDS) has been found to strongly influence nucleation and greatly enhance OTFT performance, possibly due to reduced charge trapping at the semiconductor-dielectric interface.This work was supported by the Cornell Center for Materials Research (CCMR), a Materials Research Science and Engineering Center of the National Science Foundation (DMR-0079992). Additional support was also provided by a Nanoscale Interdisciplinary Research Team on Inorganic-Organic Interfaces (NSF-ECS-0210693) and the Semiconductor Research Corporation via the Center for Advanced Interconnect Systems Technologies (SRC task 995.011).

url: http://hdl.handle.net/1813/2503
date: 2005-11-22
creator: Gokirmak, Ali
viewed: 1840
title: Ultra Narrow Silicon FETs Integrated With Microfluidic System for Serial Sequencing of Biomolecules

Based on Local Charge Sensing
abstract: Ultra-narrow channel silicon field effect transistors (FET) with suspended gates, integrated with on-chip micro-fluidic delivery system are demonstrated. These devices are designed to be used for serial sequencing of DNA, RNA and proteins, by detecting the local charge variations along these molecules as they are passed between the gate and the channel of the FETs in an aqueous solution. Devices are fabricated with down to 5 nm high tunnels passing between the gate and the channel of the FETs, integrated with larger scale micro-fluidic delivery system. The smallest fabricated active area width is less than 10 nm. A silicon nitride based shallow trench isolation (STI) scheme is developed in order to accommodate fabrication of the tunnels going through the FET, through removal of sacrificial silicon dioxide in HF. A device architecture with an independently controlled side-gate, surrounding the active area, is developed to suppress the edge related leakage currents and allow further scaling of the device width while achieving high sensitivity. The side-gated devices are fabricated as nFET prototypes using thermally grown silicon dioxide gate insulator and silicon nitride STI. The leakage currents are suppressed below 50 fA down to 70 nm gate length with the application of a negative side-gate bias. Side-gated sub-10 nm wide devices exhibit threshold voltage tunability in a range exceeding 2.5 V and with a maximum sensitivity of ?Vt/?Vside > 2 V/V. Wider channel devices with gate lengths less than 70 nm retain Ion/Ioff ratios exceeding 109 and achieve drive currents exceeding 1.5 mA/?m. Narrow channel devices with 150 nm gate length show less than 5 mV/V drain induced barrier lowering. With these performance parameters, side-gated device geometry is a promising candidate for future generation low-power, and higher performance circuits. The possibility of using this device geometry as a side-trapping FLASH memory structure is also demonstrated. A capacitance measurement technique is developed to achieve aF resolution using an instrument with 0.1 fF resolution at 1 MHz utilizing the random fluctuations. These capacitance measurements, performed on the small scale devices, are used to extract effective device dimensions, carrier density and effective carrier mobilities.

url: http://hdl.handle.net/1813/2504
date: 2005-11-22
creator: Coester, Sandra C.
viewed: 2016
title: Dietary and Medical Control of Urate Crystalluria in the Feline Patient
abstract: Senior seminar (D.V.M.)--Cornell University, 1995.
Includes bibliographical references (leaf [10]).Tammy is a 10 year old, female spayed black domestic short haired cat with a 6 year history of recurrent cystitis with hematuria and crystalluria. Urinalysis reveals ammonium urate crystal formation. Surgery was performed to remove two, one centimeter, 100% ammonium acid urate stones which were radiographically evident in her bladder. Repeated laboratory tests are inconsistent with liver disease, portosystemic shunts, renal disorders, or any common cause of urate crystalluria. General considerations involving disorders of micturition are presented, with an emphasis on urate cystitis. Additionally, medical and dietary control of this problem in the feline patient is discussed.

url: http://hdl.handle.net/1813/2505
date: 2005-11-22
creator: Liu, Christine
viewed: 1740
title: Exocrine pancreatic insufficiency in a German shepherd dog
abstract: Senior seminar (D.V.M.)--Cornell University, 1999.
Includes bibliographical references (leaves [9-10]).A two year-old spayed, female German Shepherd Dog was referred to the Cornell University Companion Animal Hospital on October 22, 1998 for further evaluation of diarrhea that was poorly responsive to treatment. The owners first noticed signs of diarrhea and weight loss when the dog was less than a year old, after being boarded at a kennel. The referring veterinarian diagnosed

her with exocrine pancreatic insufficiency (EPI) and possible bacterial overgrowth after a physical exam and lab work in March, 1997. Physical exam revealed no abnormalities except a thin dog with diarrhea. The lab work revealed a low trypsin-like immunoreactivity (TLI) of 0.5 ngfml (Reference range: 535 ng/ml) consistent with EPI. The referring veterinarian began treating her for EPI with the following drugs: Tagamet, Viokase powder, and linmodium and Pepto Bismol as needed. She was also cycled on and off Metronidazole and Tetracycline depending on the severity of her clinical signs. She was started on Hills L?D canned with Eukanuba Low Residue dry dog food. Although she has responded to the therapy, the dog was referred to Cornell because of recurrent diarrhea flare-ups and incomplete weight gain.

url: http://hdl.handle.net/1813/2506
date: 2005-11-22
creator: Hirtle, Peter B.
viewed: 2310
title: Review of Complete Copyright, The Librarian's Copyright Companion, and Copyright for Archivists and Users of Archives
abstract: A review of two new books on copyright for librarians and one book on copyright for English archivists. The author suggests that while the first two books are intended for librarians, they may still be useful to American archivists. Padfield's book would be most useful to those interested in copyright law in the United Kingdom.

url: http://hdl.handle.net/1813/2507
date: 2005-11-22
creator: Pasnik, David
viewed: 2616
title: An outbreak of furunculosis at a fish farm : the diagnosis, control, and prevention of systemic Aeromonas salmonicida infection
abstract: Senior seminar (D.V.M.)--Cornell University, 1999.
Includes bibliographical references (leaf [7]).The following is a case of fish disease that occurred mid-September 1998 in Canada. The site manager of an Atlantic salmon (Salmo salar) fish farm called a fish veterinarian to report his concerns. These concerns included gradually increasing mortalities in three of his eight seawater fish pens over the past two weeks. Normally, he expected to have an average of 10 mortalities per day per pen, but the number had increased to an average of 40. He said that the affected fish were lethargic, anorexic, and had a dark body color. The site manager was also worried, because a fish farm one mile away was reportedly having disease problems. Because this histoiy was vague and not indicative of any specific disease, a visit to the farm was scheduled.
The fish farm was located on a southern bay of Newfoundland. This is a center for salmonid aquaculture, because it has proper water temperatures and good tidal movement to flush away organic matter produced by the fish. The farm itself had eight polar circle pens with nets extending to 20 feet in depth. Each pen included 10-15 thousand fish, which had been hatched in a single freshwater hatchery in the spring on 1997. They were transferred to this saltwater site in the spring of 1998 for growout to a weight of 5-8 pounds. This population had not suffered any serious outbreaks of disease in that time and had not been exposed to antibiotic treatment.

url: http://hdl.handle.net/1813/2512
date: 2005-11-23
creator: Leon, Dennis
viewed: 2060
title: Choosing to buy a practice

abstract: Senior seminar (D.V.M.)--Cornell University, 2001.
Includes bibliographical references (leaf 10).When senior veterinary students say that they want to own a practice one day, do they really know what they are talking about? Most students have no idea what owning a veterinary practice is like. Two credits of a practice management class do not quite make these students MBA material. Are these budding entrepreneurs truly prepared to operate a small business? The decision to buy a practice should not be taken lightly. Owning a practice is a life-changing commitment ?not something to ?try out? for a couple of years. Often ignored are the downsides of practice ownership, including: increased responsibility, increased stress, interrupted vacations, and time taken away from a veterinarian?s true specialty ?medicine. It should be obvious that ownership is not for everybody. Some veterinarians will simply be much happier as associates. Yet, the pot of gold at the end of the rainbow is sometimes difficult to resist. Future and recent grads who are set on owning a practice need to evaluate themselves and their lives in order to determine when and if practice ownership is right for them. Can you buy a practice? Should you buy a practice? These are two very different questions, and they both deserve careful thought. What this self-evaluation amounts to is a seemingly endless series of questions. There are no right or wrong answers, per se, just answers that may suggest one career option over another. Do you have what it takes? Ask yourself the following questions, and judge your responses. It should be obvious how responses differ between entrepreneurs and couch potatoes.

url: http://hdl.handle.net/1813/2513
date: 2005-11-23
creator: Allen, Heather
viewed: 1908
title: Hemangiopericytoma in the dog
abstract: Senior seminar (D.V.M.)--Cornell University, 2003.
Includes bibliographical references (leaf 8).Hemangiopericytomas are a group of soft tissue sarcomas, which have a high rate of local recurrence with minimal metastatic potential. Treatment options for hemangiopericytomas include surgery and radiation, with a combined efficacy greater than either single modality. A case discussion of a timber wolf hybrid seen at Cornell University Hospital for Animals in August 2002 will provide a background in diagnostics and treatments used in managing hemangiopericytoma.

url: http://hdl.handle.net/1813/2521
date: 2005-11-23
creator: Arteaga, Theresa
viewed: 3344
title: Necrolytic migratory erythema in a shih tzu
abstract: Series: Senior seminar paper (Cornell University. College of Veterinary Medicine)
Notes: Senior seminar (D.V.M.)--Cornell University, 2003.
Includes bibliographical references (leaf 8).Digbee, a seven year old male, castrated Shih tzu presented to the Cornell Dermatology Service with a progressive history of crusted, pruritic, ulcerative lesions on mucocutaneous junctions. Clinical diagnostics consisted of a CBC/Chemistry Panel, bile acid assay. urinalysis, ultrasound and skin biopsies. The histopathology of the skin biopsies were pathogneumonic for Necrolytic Migratory Erythema. Introduction/Case History: Digbee is a seven year old, male castrated, 14.5 lb. Shih tzu that presented to the Cornell University Dermatology Service on 6/16/2002 for pruritic, crusting, ulcerative dermatosis of the footpads, ventral abdomen and external genitalia. Three months before presentation at Cornell, Digbee?s paws became severely erythematous and pruritic. One month previous to presentation Digbee?s paws progressed to erosion, ulceration and crusting making it difficult for him to walk. The lesions then spread to his prepuce and anus. The crusting around his prepuce and anus caused obstructive stranguria and tenesmus. The referring veterinarian prescribed an antihistamine with no noticeable improvement.

Digbee was then prescribed a course of methylprednisolone and Baytril with some improvement noted in terms of comfort level. However, after the course of steroids was completed, Digbee relapsed to not walking and was placed back on steroids and antibiotics but with no noticeable improvement. The rDVM performed a complete blood cell count and chemistry panel, which revealed a mild hyperglycemia and increases in alkaline phosphatase and alanine transferase. Two days previous to presentation at Cornell, the owner noticed small, multifocal lesions on the ventrum and occassional whole body tremors at which time he was referred to Cornell with a tentative diagnosis of pemphigus foliaceous.

url: http://hdl.handle.net/1813/2522
date: 2005-11-23
creator: Bahrawy, Dina
viewed: 2818
title: Anesthetic Management of a Kemp's Ridley Sea Turtle
abstract: Series: Senior seminar paper (Cornell University. College of Veterinary Medicine)
Notes: Senior seminar (D.V.M.)--Cornell University, 2003.
Includes bibliographical references (leaves 14-15).A male juvenile Kemp?s Ridley sea turtle presented to the Marine Animal Rehabilitation Hospital at the New England Aquarium in Boston in November of 2001 for treatment of disease associated with "cold-stunning". On presentation at the rehabilitation hospital, the turtle received initial therapies to correct hypothermia, dehydration, electrolyte abnormalities and malnutrition. Once stabilized, he was gradually introduced into a controlled aquatic environment but was unable to control his buoyancy. The turtle could swim and float at the surface but could not dive. Radiographs and ultrasound were non-diagnostic, and the veterinary staff elected to perform a laparoscopic exploratory under general anesthesia. Anesthesia of sea turtles presents several unique challenges. Unique aspects of the cardiovascular system include the potential for perianesthetic intra-cardiac shunts and the adaptation to breath-hold for extended periods of time. The dive reflex triggers significant bradycardia, peripheral vasoconstriction and prolonged apnea which can have marked effects on induction as well as recovery from anesthesia. The anesthetic protocol used in this case will be presented including a description of monitoring techniques and supportive peri-operative care. Recovery is often markedly prolonged in sea turtles as was true in this case, and the paper will conclude with a brief discussion of select alternative protocols with potential to expedite recovery from anesthesia.Advisors: Dr. Noha Abou-Madi Dr. Lysa Posner

url: http://hdl.handle.net/1813/2523
date: 2005-11-23
creator: Berliner, Elizabeth
viewed: 3381
title: Feline splenic mast cell tumor
abstract: Series: Senior seminar paper (Cornell University. College of Veterinary Medicine)
Notes: Senior seminar (D.V.M.)--Cornell University, 2003.
Includes bibliographical references (leaves 12-13).Splenic mast cell tumor is the most common splenic neoplasm in the cat. This disease is frequently metastatic, involving liver, lymph node, and bone marrow, with a peripheral mastocythemia. The treatment of choice is splenectomy, with surprisingly long survival times (mean of 12-19 months) considering the extent of metastatic disease. There are currently no proven chemotherapeutic options for cats, although recent research suggests CCNU may be useful post-operatively .Advisor: Dr. Dennis Bailey Clinicians: Dr. Olivier Toulza, Dr. Michelle Steffey

url: http://hdl.handle.net/1813/2524
date: 2005-11-23
creator: Bishop, Todd M.

viewed: 2812
title: Ultrasound-guided percutaneous ethanol injection (PEI) for the treatment of primary hyperparathyroidism in a dog
abstract: Series: Senior seminar paper (Cornell University. College of Veterinary Medicine)
Notes: Senior seminar (D.V.M.)--Cornell University, 2003.
Includes bibliographical references (leaf 15)."Sadie-Mae", a 10 year-old spayed female mixed breed dog, presented to the Small Animal Medicine Service for inappetance, lethargy, weight loss, incontinence, occasional constipation and questionable polyuria. Physical exam was unremarkable except for some mild hepatomegaly and slightly enlarged popliteal lymph nodes bilaterally. A complete blood count was within normal limits. A serum chemistry profile indicated a mild hypomagnesemia and a marked hypercalcemia. A parathyroid panel revealed a mildly elevated intact PTH level, a marked elevation in ionized calcium and a PTHrP level that was within normal limits. Cervical ultrasound revealed a small, focal, round-oval hypoechoic nodule in the thyroid tissue on the right side. These results suggested a diagnosis of primary hyperparathyroidism. Sadie-Mae's owners opted to pursue therapy using ultrasound-guided percutaneous ethanol injection to the chemically ablate the affected parathyroid gland.Advisor: Richard Goldstein DVM, DACVIM

url: http://hdl.handle.net/1813/2525
date: 2005-11-23
creator: Byers, Christopher G.
viewed: 3697
title: Feline bronchial asthma : treatment options for the emergency patient
abstract: Series: Senior seminar paper (Cornell University. College of Veterinary Medicine)
Notes: Senior seminar (D.V.M.)--Cornell University, 2003.
Includes bibliographical references (leaves 13-15).Objective: To describe a case report of feline bronchial asthma detailing standard and novel treatment options for the emergency patient. Case Summary: A 5.5-year-old, castrated male, Domestic Shorthair cat presented with acute onset of dyspnea and tachypnea. Crackles were auscultable in all lung fields, and the patient was tachycardic. Diagnostic procedures, including thoracic radiography, electrocardiography, complete blood count, biochemical profile, and bronchoalveolar lavage supported a diagnosis of feline bronchial asthma. Treatment was initiated with dexamethasone sodium phosphate, terbutaline, and oxygen supplementation. The patient was discharged 24 hours after initial presentation with instructions for using inhalant beta2-adrenergic and glucocorticoid medications to manage his disease. Keywords: feline bronchial asthma, bronchodilators, corticosteroid, leukotriene, beta2-adrenergic, methylxanthinesAdvisor/Clinician: Tristan K. Weinkle, DVM

url: http://hdl.handle.net/1813/2526
date: 2005-11-23
creator: Cadavieco-Viejo, Cristina
viewed: 2584
title: Progressive ethmoid hematoma in a 15 year old Thoroughbred horse
abstract: Series: Senior seminar paper (Cornell University. College of Veterinary Medicine) Notes: Senior seminar (D.V.M.)--Cornell University, 2003. Includes bibliographical references (leaves 7-8).Progressive ethmoid hematomas are uncommon lesions of unknown etiology that affect more commonly horses 6 years of age or older. Endoscopic examination commonly reveals a characteristic gray to white mass in the region of the ethmoids. The most common clinical sign is mild, intermittent, unilateral epistaxis caused by ulceration of the respiratory epithelium covering the mass or by destruction of adjacent tissues. Several treatment options are available to attempt mass removal. Regardless of treatment, prognosis for recurrence of ethmoid hematomas is high.Advisor: Dr. Woodie Clinician: Dr. Woodie

url: http://hdl.handle.net/1813/2527
date: 2005-11-28
creator: Silterra, Rick;Nehler, Greg;Kurth, Martin
viewed: 1968
title: Using Controlled Vocabularies to Manage Resource Relationships: The KMODDL Experience
abstract: Publication version.The Kinematic Models for Design Digital Library (KMODDL) exemplifies digital collections in which groups of objects are versions of the same resource and which resources are related to one another taxonomically. Other objects in the collection are supplementary materials that explicitly cite the primary KMODDL resources. To manage the complex relationships among KMODDL objects while maintaining the DC one-to-one principle, metadata developers established controlled vocabulary encoding schemes that linked related objects. The solution implemented enables users to find all versions of a resource and all supplementary materials that cite the resource in a single search.

url: http://hdl.handle.net/1813/2528
date: 2005-11-30
creator: Atkinson, Ross
viewed: 3274
title: Key Challenges for Collection Development
abstract: The powerpoint presentation given by Ross Atkinson at the Janus Conference on Research Library Collections, October 10,2005,

url: http://hdl.handle.net/1813/2528
date: 2005-11-30
creator: Atkinson, Ross
viewed: 3274
title: Key Challenges for Collection Development
abstract: The powerpoint presentation given by Ross Atkinson at the Janus Conference on Research Library Collections, October 10,2005,

url: http://hdl.handle.net/1813/2529
date: 2005-11-30
creator: Sandler, Mark
viewed: 3289
title: Collection Development in the Day of Google
abstract: The powerpoint presentation given by Mark Sandler at the Janus Conference on Research Library Collections, October 10, 2005.

url: http://hdl.handle.net/1813/2529
date: 2005-11-30
creator: Sandler, Mark
viewed: 3289
title: Collection Development in the Day of Google
abstract: The powerpoint presentation given by Mark Sandler at the Janus Conference on Research Library Collections, October 10, 2005.

url: http://hdl.handle.net/1813/2530
date: 2005-12-01

creator: Codr, Dwight Douglas
viewed: 1886
title: A Store Yet Untouched: Speculative Ideologies in Eighteenth-Century English Literature
abstract: This dissertation explores the ways in which attacks on speculative practices articulated in the financial literature of the seventeenth and eighteenth centuries were revised and reformulated in the literary productions of eighteenth-century English fiction writers. The title of this dissertation derives from William Hazlitt?s remark that the ?past is?like money that is spent,? while the future ?is like a store yet untouched, and in the enjoyment of which we promise ourselves infinite gratification? (?On the Past and Future?). Hazlitt?s figuration of time as money refers us to an important historical connection between England?s revolutionized financial order and alterations in the individual?s relationship to futurity. The financial revolution, as P.G.M. Dickson famously styled it, brought the British a new sense of the individual?s control over his or her material destiny in the temporal order of things; and the challenge it posed to a Providentialist view of history was addressed and negotiated by countless literary texts of the period in explicit or implicit fashion. Rather than sidestepping the vexing theoretical problem of how a revolution could be said to exist independently of the discourse that names it so, this dissertation argues that the historically significant fictional discourses of the eighteenth century acted to mark the historical moment as one particularly interested in the status of the forward-looking (often explicitly financial) subject. Ascertaining how texts of this period established ethical distinctions between prudential foresight and ?scheming? offers a new way of understanding the development of eighteenth-century fiction as well as the broader cultural narratives from which those fictions drew energy and, indeed, a readership. The carving of ethical space for the speculative subject, one who was forward-looking without being either presumptuous or manipulative, is shown to be a central moral concern and literary opportunity for writers such as Daniel Defoe, Richard Steele, Alexander Pope, Eliza Haywood, Samuel Richardson, Henry Fielding, and Samuel Johnson.

url: http://hdl.handle.net/1813/2532
date: 2005-12-02
creator: Chavis, Larry
viewed: 1690
title: An Analysis of the Events that Sustained the Crisis in Indonesia
abstract: This research aims to uncover the forces that led to the intense nature of the 1997 financial crisis in Indonesia. While the crisis struck many countries in Asia, Indonesia was particularly hard hit. By examining the how the Jakarta Stock Exchange and the Indonesian Rupiah reacted to news events during the crisis, this research seeks to identify which kind of news events where most responsible for Indonesia?s volatility during the crisis. Where market players taking cues from the IMF and external credit rating agencies during the crisis or were they responding to events inside of Indonesia?

The core data for this research are daily rupiah-U.S. dollar exchange rates and Jakarta Stock Market index quotes from July 1997 until October 1999. To analyze the variation in the data, news variables based on the Dow Jones News Service and other news outlets are used. Three main methods are used to analyze the interaction between markets and news. First I identify a set of key events using headlines from the New York Times. For each event I analyze the movements of markets during that period. Next rather than start with top news stories, the top 50 market movements for both the rupiah and Jakarta Stock Exchange are identified. The news events behind these movements are analyzed to determine which types of news (political, policy-related, international, civil unrest, etc.) drove the markets during this tumultuous period. Lastly indicator variables representing the various types of news are regressed separately on the daily quotes for the rupiah and the stock exchange. This gives a more exact measure of the impact of each type of news category. Testing for changes in the regression coefficients over time allows me to identify the most intense part of the crisis.

A consistent picture of the crisis emerges from these three methodologies. First we see that the rupiah is more volatile than the Jakarta Stock Exchange index. The currency responds vigorously to both good and bad

news while the stock market is less affected by bad news and consistently buoyed by good news. While the stock market may have lost considerable value because of the declining exchange rate, that aside, the market seemed to do relatively well considering the severity of the crisis. The importance of domestic news events also stands out. Although the announcements of international agencies like the IMF and World Bank were an important part of the crisis, the three key sources of domestic news have larger impacts: politics, policy, and civil unrest. This research shows that many of the events that sustained the crisis where not external to Indonesia. This research is able to give quantitative credence to the popular idea that Indonesia?s crisis transformed over time from a financial/economic crisis to a political/social crisis.

url: http://hdl.handle.net/1813/2536
date: 2005-12-06
creator: Chavez-Martin del Campo, Juan Carlos
viewed: 2710
title: Three Essays on Poverty Analysis
abstract: This dissertation is a collection of three essays that cover issues in poverty analysis. The first essay (Partial Identification of Poverty Measures with Contaminated and Corrupted Data) applies a partial identification approach to poverty measurement when data errors are non-classical in the sense that it is not assumed that the error is statistically independent of the outcome of interest, and the error distribution has a mass point at zero. This paper shows that it is possible to find non-parametric bounds for the class of additively separable poverty measures. A methodology to draw statistical inference on partially identified parameters is extended and applied to the setting of poverty measurement. The methodology developed in this essay is applied to the estimation of poverty treatment effects of an anti-poverty program in the presence of contaminated data.

The second essay (On the Design of an Optimal Transfer Schedule with Time Inconsistent Preferences) addresses a very recent literature that studies public policy and its connection to behavioral economics. It incorporates the phenomenon of time inconsistency into the problem of designing an optimal transfer schedule. It is shown that if program beneficiaries are time inconsistent and receive all of the resources in just one payment, then the equilibrium allocation is always inefficient. In the spirit of the second welfare theorem, I also show that any efficient allocation can be obtained in equilibrium when the policymaker has full information. This assumption is relaxed by introducing uncertainty and asymmetric information into the model. The optimal solution reflects the dilemma that a policymaker has to face when playing the roles of commitment enforcer and insurance provider simultaneously.

The third essay (Does Conditionality Generate Heterogeneity and Regressivity in Program Impacts? The Progresa Experience) studies both empirically and theoretically the consequences of introducing a conditional cash transfer scheme for the distribution of program impacts. Intuitively, if the conditioned-on good is normal, then better-off households tend to receive a larger positive impact. I formalize this insight by means of a simple model of child labor, applying the Nash-Bargaining approach as the solution concept. A series of tests for heterogeneity in program impacts are developed and applied to Progresa, an anti-poverty program in Mexico. It can be concluded that this program exhibits a lot of heterogeneity in treatment effects. Consistent with the model, and under the assumption of rank preservation, program impacts are distributionally regressive, although positive, within the treated population.The Consejo de Ciencia y Tecnologia del Estado de Aguascalientes (CONCYTEA), the Consejo Nacional de Ciencia y Tecnologia (CONACYT), and the Ford-MacArthur-Hewlett Foundation Graduate Fellowship in the Social Sciences.

url: http://hdl.handle.net/1813/2537
date: 2005-12-06
creator: Ikeya, Chie
viewed: 3268

title: GENDER, HISTORY AND MODERNITY: REPRESENTING WOMEN IN TWENTIETH CENTURY COLONIAL BURMA
abstract: Tamara Loos, Eric Tagaliacozzo, Anne BlackburnThis dissertation is the first social history of twentieth century colonial Burma to analyze the central role gender played in discourses of colonialism, modernity, and nationalism. It revises the dominant historiography on colonial Burma that reifies and overly emphasizes the significance of ethnicity and is principally concerned with the identification of the origins of the Burmese nationalist movement. This dissertation redresses in particular the occlusion of women and draws attention to the multiple connections between gender and both sides of the colonial struggle, colonial and anti-colonial. Through an interwoven analysis of English and Burmese sources ranging from census reports and confidential memos to missionary pamphlets, fashion advertising, and serialized fiction, my research investigates the emergence of colonial discourses concerning Burmese women and the explosion of censorious and misogynistic representations of "the modern girl" during a formative period that defined Burma's transition from a pre-modern polity to a modern nation-state. What interests motivated these discourses and representations? Why were there no parallel discourses concerning men or masculinity? I argue that modern colonial rule produced a set of conditions in which colonizing and colonized women and men in unequal relations of power co-authored essentially gendered discourses and binary representations of "East" and "West," "tradition" and "modernity," "Buddhist" and "secular," and "colony" and "nation." The socio-historical conditions I attend to include: the large influx of single male immigrants from England and British India; the establishment of secular government-funded educational institution; the formation of a new textual culture which was founded on popular print and visual media; and the centrality of "the status of women" to the colonial civilizing mission and the modernization projects of the indigenous elite. My study examines the complex and sometimes contradictory effects these conditions had on the status of women in colonial Burma and on the emergence of a popular discourse on "Burmese women" that became a privileged idiom for articulating, interpreting, and discussing new and old social inequities.Institute of Historical Research (University of London), American Association of University Women, Mario Einaudi Center for International Studies (Cornell University), Feminism, Gender, and Sexuality Studies Program (Cornell University), Department of History (Cornell University), Southeast Asia Program (Cornell University)

url: http://hdl.handle.net/1813/2538
date: 2005-12-06
creator: Wang, Yujun
viewed: 2592
title: A Critique of the Status Exchange Theory of Merton and Davis in Mate Assorting
abstract: In this paper I reexamine the status exchange hypothesis (Davis 1941; Merton 1941), which argued that minorities exchange their high socioeconomic status for the "high" social status of whites. Specifically, I reanalyze the cross-classification table presented in Fu (2001) on recent marriages among whites, blacks, Mexicans, and Japanese (from the 1990 PUMS data), which claims to corroborate the status exchange hypothesis for intermarriage between whites and blacks as well as between whites and Mexican Americans. Using a simple quasi-symmetry model, I show that the same-race and mixed-race marriage share a broadly similar pattern of educational homogamy, which is quasi-symmetric in character. Thus, I argue that this suggests little, if any, evidence for the status exchange hypothesis. Furthermore, the evidence strongly indicates that there is a remarkable consistency and symmetry in husband/wife educational attainment regardless of race (with the possible exception of white/white marriages); intermarried couples share a similar level of education, and educational homogamy dominates the educational marriages, no matter how strong the racial endogamy is.

url: http://hdl.handle.net/1813/2539
date:

creator:
viewed: 2
title:
abstract:

url: http://hdl.handle.net/1813/2540
date: 2005-12-07
creator: Harrison, Ellen Z;Bonhotal, Jean
viewed: 3115
title: Compost Pads
abstract: Cornell Cooperative Extension, New York State Energy Research and Development Authority, and Cornell University's College of Agriculture and Life Sciences

url: http://hdl.handle.net/1813/2541
date: 2005-12-09
creator: Roy, Sonali
viewed: 2863
title: The Emerging Economy-Industrial Complex
abstract: This Masters Thesis is a synthesis of two papers that address how changes in global industrial structures affect regional-specific industrial organization. The first paper is a characterization of the response of Indonesian manufacturing firms to the Asian financial crisis in 1997. The second paper is a characterization of the how to induce a response from firms (specifically multinational seed companies) with research capacities in the agricultural biotechnology sector in developing countries. The lessons from both papers are broadly centered on effective growth policies and it?s relation of private sector and foreign direct investments. Specifically, an economic development agenda concentrated only on the private sector will not necessarily guarantee that firms will take advantage of ideal economic scenarios. As the case of Indonesian firms demonstrated, uncertainty and perceptions of the local economy affect the extent to which the private sector should have led growth through exports during devaluation of the Indonesian currency. In contrast, the capacity for research and development in agricultural biotechnology is grossly underdeveloped in Africa, and limited to only a few countries. The massive intellectual capacity of a largely consolidated seed industry actually becomes beneficial for firms to take greater risks and spur sector development. Reading the following papers as a policy maker, one would thus gain valuable insight to the complexities of industrial development. As a researcher and student, one should be interested in these studies as a call attention to areas with potential for future research. The implications of research into firm-level response of Indonesian export firms will greatly affect future empirical work on trade theory and economic growth policies because it highlights a circumstance that runs somewhat contrary to trade theory predictions. Policies need to take into account the extent to firm response to financial crisis and ability to face adverse economic situations. The immediacy of riskanalysis research in the biotechnology sector in Africa is equally important and unexhaustive. If foreign investments are to play an important role in the development strategy for African countries, it must take into account the decision making processes of firms willing to take on high-cost projects with low immediate returns.

url: http://hdl.handle.net/1813/2542
date: 2005-12-09
creator: Darby, Trudy L.;Ife, B.W.
viewed: 1865
title: Remorse, Retribution and Redemption in La fuerza de la sangre: Spanish and English Perspectives
abstract: an essay describing "the power of blood" as a concept used in Miguel de Cervantes' Novelas

ejemplares

url: http://hdl.handle.net/1813/2543
date: 2005-12-09
creator: Block, David
viewed: 3178
title: Broadcast and Archive: human rights documentation in the early digital age.
abstract: Human rights documentation is undergoing a transition from paper to digital formats. The paper traces recent progress, identifies barriers to be overcome and lays out some advantages to a virtural netword of documents to parallel the human networks that characterize human rights work.

url: http://hdl.handle.net/1813/2545
date: 2005-12-12
creator: Davies, Peter J.
viewed: 3093
title: Genes Involved in Aspects of Plant Hormone Biosynthesis, Transport, Signal Transduction or Action
abstract:

url: http://hdl.handle.net/1813/2546
date: 2005-12-13
creator: Carberry, Edward J.
viewed: 3427
title: Defending Organizational Legitimacy after Enron: The Symbolic Use of Stock Option Accounting
abstract: David Strang, Richard Swedberg, Michael LounsburyThis paper examines the forces driving the adoption of an accounting practice, stock option expensing (SOE), among the Fortune 500 in the wake of the recent corporate scandals. I argue that in the ensuing debates and challenges to the legitimacy of existing institutional frameworks governing corporate behavior, SOE became a symbol of normative legitimacy and a way for organizations to defend against threats to their own legitimacy. In analyzing the effects of different types of legitimacy threats, the results indicate that organizations in industries that were under intensive levels of investigation were more likely to adopt SOE, but that negative media scrutiny and shareholder activism did not influence SOE adoption. The results also suggest that as the Financial Accounting Standards Board threatened to require SOE, the significance of the practice as a symbol of normative legitimacy began to diminish. The findings broaden and deepen our understanding of how organizations engage in symbolic practice adoption to defend their legitimacy as well as the processes shaping the social construction of accounting practices. This paper also provides empirical support for recent theoretical claims regarding legitimacy defense and expands upon recent work that has made links between the impression management literature and neoinstitutional theory.

url: http://hdl.handle.net/1813/2547
date: 2005-12-13
creator: Bouldin, David
viewed: 1973
title: Manuscripts and Water Quality Data for Watersheds and Lakes in Central NY, 1972-2003
abstract: David Bouldin, Emeritus Professor, Crop and Soil Science, Cornell University ---
E-mail: DRB6@Cornell.edu ---
In 1970 Cornell University received a grant from the Rockefeller Foundation to study runoff from land and its impact on water quality. A multidisciplinary team, focused on the lakes and landscapes in central NY, was developed and led by Professor Robert J Young. Since the above project was finished, I have continued

to monitor Fall Creek, sub-watersheds in Fall Creek, other tributaries to Cayuga Lake and the aquifers on the Harford T and R center. (intro.doc) --- The appended files describe the results of analysis of over 3000 water samples, 1970- 2003, concerned with land runoff and the lakes in central NY. Major findings follow. References to the appropriate document can be found in the folder "mss" --- Three P fractions were measured: MRP, TDP and TP. MRP is measured on filtered samples without treatment and is presumed to be mostly inorganic P in solution. TDP is measured on filtered samples after oxidation of organic forms of P and hence is total Pin solution. TP is particulate P plus TDP. Usually MRP and TDP are considered the major forms used by algae. (ms1, ms2, ms13, ms14) --- The average TDP in about 1500 samples from Fall Creek was 0.026 mg per liter, loading was about 4400 Kg P or about 0.13 kg/ha/year . About ? was MRP. Total P was about 0.140 mg/liter. Approximate sources of TDP are as follows: 50% from inactive agriculture and forest, the other 50% attributed to human activities of which about half from diffuse sources and half from point sources. MRP concentrations in runoff from 16 subwatersheds, February to April of 1973, varied from 0.006 to 050 mg/l. The TDP in Cayuga Lake ranges from 0.005 to 0.020 mg per liter (ms3, ms4, ms5, ms6, ms7). --- NO3 loading from Fall Creek is about 5 kg/ha /year; this is about 80% of the input of inorganic N in precipitation. This is a consequence of mosaic of sources varying widely in concentration. NO3 loading from 9 subwatersheds in Fall Creek varied from 1 to 7.7 kg/ha/year; no samples containing more than 10 ppm was found. (ms8,ms5,ms9,ms6,ms7,ms10) --- Streams draining wooded areas without human habitations or active agriculture have NO3 concentrations and loadings on the order of 20 % of the inputs of inorganic N from precipitation (~1kg/ha/year). and similar to those found in the Catskill and Hubbard Brook in NY (ms5,ms6,ms7,ms9) --- There are unlikely to be more than a very few small streams in the Cayuga Lake watershed in which the concentration of NO3-N will exceed the 10 ppm public health standard. However aquifers under heavily fertilized fields may contain more than the public health standard. (ms9, ms5) --- Estimates of evapotranspiration (ET) for Fall Creek did not change statistically during the period 1926-1996 as estimated by annual precipitation input minus stream outflow, indicating that land use changes were not important in influencing ET.(ms_15) --- The most important sampling protocols are the following: Concentrations of constituents in stream water vary seasonally and with flow intensity. This means that a) timing of sampling must be carried out during all seasons and over all flow regimes, b) amounts of various substances such as N, P and sediment transported to lakes and reservoirs are the product of flow multiplied by concentration which means that flow measurements must be made at the same time as samples are taken for analytical determination and c) most of the water leaves the watershed during the 10 to 20 % of the time that highest flows occur; this means that timing of sampling must include frequent sampling during storm events. With respect to TDP, point sources will be most evident under low flow conditions while non- point sources will be most evident under high flow conditions. Loading of non point sources is thus very much dependent on the 10 % to 20% of the time when highest flow conditions occur. --- The most important conclusion I reached about watershed management is the following. Watershed management requires detailed knowledge about the cost of several management options per unit of decrease in loading/ concentration. Our experience was that the various human activities in sub watersheds were correlated with each other. This meant that statistical analysis of correlations between loading of N and P were useless in identifying the management options which would be most beneficial. This also means that commonly used procedures for validating models are useless in terms of developing management strategies . (Ms12)

url: http://hdl.handle.net/1813/2549
date: 2005-12-15
creator: Nanias, Marian
viewed: 3005
title: Protein Folding with Coarse-Grained Off-Lattice Models of the Polypeptide Chain
abstract: A hierarchical approach, together with the United
Residue (UNRES) model of the polypeptide chain, is used to study protein structure prediction.

First, an efficient method has been developed as an extension of the hierarchical approach for packing alpha-helices in proteins. The results for 42 proteins show that the approach reproduces native-like folds of alpha-helical proteins as low-energy local minima. Moreover, this technique successfully predicted the structure of the largest protein obtained so far with the UNRES force field in the sixth Critical Assessment of Techniques for Protein Structure Prediction (CASP6).
Next, two popular methods of global optimization are coupled, and the performance of the resulting method is compared with that of its components and with other global optimization techniques. The Replica-Exchange Method together with Monte Carlo-Minimization (REMCM) was applied to search the conformational space of coarse-grained protein systems described by the UNRES force field. In summary, REMCM located global minima for four proteins faster and more consistently than two of three other global optimization methods, while being comparable to the third method used for comparison.
Finally, efficient methods for calculating thermodynamic averages were implemented with the UNRES force field, namely a Replica Exchange method (REM), a Replica Exchange Multicanonical method (REMUCA), and Replica Exchange Multicanonical with Replica Exchange (REMUCAREM), in both Monte Carlo (MC) and Molecular Dynamics (MD) versions. The algorithms were applied to one peptide and two small proteins (with alpha-helical and alpha+beta topologies). To compare the different methods, thermodynamic averages are calculated, and it is found that REM MD has the best performance. Consequently, free energy maps are computed with REM MD, to evaluate the folding behavior for all test systems.This work was supported by National Science Foundation (NSF) and National Institutes of Health (NIH). Support was also received from the National Foundation for Cancer Research. This research was carried out by using the resources of our 392-processor Beowulf cluster at the Baker Laboratory of Chemistry and Chemical Biology, Cornell University, the National Science Foundation Terascale Computing System at the Pittsburgh Supercomputer Center, and the National Center for Supercomputing Applications System at the University of Illinois at Urbana-Champaign.

url: http://hdl.handle.net/1813/2550
date: 2005-12-15
creator: Gary W. Fick
viewed: 3620
title: FARMING BY THE BOOK: Food, Farming, and the Environment in the Bible and in the Qur-an
abstract: Food, farming, and environmental care are key topics in the study of agricultural sustainability. Agricultural sustainability is holistic in its approach, so religion and ethics need to be considered as aspects of the topic. Religious considerations become especially important when academic and development specialists must communicate with and motivate religious audiences. Thus, development agencies such as the World Bank are now collecting and distributing information about the religious beliefs of potential clients as they relate to food, farming, and the environment. The material provided here offers an in-depth treatment from the perspective of three religions: Judaism, Christianity, and Islam. A comprehensive compilation of passages about food and agriculture is supplemented with brief annotations. Because there are many publications about religion and the environment, only the core scriptures about environmental care are covered here. The passages are taken from the primary religious sources (the Bible and the Qur-an) used by Jewish, Christian, and Muslim communities. The goal is to help current and future agricultural development workers understand and communicate in terms that audiences with those religious backgrounds will appreciate.

url: http://hdl.handle.net/1813/2551
date: 2005-12-15
creator: Lee, Eunjung
viewed: 2503
title: A SOCIAL RESOURCE MODEL OF POLITICAL PARTICIPATION:MASS MEDIA USE, SOCIAL

CAPITAL, AND POLITICAL PARTICIPATION
abstract: This dissertation explores the theoretical foundation and empirical significance of the social resource model of political participation, an approach that views political participation as an outcome of individuals? use of social resources created by social connectedness. Building on the decomposition of the concept of "social capital," I explicate the mechanisms through which non-political resources?formal membership, social trust, talk and tolerance?function to facilitate political behaviors. In addition, I examine how such social resources enhance or substitute for other resources that are already established as individual-level determinants of political participation, such as formal education or mass media use. I employ three datasets that include measures of social and individual resources with respect to political participation: The Social Capital Benchmark Survey (2000), the National Election Study (2002), and the American Citizen Participation Study (1990). Results show that political (dis)engagement can be meaningfully explained by understanding why some people are better or more poorly able to utilize certain forms of social resources, regardless of or beyond their individual capabilities or options. It is important to note, however, that different forms or dimensions of social relations contribute differently not only to the generation of social resources but also to political mobilization. In addition, this dissertation shows that social resources reinforce the effects of individual capital on political participation. Most of all, the structural and communicative forms of social resources add to the political reservoir of those who are highly educated. The significant interaction effects of television use and social resources support television?s ?time displacement? and ?worldview? explanation of participation inequality. In future research, the nexus where social resources meet individual resources should be the focal point for the study and development of the social resource model of political participation.

url: http://hdl.handle.net/1813/2552
date: 2005-12-15
creator: Freeman, Allison Tucker
viewed: 2676
title: LEGISLATING ACCESS AND REDRESSING INEQUALITY? THE COMMUNITY REINVESTMENT ACT AND MORTGAGE LENDING IN POST-APARTHEID SOUTH AFRICA
abstract: William Goldsmith, Rolf Pendall, Sandra GreeneSouth Africa's brutal apartheid system came to an official end in 1994, when the African National Congress (ANC) won the majority of seats in the country's first democratic elections. Since that time, the ANC-led government has struggled with the challenge of redressing the inequitable access to resources and opportunity resulting from South Africa's history. Community reinvestment legislation is one tool in this effort, and the dissertation considers the following question: is a Community Reinvestment Act (CRA) an effective means through which to redress unequal access to housing finance, and thereby unequal access to housing, in post-apartheid South Africa.

The study sheds light on three broader questions. First, can legislative efforts be as effective when used to promote access to resources and opportunity as they are when used to bar access to resources and opportunity? Second, what are the real possibilities of effecting a redistribution of resources in a society on the capitalist periphery? Third, can the tools of capitalism be used to correct the inequitable distribution of resources created by apartheid's racist form of capitalism?

The study concludes that the answer to the question regarding the effectiveness of a CRA is "no." Through analysis of 30 interviews with bankers, government officials, housing and lending specialists, and community activists and through regression analysis of the geographic distribution of bank loans throughout South Africa's Gauteng Province, it is determined that the provisions in South Africa's draft Community Reinvestment Bill would neither have broadened access to the country's banks nor increased the flow of funds into previously marginalized communities.

The study moves from examination of the draft legislation's structural failures to consider its procedural failures, providing a detailed examination of the political and economic factors that led to CRA's withdrawal from the legislative agenda. Following this, the study explains why, given the inappropriate structure of the

proposed CRA and the limited likelihood that it would be accepted by the necessary range of actors in South Africa, the Department of Housing nevertheless attempted its passage.Graduate School of Cornell University, Department of City and Regional Planning of Cornell University, Mario Einaudi Center of Cornell University, Institute for African Development of Cornell University, Program on International Studies in Planning of Cornell University, Alumnae Association of Mount Holyoke College, Department of International Relations and Law and Politics of Mount Holyoke College

url: http://hdl.handle.net/1813/2553
date: 2005-12-15
creator: Kulcsar, Laszlo
viewed: 2018
title: LEGACY AND POLICY EFFECTS ON SPATIAL DEVELOPMENT IN HUNGARY AND BULGARIA
abstract: David L. Brown, Valerie J. Bunce, Douglas T. GurakThis dissertation investigates the relationship between socioeconomic and spatial development in Eastern Europe from a historical perspective. I examine how global and national processes affect localities, and what their impact is on the spatial distribution of population and economic activities over time. The backdrop for this study is the historical transformation of Eastern Europe from a predominantly agricultural region to a modern industrial one, even if this modernity can be labeled as "delayed", "distorted" or "dependent" when compared to the Western experience. When investigating socioeconomic and spatial development over time, I focus on the impacts of two fundamental processes, historical legacies and development policies. Legacies and policies must be connected in order to understand their impact on patterns of socioeconomic and spatial development over time, and to assess trends for the future.

I approach the study of social and spatial development from an interdisciplinary standpoint, working at the intersection of development sociology, social demography, political science and population geography. The conceptual project of this study is to connect these disciplines' accumulated knowledge on Eastern Europe, and articulate causal links between processes described by these fields. Although each field has accumulated considerable knowledge on development in the region separately, there hasn't been a systematic effort to connect these findings in a historical perspective. I use a comparative framework to achieve this goal, and hence I discuss the Eastern European development trajectory vis-?-vis the Western experiences. The particular contribution of this study is to connect the political theory of Eastern European "backwardness" to an analysis of the region's socio-demographic change, population redistribution and urbanization in particular. The dissertation's empirical project is to examine population distribution and urbanization dynamics in Eastern Europe. I investigate how spatial development occurred in the context of broader socioeconomic development, and how various policies and legacies affected settlement morphology and population redistribution. This analysis will use the cases of Hungary and Bulgaria. Hungary will be the central analytical case of this study, and I will use Bulgaria to demonstrate the intraregional heterogeneity of Eastern Europe.Polson Institute for Global Development, Echo Survey Institute

url: http://hdl.handle.net/1813/2554
date: 2005-12-20
creator: Porret, Naomi Azur
viewed: 3113
title: REALTIME PCR SYSTEMS TO MONITOR YEASTS IN GRAPE MUST AND WINE
abstract: The quality of beverages, particularly wine, depends largely on their microflora. Yeast and bacterial fermentations shape the product flavor profile, and can cause spoilage. Current detection methods for microorganisms are usually either inaccurate, slow, or both. In this project, realtime PCR systems were designed to test wines for the presence of certain microorganisms. The sampling method during wine

production was optimized to ascertain that the microflora in the samples is representative of the whole tank. Four different sampling locations within the vertical axis of stainless steel tanks were tested during both the alcoholic and the malolactic fermentation. Saccharomyces cerevisiae and Oenococcus oeni were enumerated by plating. The results showed that a representative number of viable cells is obtained by taking a sample from the sampling valve. Part of the actin gene (Act1) was sequenced as the basis for the realtime PCR. Detection systems for the three undesirable wine yeasts Brettanomyces bruxellensis, Hanseniaspora uvarum, and Pichia anomala were designed and validated. The extraction methods were optimized to ensure that they were quantitative within a suitable range. The specificity of the detection systems as well at their threshold and range were very satisfactory. The realtime PCR system for B. bruxellensis was used to determine whether there is a quantitative connection between B. bruxellensis contamination and the marker phenols 4-ethylphenol, 4-ethylguaiacol, and 4-ethylcatechol or the subjective sensory impression. The experiments show that although B. bruxellensis does produce the known marker phenols, there is no mathematical correlation between the volatile phenol concentration and cell counts. The influence of sanitation procedures on the occurrence of B. bruxellensis in wineries was investigated using plating and realtime PCR. B. bruxellensis was found in most locations in wineries, including the wines. The inheritance of the teinturier phenotype was studied in a cross segregating for this character. Segregation results suggest that the primary gene controlling berry skin color also controls berry flesh pigmentation. This new detection method is faster, more accurate, and more sensitive than previous microbial and chemical detection methods. Routine testing of beverages would minimize the effects of spoilage microorganisms, resulting in decreased product losses for the beverage producers.

url: http://hdl.handle.net/1813/2555
date: 2005-12-21
creator: Ghassem-Fachandi, Parvis
viewed: 2282
title: Sacrifice, Ahimsa, and Vegetarianism: Pogrom at the Deep End of Non-Violence
abstract: James T. Siegel; Benedict Anderson; Bernd Lambert; David Lelyveld This dissertation explores the relation of ahimsa (non-violence) and vegetarianism to sacrificial logic in post-independence Ahmedabad. It follows the transformation of ahimsa--from a protection of the sacrifier against the revenge of the animal victim; to a doctrine of renunciation, self-reform, and prohibition of animal sacrifice; to Gandhi?s famous tool for nonviolent resistance to colonial domination; and finally, to the ritualization of violence itself in the organized persecution of minorities in a secular state. Central Gujarat is often called the "laboratory of Hindutva." Hindutva offers an interpretation of "Hinduism" as a historical subject threatened by Islam and Christianity. It portrays Hindus as victims of Muslim barbarism, slaughtered and humiliated, butchered and raped, and demands a response that redefines the relation of violence to ahimsa. Its electoral success can be traced to a claim to unify Adivasi, lower, and intermediary caste groups with the Savarnas (high castes) as "Hindus" in opposition to Muslims and Christians, who are positioned as foreigners. As ethno-religious identifications have become integral to representation in a secular democratic system, traditional practices relating to diet and worship are simultaneously reconfigured. This research investigates the embodiment and experience of disgust among members of upwardly mobile castes, who are encouraged both to externalize their own low caste practices and to distance themselves from Muslims and Christians in new ways. In the 2002 anti-Muslim pogrom in Ahmedabad, an event around which this dissertation turns, I witnessed a mimetic reversal of Hindutva's claim. Violence returns as legitimate punishment of Muslims. The contemporary conjuncture of sacrificial language, beef prohibition, and vegetarianism makes explicit a subliminal criminalization of the dietary practices of minorities positioned permanently outside Hindutva identity. Most criminalized among these groups is the unabashed meat-consuming Muslim. The excessive expenditure of phantasmatic projections onto the Muslim is expressed in a m?lange of culinary and sacrificial idioms. The putatively excessive sexuality, violence, and power of the Muslim are themselves

transformations of the symbolics of food and ingestion. The pogrom and reactions to it reveal how a notion of nonviolence becomes implicated in violence that has a sacrificial character.Social Science Research Council Wenner Gren Foundation

url: http://hdl.handle.net/1813/2556
date: 2005-12-21
creator: Siemens, Tania Juniper
viewed: 3245
title: IMPACTS OF THE INVASIVE GRASS SALTWATER PASPALUM (PASPALUM VAGINATUM) ON AQUATIC COMMUNITIES OF COASTAL WETLANDS ON THE GALAPAGOS ISLANDS, ECUADOR.
abstract: Invasive plants species pose a threat to ecosystem function, and island ecosystems are particularly vulnerable to their impact. The grass saltwater paspalum (Paspalum vaginatum) has successfully invaded Galapagos Islands, potentially threatening coastal lagoons and their globally significant avifaunal biodiversity. I conducted two studies to assess potential changes in invertebrate populations associated with increased P. vaginatum abundance. The first study evaluated the relationship between abundances of fiddler crab (Uca galapagensis) burrows and habitat conditions (including above ground P. vaginatum densities) measured along transects that spanned lagoon shore-line habitat. Results show that at intermediate P. vaginatum densities, fiddler crab burrow abundance increased proximal to the shoreline and at high water tables and demonstrates the importance of moisture in fiddler crab habitat selection. However, burrow densities were reduced at high and low P. vaginatum densities regardless of habitat. This result suggests that P. vaginatum invasion may benefit the crab at early stages of invasion, but once P. vaginatum reaches high densities fiddler crabs may be excluded from lagoon shoreline habitats. In the second study I assessed whether P. vaginatum is impacting aquatic invertebrates by comparing invertebrate communities across 4 lagoon habitats: P. vaginatum, the interface between P. vaginatum and open water (edge), open water, and emergent mangroves. The invertebrate community in P. vaginatum showed increased species richness and was characterized by more terrestrial species such as polychaetes, tabanid larvae, and syrphid larvae. Invertebrate communities in open water were dominated by highly abundant aquatic species such as corixids (Trichocorixa reticulata) and ostracods. Although invertebrates in P. vaginatum had greater mass/individual than those in water, edge and mangrove, average overall invertebrate biomass was similar in all habitats and across seasons. This suggests that the invasion of P. vaginatum does not affect annual average invertebrate production per se, but rather the relative contribution of each species to the overall biomass. To evaluate whether the shift in invertebrate communities may impact lagoon avifauna, I conducted bird observations, estimated maximum habitat potentially affected by P. vaginatum, and assimilated bird feeding ecology data into an impact assessment table. Results suggest that most waterbirds (flamingos, ducks, herons, migratory shorebirds) generally do not associate with P. vaginatum while food availability for terrestrial birds (yellow warblers, smooth billed ani, mocking birds) may increase. Furthermore, the P. vaginatum invasion degrades foraging habitat and food resources for waterbirds and with further increase may potentially occupy 90.6 % of the lagoon surface area. This potential habitat degradation poses a particular threat to the viability of the Galapagos flamingo (Phoenicopterus ruber glyphorhynchus) population, an endemic subspecies, since a further population reduction may increase extinction risk. My results show that the invasion of P. vaginatum is associated with a shift from an aquatic to a more terrestrial invertebrate community. The continued invasion of P. vaginatum degrades water bird and fiddler crab habitat. Control of P. vaginatum may be necessary to maintain the Galapagos lagoons status as an Internationally Important Wetland.

url: http://hdl.handle.net/1813/2557
date: 2005-12-22
creator: Cohen, Suzanne;Davis, Philip M.

viewed: 2673
title: The Effect of the Web on Undergraduate Citation Behavior 1996-1999
abstract: A citation analysis of undergraduate term papers in microeconomics revealed a significant decrease in the frequency of scholarly resources cited between 1996 and 1999. Book citations decreased from 30% to 19%, newspaper citations increased from 7% to 19%, and Web citations increased from 9% to 21%. Web citations checked in 2000 revealed that only 18% of URLs cited in 1996 led to the correct Internet document. For 1999 bibliographies, only 55% of URLs led to the correct document. The authors recommend 1) setting stricter guidelines for acceptable citations in course assignments; 2) creating and maintaining scholarly portals for authoritative Web sites with a commitment to long term access; and 3) continuing to instruct students how to critically evaluate resources.

url: http://hdl.handle.net/1813/2558
date: 2005-12-22
creator: Davis, Philip M.
viewed: 4572
title: The Effect of the Web on Undergraduate Citation Behavior: A 2000 update
abstract: This paper provides a 2000 update to the 1996-1999 citation analysis of undergraduate term papers by Philip Davis and Suzanne Cohen [JASIST 52(4) 2001, p.309-314]. The total number of bibliographic citations continued to grow in 2000 from a median of 10 in 1996 to 13 in 2000. The growth however is entirely explained by the addition of traditionally non-scholarly materials (Web and newspaper citations). A significant improvement in the accuracy of Internet citations was found when term papers were submitted electronically. In 2000, the first year of electronic submissions, 65% of the citations pointed directly to the cited document, up from 55% in 1999. Internet citations aged six months in both 1999 and 2000 bibliographies were still irretrievable anywhere on the Internet 16% of the time. If we are to see more scholarly citations in term papers, professors must provide clear expectations in their class assignments. Students should be required to submit an electronic copy of their paper so that Internet citations can be scrutinized for accuracy and plagiarism.

url: http://hdl.handle.net/1813/2559
date: 2005-12-22
creator: Davis, Philip M.
viewed: 2762
title: Where to spend our e-journal money? Defining a university library?s core collection through citation analysis
abstract: This paper identifies core journals in the life sciences for Cornell University researchers by analyzing the frequency of Cornell-authored citations in Biosis Previews between 1996 and 2001. The distribution frequency of journals confirms Bradford's Law of Scatter or the 80/20 Rule. The top 240 journals, providing 80% of the citations, were analyzed by publisher type and institutional subscription price. In general, journals from society and associations received the highest number of citations and were priced considerably lower than commercial journals. The methodology described is a fast, no-cost, and scalable procedure that can be adapted to various subject databases, and may be used to provide guidance on which titles to purchase for electronic access.

url: http://hdl.handle.net/1813/2560
date: 2005-12-22
creator: Cerda-Gonzalez, Sofia
viewed: 1958
title: Ectopic ureter in an adult male dog

abstract: Series: Senior seminar paper (Cornell University. College of Veterinary Medicine)
Notes: Senior seminar (D.V.M.)--Cornell University, 2003. Includes bibliographical references (leaves 9-10).A nine year old male castrated Siberian Husky presented with a history of cyclic fever, anorexia and lethargy of one year in duration, along with chronic urinary tract infections and urinary incontinence. Initial diagnostics revealed a progressive pneumonia, an intramural ectopic left ureter, and left-sided hydroureter and hydronephrosis. The ectopic ureter was corrected via a ureteral transposition, and the animal recovered well from the procedure. Ectopic ureters are a common cause of urinary incontinence since birth or weaning. They may be unilateral or bilateral, and intramural or extramural. The cause of this abnormality is debated, but it is likely dependant on genetic factors. Ectopic ureters are often associated with other structural or functional abnormalities, which should be identified prior to surgery. Surgical correction may be accomplished via a neoureterostomy and urethral / trigone reconstruction, a ureter transposition, or a nephroureterectomy. Advisor: Dr. Richard Goldstein

url: http://hdl.handle.net/1813/2561
date: 2005-12-22
creator: Davis, Philip M.
viewed: 3416
title: Patterns in Electronic Journal Usage: Challenging the Composition of Geographic Consortia
abstract: Annual electronic journal usage data for the NorthEast Research Library (NERL) consortium was analyzed for 2000 and 2001 for the Academic Press IDEAL aggregate package. Patterns indicated a high degree of skew in the use of the journal collection: a small number of journals formed the majority of total use. Each institution illustrated a unique usage pattern, with some institutions using (proportionally) more or less of the collection. No institution used every title, and some titles were used very infrequently by the consortium as a whole. Title ranking showed high congruence between 2000 and 2001. Titles not subscribed in print, received about ten times less use than locally subscribed titles. Cluster analysis revealed three distinct groups of institutions based on their use of the journal package: 1) Large research institutions, 2) Medical institutions, and 3) Smaller liberal arts colleges and polytechnic institutes. Student enrollment is a good predictor of total usage, with medical institutions being an exception. It is recommended that institutions consider their consortial membership and organize themselves into groups of homogenous institutions with similar missions.

url: http://hdl.handle.net/1813/2562
date: 2005-12-22
creator: Coffey, Margaret
viewed: 1776
title: Nephrocalcinosis in tilapia from a recirculation production facility
abstract: Series: Senior seminar paper (Cornell University. College of Veterinary Medicine) Notes: Senior seminar (D.V.M.)--Cornell University, 2003. Includes bibliographical references (leaves 9-10).Nile tilapia, Oreochromis niloticus, from a recirculation aquaculture venture in the Northeastern United States were presented to Cornell's Fish Disease Diagnostic Laboratory. The chief complaint was of chronic, low-level tilapia mortalities. Histopathological diagnosis of renal tissue revealed moderate to severe kidney disease due to the precipitation of calcium salts from the short-term use of calcium carbonate to maintain alkalinity in the production system water. Calcium carbonate had been substituted for sodium bicarbonate (the normal industry practice) due to economic considerations. A recommendation was made to return to the use of sodium bicarbonate for water quality maintenance. This change was instituted and levels of nephrocalcinosis in the aquaculture facility's Nile tilapia dropped significantly. Advisor: Dr. Paul Bowser

url: http://hdl.handle.net/1813/2563

date: 2005-12-22
creator: Davis, Philip M.
viewed: 2957
title: Effect of the Web on Undergraduate Citation Behavior: guiding student scholarship in a networked age
abstract: This article provides the last update to a longitudinal study tracking the research behavior of a multi-college undergraduate course in microeconomics from 1996 to 2001. Student term paper bibliographies grew between 1996 and 2000 but included fewer scholarly resources. In 2001, a return to citing scholarly sources was demonstrated when the professor provided clear and enforceable guidelines in his class assignment. The accuracy and persistency of cited Web documents also increased as a result.

url: http://hdl.handle.net/1813/2564
date: 2005-12-22
creator: Solla, Leah;Davis, Philip M.
viewed: 1576
title: An IP-level analysis of usage statistics for electronic journals in chemistry: Making inferences about user-behavior.
abstract: This study reports an analysis of American Chemical Society electronic journal downloads at Cornell University by individual IP addresses. While the majority of users (IPs) limited themselves to a small number of both journals and article downloads, a small minority of heavy users had a large effect on total journal downloads. There was a very strong relationship between the number of article downloads and the number of users, implying that a user-population can be estimated by just knowing the total use of a journal. Aggregate users (i.e. Library Proxy Server and public library computers) can be regarded as a sample of the entire user population. Analysis of article downloads by format (PDF vs HTML) suggests that individuals are using the system like a networked photocopier, for the purposes of creating print-on-demand copies of articles.

url: http://hdl.handle.net/1813/2565
date: 2005-12-22
creator: Davis, Philip M.
viewed: 3247
title: Information seeking behavior of chemists: a transaction log analysis of referral URLs
abstract: This study reports an analysis of referral URL data by Cornell University IP address from the American Chemical Society servers. The goal of this work is to better understand the tools used and pathways taken when scientists connect to electronic journals. While various methods of referral were identified in this study, most individuals were referred infrequently and followed few and consistent pathways each time they connected. The relationship between the number and types of referrals followed an inverse-square law. Whereas the majority of referrals came from established finding tools (library catalog, library e-journal list, and bibliographic databases), a substantial number of referrals originated from generic web searches. Scientists are also relying on local alternatives or substitutes such as departmental or personal web pages with lists of linked publications. The use of electronic mail as a method to refer scientists directly to online articles may be greatly underestimated. Implications for the development of redundant library services like e-journal lists, and the practice of publishers to allow linking from other resources are discussed.

url: http://hdl.handle.net/1813/2566
date: 2005-12-22
creator: Cornelison, Lynda
viewed: 2715

title: Feline cutaneous asthenia (Ehlers-Danlos syndrome)
abstract: Series: Senior seminar paper (Cornell University. College of Veterinary Medicine) Notes: Senior seminar (D.V.M.)--Cornell University, 2003. Includes bibliographical references (leaf (11)).Feline cutaneous asthenia is a rare, inherited disorder of collagen production in cats. Similar diseases are found in humans, dogs, mink, horses and mice. In cats, there are two identified modes of inheritance. Both the autosomal dominant and recessive forms cause abnormal packing of Type I collagen. Affected animals have hyperextensible and fragile skin. This disease can be diagnosed via a skin extensibility test, histology and electromicrography. There is no cure, but consistent management can allow affected cats to live long lives. Advisor/Clinician: Dr Christopher Cook

url: http://hdl.handle.net/1813/2567
date: 2005-12-22
creator: Davis, Philip M.
viewed: 2128
title: Transfer From Print to Electronic Serials
abstract: Comparing the average cost per download for electronic journal packages to the average Interlibrary Loan cost can be both grossly inaccurate and wildly misleading. If forces one to accept the following assumptions: 1) aggregate online use can be compared with print use, 2) all journals cost the same and are used the same, and 3) the set of journals requested by Interlibrary Loan are similar to the set of journals subscribed by a library. This letter to the editor refutes each of these assumptions.

url: http://hdl.handle.net/1813/2568
date: 2005-12-22
creator: Davis, Philip M.
viewed: 2121
title: Tragedy of the Commons Revisited: Librarians, Publishers, Faculty and the Demise of a Public Resource
abstract: The model of scholarly publishing can be reduced, in economic terms, to a Tragedy of the Commons, whereby the individual interests of publishers, libraries and scholars are in conflict with what is in the best interest of the public good. Serials inflation, price discrimination, and site-license pricing are all manifestations of this dysfunctional economic model. Moral arguments to change human behavior are not effective because they do not provide individual incentives. Technology-alone is also not a viable solution since it fails to change the underlying human behavior that is driving the economic model. Abandoning the current system of publishing is both risky and costly. This paper argues for a reintermediation of the library as governor of the public scholarly commons, but illustrates that these solutions are in conflict with the mission of the library profession.

url: http://hdl.handle.net/1813/2569
date: 2005-12-22
creator: Davis, Philip M.
viewed: 3106
title: Why usage statistics cannot tell us everything, and why we shouldn't dare to ask
abstract: Publishers currently practice third-degree price discrimination whereby different classes of subscribers are charged different prices based on their ability (or willingness) to pay. Distinguishing the type of user within the institution and determining why a resource was used would allow publishers to start practicing first-degree price discrimination -- an economic environment where publishers can start maximizing profits from each institution. Protecting patron privacy also has unintended consequences of protecting the library budget.

url: http://hdl.handle.net/1813/2570
date: 2005-12-22
creator: Davis, Philip M.
viewed: 2615
title: For electronic journals, total downloads can predict number of users
abstract: Results from two multiple regression models involving HighWire journal subscriptions for 16 participating universities in the United States, United Kingdom and Sweden for 2003 indicate a highly predictive relationship between the number of article downloads and the number of users, meaning that the size of a user population can be estimated by just knowing the total use of a journal. The relationship is consistent over time and across institutions, and appears to be unrelated to the subject, size or popularity of a journal. It is not consistent across publishers, however, suggesting that an 'interface effect' may exist. The development of a Project COUNTER standard to deal with extreme or abnormal journal usage is necessary if we wish to compare the performance of journals across publishers.

url: http://hdl.handle.net/1813/2571
date: 2005-12-22
creator: Cunningham, Suzanne
viewed: 2619
title: Correction of a patent ductus arteriosus in the dog
abstract: Series: Senior seminar paper (Cornell University. College of Veterinary Medicine)
Notes: Senior seminar (D.V.M.)--Cornell University, 2003.
Includes bibliographical references (leaves 9-10).This paper describes the correction of a patent ductus arteriosus in a four month-old, intact female cock-a-poo dog. The dog was in congestive heart failure at initial presentation and was sent home on medications to resolve her pulmonary edema prior to PDA correction. One month later, the dog was brought back for coil embolization of her PDA. Under general anesthesia, aortic angiography was performed to assess the size and shape of the ductus. Coil embolization of the ductus was attempted. However, occlusion of the ductus was not achieved due to coil dislodgement. Embolization of both main pulmonary arteries occurred. The dog was recovered from anesthesia and surgical ligation of the ductus was performed two days later. Although trivial flow through the ductus remains, the dog?s heart is reduced in size and no pulmonary edema is noted. Although coil embolization is not without complications, they are not usually life threatening. Coil embolization remains a viable alternative to surgical ligation for treatment of patent ductus arteriosus in most affected dogs.Advisor: Dr. Anna Gelzer Clinician: Dr. N. Sydney Moise

url: http://hdl.handle.net/1813/2572
date: 2005-12-22
creator: Davis, Philip M.
viewed: 1910
title: The Ethics of Republishing: A Case Study of Emerald/MCB University Press Journals
abstract: It is unethical to republish a journal article without citing the original source. Simple keyword searching of Emerald (formerly known as MCB University Press) online journals from the publisher's web site has identified 409 examples of articles from sixty-seven journals that were republished without such notification from 1989 through 2003. Many of these articles were published simultaneously in journals within the same or similar subject disciplines. Five examples of triple publication were identified. In several cases, neither the editor nor editorial board members reported knowledge of this practice. This article will review the conditions of acceptable republishing plus document and provide examples of republication. It will discuss implications on the publication of record, and question whether this is a case of "let the buyer beware".

url: http://hdl.handle.net/1813/2573
date: 2005-12-22
creator: Cyr, Jacqueline
viewed: 3352
title: Canine leptospirosis
abstract: Series: Senior seminar paper (Cornell University. College of Veterinary Medicine) Notes: Senior seminar (D.V.M.)--Cornell University, 2003. Includes bibliographical references (leaf 15).Leptospirosis, a reemerging zoonosis, is an important cause of vasculitis, renal, and hepatic disease and should be a potential diagnosis for dogs presenting with hemorrhagic, uremic, or icteric symptoms, particularly in endemic areas. It is a serious disease in dogs with a reported case-fatality rate of 10 ? 20 %. A case will be presented of a dog infected with serovar grippotyphosa that had fulminant liver failure. An overview of the etiology, epidemiology, clinical presentation, diagnosis, and treatment of canine leptospirosis will also be covered. Advisor/Clinician: Tristan Weinkle, DVM

url: http://hdl.handle.net/1813/2574
date: 2005-12-22
creator: Davis, Philip M.
viewed: 2638
title: Article duplication in Emerald/MCB journals is more extensive than first reported: Possible conflicts of financial and functional interests are uncovered
abstract: Article duplication within Emerald/MCB publications is more extensive than first reported. It has now been identified in 73 journals spanning a period from 1975 to 2003. This letter will address updates to the initial findings and react to Emerald's response. It will investigate the relationships between Emerald, MCB and Barmarick Publications, and shed light on possible conflicts of interest in management functioning simultaneously as owners, editors and authors. Is this a case where commercial interests have outweighed editorial independence?

url: http://hdl.handle.net/1813/2575
date: 2005-12-22
creator: Deal, Wendy
viewed: 1723
title: Electrocution and acute respiratory distress syndrome in a puppy
abstract: Series: Senior seminar paper (Cornell University. College of Veterinary Medicine) Notes: Senior seminar (D.V.M.)--Cornell University, 2003. Includes bibliographical references (leaf 9).A 4-month old mixed breed dog presented with a history of acute dyspnea. He was severely dyspneic and hypoxemic on presentation and had a non-cardiogenic pulmonary edema. Electrical burns were discovered on his lips, and a final diagnosis of electrocution was made. He was supported with supplemental oxygen, improved rapidly, and was discharged. The origin of pulmonary edema associated with electrocution is unknown, but it may be part of an acute respiratory distress syndrome (ARDS). ARDS is an important clinical syndrome seen in critically ill patients. It has a poor prognosis and requires prompt identification and supportive therapy. Advisor: Dr. Tristan Weinkle Clinicians: Dr. Olivier Toulza and Dr. Kevin Wallace

url: http://hdl.handle.net/1813/2576
date: 2005-12-22
creator: Davis, Philip M.
viewed: 3868
title: Who's to Blame for Article Duplication?

abstract: We may have just witnessed the very worst of academic publishing? a scenario in which commercial interests have outweighed editorial integrity and independence. At a time when academics have expressed great fears that commercial publishers are exploiting the scholarly publishing process, it is far too easy to level blame entirely on Emerald without considering our own actions. Publishing does not exist without authors, reviewers, editors, editorial boards, and librarians; it operates with the support, participation and consent of the academic community.

url: http://hdl.handle.net/1813/2577
date: 2005-12-22
creator: DeBiasio, John
viewed: 2230
title: Temporomandibular Septic Arthritis in a Horse
abstract: Series: Senior seminar paper (Cornell University. College of Veterinary Medicine) Notes: Senior seminar (D.V.M.)--Cornell University, 2003. Includes bibliographical references (leaf 12).Sonny is a 20-year-old male castrated Morgan horse that presented with the chief complaints of quidding, fevers, and a draining abscess over his left eye. He had a previous episode of fever 6 months before, which was successfully treated with oral antibiotics, but subsequently lost a significant amount of weight. The weight loss was partially reversed with addition of grain to the diet. Just prior to presentation at Cornell Sonny's owners noted that he was having difficulty chewing and pretending his food and was depressed. He also suffered from evening fever spikes as high as 103.6 ?F. Sonny was consequently taken to the referring veterinarian who noted left masseter muscle atrophy, a nose pull to the right, and an abscess over the left temporal area. On presentation at Cornell, physical examination revealed a moderately underconditioned horse that was slightly depressed, lethargic, but non-febrile. A 10 cm diameter draining abscess was centered over the left temporomandibular joint. Moderate masseter muscle atrophy was noted on the left side as well as a slight nose pull to the right. The remainder of the physical exam was within normal limits. From the history and physical exam findings, a problem list was formulated and included: draining abscess, fever, difficulty pretending food, nose pull, masseter atrophy, weight loss, and depression. Advisor: Dr. Thomas Divers Clinicians: Dr. Thomas Divers and Dr. Allesandra Pellegrini-Masini

url: http://hdl.handle.net/1813/2578
date: 2005-12-22
creator: DePauw, Shari
viewed: 2664
title: Medical management of immune-mediated hepatitis
abstract: Series: Senior seminar paper (Cornell University. College of Veterinary Medicine) Notes: Senior seminar (D.V.M.)--Cornell University, 2003. Includes bibliographical references (leaves 12-14).An 8 year old spayed female Jack Russell Terrier presented for evaluation of previously diagnosed chronic hepatitis. Physical exam revealed jaundice, hepatomegaly, petechiae, and ecchymoses. Bloodwork showed severely increased liver enzymes, prolonged clotting times, and decreased coagulation inhibitory proteins. ELISA and Western blot were strongly positive for Borrelia infection. A liver Tru-cut biopsy revealed lobular dissecting hepatitis, but stains were negative for the Borrelia organism. Differentials included primary immune-mediated hepatitis, or immune-mediated hepatitis secondary to Borrelia, which has never been documented in the dog. Medical management included doxycycline, dexamethasone, azathioprine, ursodiol, SAMe, vitamin E, plasma, vitamin K, aspirin, and famotidine. The dog responded well to medical therapy with normalization of her liver enzymes and improvement in general attitude over the following months. This paper will discuss each of these medical therapies in more detail. Advisor: Tristan Weinkle

url: http://hdl.handle.net/1813/2579

date: 2005-12-22
creator: Dewe-Mathews, Jennifer J.
viewed: 1775
title: Bilateral adenocarcinomas causing hyperadrenocorticism in a dog
abstract: Series: Senior seminar paper (Cornell University. College of Veterinary Medicine) Notes: Senior seminar (D.V.M.)--Cornell University, 2003. Includes bibliographical references (leaf 14).Naturally occurring hyperadrenocorticism is a multisystemic disorder resulting from excessive production of cortisol by the adrenal cortex. Hyperadrenocorticism is caused by either excessive pituitary ACTH secretion, as in pituitary-dependent hyperadrenocorticism (PDH), or an autonomously functioning tumor of the adrenal cortex (AT). Primary adrenocortical neoplasia has been diagnosed in 10 to 20% of dogs with hyperadrenocorticism. The prevalence of adenomas and carcinomas in dogs with functioning adrenocortical tumors is approximately equal, and the right and left glands appear to be involved with equal frequency. Bilateral adrenocortical tumors resulting in hyperadrenocorticism are exceedingly rare in dogs. In a retrospective study conducted between 1983 and 1988 of 41 dogs with hyperadrenocorticism caused by adrenocortical neoplasia, 3 dogs (7%) were found to have bilateral adrenocortical neoplasia. The following is a case report of a dog that was diagnosed with hyperadrenocorticism due to bilateral adrenocortical tumors and some of the associated complications. Advisor: Dr. Michele Steffey Clinician: Dr. Michele Steffey

url: http://hdl.handle.net/1813/2580
date: 2005-12-22
creator: Stern, David;Davis, Philip M.
viewed: 2477
title: Comparing Institutional Membership to Per-Article Payment in an Open Access Model
abstract: Is it cheaper in an Open Access producer-pays model to take an institutional membership over paying per article published? The results of this analysis of two research institutions suggests that institutions could save money if they paid by the article. This study looked at Cornell University and Yale University, both institutional members of BioMed Central and compared the number of article published in 2004 to the amount their institutions paid for membership. In both cases, each institution could have saved money if they simply paid their author's publication fees.

url: http://hdl.handle.net/1813/2581
date: 2005-12-22
creator: Emery, Cathleen
viewed: 2175
title: A suspected case of Lyme glomerulonephritis in a Labrador retriever
abstract: Series: Senior seminar paper (Cornell University. College of Veterinary Medicine) Notes: Senior seminar (D.V.M.)--Cornell University, 2003. Includes bibliographical references (leaves 17-18)."Koko," a three-year-old female Labrador Retriever, presented to Cornell on August 26, 2002 with suspected Lyme glomerulonephritis. While Lyme disease in dogs typically presents as acute mono/ polyarthritis, atypical presentations of canine Lyme disease - including Lyme (glomerulo) nephritis - are being recognized with increasing frequency. Lyme glomerulonephritis, more common in retriever breeds, is characterized by renal failure with protein-losing nephropathy. Histopathologic lesions consist of immune-mediated membranoproliferative glomerulonephritis, diffuse tubular necrosis, and interstitial inflammation; renal pathology is irreversible. "Koko's" history consisted of a transient single limb lameness, followed by worsening lethargy, anorexia, and polyuria. Laboratory tests revealed the presence of protein losing nephropathy and concurrent renal failure; a Lyme ELISA and Western blot were positive for antibody to infection. These results indicated glomerular injury, with Borrelia burgdorferi as a possible causative agent. Renal biopsies would be necessary to definitively diagnose the glomerulopathy, but "Koko's" thrombocytopenia and a prolonged

BMBT represented contraindications for biopsy. Advisor/Clinician: Dr. Jennifer McCabe

url: http://hdl.handle.net/1813/2582
date: 2005-12-22
creator: Estra, Tara
viewed: 2005
title: No more fat pets : canine and feline obesity, how to win
abstract: Series: Senior seminar paper (Cornell University. College of Veterinary Medicine) Notes: Senior seminar (D.V.M.)--Cornell University, 2003. Includes bibliographical references (leaves 15-16).Obesity is the most common form of malnutrition in cats and dogs in the United States. It is estimated that 35 - 40 % of cats and 25 - 35% of dogs are obese. As in the market for human weight loss programs, there are multiple approaches to weight loss in dogs and cats. A study conducted at the Cornell University Hospital for Animals in 2001 determined an effective obesity management program involves a total wellness program comprised of three key factors as outlined in the Estra Diet Plan: an appropriate feeding regimen, an exercise program, and behavior modification for both the pet and the owner. Advisor: Sharon Center, DVM, ACVIM

url: http://hdl.handle.net/1813/2583
date: 2005-12-22
creator: Fietz, Mike
viewed: 3294
title: Subaortic stenosis, aortic insufficiency, and patent ductus arteriosus in a dog
abstract: Series: Senior seminar paper (Cornell University. College of Veterinary Medicine) Notes: Senior seminar (D.V.M.)--Cornell University, 2003. Includes bibliographical references (leaf 7).At presentation, Sadie was a 3-year-old, intact female, mixed-breed dog with a chief complaint of a heart murmur and a history of collapse after exertion. Examination revealed a 5/6 systolic murmur on the left, with a diastolic component, at times taking on a continuous character. Femoral pulses were weak, and examination was otherwise unremarkable. Radiographs revealed generalized cardiomegaly, hypervascular lungs, and dilatation of the aortic arch. Her differential diagnosis included subaortic stenosis (SAS) with aortic insufficiency (AI), and a patent ductus arteriosus (PDA). An echocardiogram revealed a subaortic ridge, left ventricular hypertrophy, and enlargement of the left atrium, consistent with SAS. Continuous wave Doppler showed turbulent flow in the aortic outflow tract, increased outflow velocity of 6 m/s, and aortic insufficiency. The PDA was also observed, with Doppler showing continuous blood flow through the ductus. Her final diagnosis was severe SAS with AI, and a PDA. The PDA was treated via transcatheter coil occlusion in order to resolve the PDA and the associated left ventricular volume overload which was exacerbating the stenosis. After surgery, echocardiographic evaluation showed 90% closure of the PDA, and diminished aortic outflow velocity (3.9 m/s). Her diagnosis was downgraded to mild to moderate SAS, and her prognosis upgraded to good. Advisor: Dr. Marc Kraus

url: http://hdl.handle.net/1813/2584
date: 2005-12-22
creator: Fitzpatrick, Patti
viewed: 2540
title: Subepiglottic cyst in a quarter horse foal
abstract: Series: Senior seminar paper (Cornell University. College of Veterinary Medicine) Notes: Senior seminar (D.V.M.)--Cornell University, 2003.
Includes bibliographical references (leaf 8).Parker, a 5 month old Quarter Horse colt presented to the large animal medicine section of Cornell University Hospital for Animals on 10/01/02 with a 2-week history of serous to purulent nasal discharge, which had recently changed to green discharge with feed material in it.

There is no history of strangles on this farm. Endoscopic examination of the nasopharynx showed evidence of dysphagia and a mass ventral to the epiglottis. The appearance and location of the mass were consistent with a subepiglottic cyst. Thoracic ultrasound showed increased pleural echogenicity and fluid, indicating possible aspiration pneumonia. The patient was transferred to the large animal surgery section of the hospital for removal of the subepiglottic cyst. Surgical removal of the cyst was accomplished with the foal in sternal recumbancy and under general anesthesia. An oral approach was utilized, using the endoscope as a guide. The cyst was removed and sent to histopathology, the results of which were consistent with the diagnosis of a subepiglottic cyst. The foal recovered from surgery uneventfully. Advisor: Dr. J. Brett Woodie Clinician: Dr. Radcliffe

url: http://hdl.handle.net/1813/2585
date: 2005-12-22
creator: Stanton, Elizabeth Cady
viewed: 2923
title: The Woman's Bible
abstract: The publication of The Woman's Bible in 1895 and 1898 represented the feminist pioneer's last strike at the roots of the ideology behind her gender's subordinate role in society. In keeping with her characteristic radical individualism, Stanton attacks religious orthodoxy on a political rather than scholarly basis. This clarion call to action consists of a book-by-book examination of the Bible, placing events in their historical context, interpreting passages as both allegory and fact, and comparing them with the myths of other cultures. It endures as an extraordinary document because of the questions it addresses, the topics it covers, and its still-resonant sincerity.

url: http://hdl.handle.net/1813/2586
date: 2005-12-22
creator:
viewed: 2235
title: The Book of Mormon; an account written by the hand of Mormon upon plates taken from the plates of Nephi. (Translated by Joseph Smith, Jr.)
abstract: The Book of Mormon is a volume of scripture which records God's dealings with the ancient inhabitants of the Americas. Translated by Joseph Smith, Jr. (1805-1844), the founding prophet of The Church of Jesus Christ of Latter-day Saints, this book is accepted by the Church of Jesus Christ of Latter-day Saints as containing the fullness of the everlasting gospel.

url: http://hdl.handle.net/1813/2587
date: 2005-12-22
creator: Welsey, John
viewed: 3837
title: The heart of John Wesley's Journal; with an introduction by Hugh Price Hughes, and an appreciation of the Journal by Augustine Birrell, ed. by Percy Livingstone Parker
abstract: John Wesley's Journal, edited by his own hand, offers a unique view into the life and ministry of one of the 18th century's great religious leaders and the reforms he helped to promote.

url: http://hdl.handle.net/1813/2588
date: 2005-12-22
creator: Swedenborg, Emanuel
viewed: 1995
title: Heaven and its wonders and hell : from things heard and seen

abstract: Series: Everyman's library. Theology & philosophy; no. 379. Notes: Title within ornamental border; illustrated lining-papers. Introduction by J. Howard Spalding. Bibliography: p. xiv. Emmanuel Swedenborg's most famous work is a description of the many heavens and hells that make up the great 18th-century thinker's cosmology, at once perfectly logical and perfectly eccentric. Swedenborg's afterworld is a kind of reflection and amplification of our own, and his vision of moving and active collective of heavens, occupied by the very real blessed dead, has been a tremendous influence on Goethe, Emerson, and Jorge Luis Borges, among many others.

url: http://hdl.handle.net/1813/2589
date: 2005-12-23
creator: Renan, Ernest
viewed: 2675
title: The History of the Origins of Christianity
abstract: Ernest Renan was a French philosopher, historian, and scholar of religion. He trained for the priesthood but left the Catholic church in 1845, feeling that its teachings were incompatible with the findings of historical criticism, though he retained a quasi-Christian faith in God. His seven-volume History of the Origins of Christianity (1863-90) includes his Life of Jesus (1863); an attempt to reconstruct the mind of Jesus as a wholly human person. --Volume 1 - The Life of Jesus --- Volume 2 - The Apostles --- Volume 3 - Saint Paul --- Volume 4 - The AntiChrist --- Volume 5 - The Gospels --- Volume 6 - Comprising the Reigns of Hadrian and Antoninus Pius (A.D. 117-161) --- Volume 7 - Marcus-Aurelius

url: http://hdl.handle.net/1813/2590
date: 2005-12-23
creator: Duval Hernandez, Robert
viewed: 3752
title: Dynamics of Labor Market Earnings and Sector of Employment in Urban Mexico, 1987-2002.
abstract: This dissertation studies labor earnings mobility in the short-run and the structure of labor markets in urban Mexico, from 1987 to 2002.

In the first part it gauges the average earnings mobility in the economy and whether mobility equalized longer-term earnings. It also analyzes whether the mobility patterns differ by groups of the population, and whether mobility reduced longer-term earnings inequality between and within groups. The groups considered are age, education, gender, quintile of initial earnings, sector, and region groups.

In general, average earnings mobility fluctuated around zero, with the exception of the late eighties and early 2000, when individuals experienced gains, and of the years following the 1994 Peso crisis, when individuals experienced large losses. These patterns are shared by the majority of the groups of the population, with the exception of initial earnings quintile and sector groups. For these groups, the most advantaged individuals experience the largest losses, while the most disadvantaged ones experience the largest gains. Furthermore, mobility equalized longer-term earnings for the entire population during most of the periods studied, and it helped reduce longer-term earnings inequality within-groups. However, mobility only sometimes equalized longer-term earnings between groups.

The second part of the dissertation studies short-run earnings dynamics at the individual level. In particular, it examines whether mobility benefits more the initially advantaged individuals. Regression analysis shows a high level of convergence between the earnings of rich and poor. However, part of this convergence reflects transitory adjustments in earnings. In practice, most of the individuals keep their permanent advantage, leading to little convergence between rich and poor. The major exception to this finding occurs in the aftermath of the Peso crisis, when individuals with a high permanent advantage experienced greater losses than the rest of the population. The ceteris paribus impact of socioeconomic characteristics of the individual on earnings mobility is gauged. Education, gender, region and transitions between sectors are important

factors affecting earnings mobility.
The final part of the dissertation tests whether Mexican urban labor markets are segmented between formal and informal sectors. An econometric structural model of sector choice is estimated, and a strong evidence of rationing of formal sector jobs is found. The estimations also show that individuals rationed out of the formal sector would experience large gains by moving into the formal sector. CONACYT and Cornell University

url: http://hdl.handle.net/1813/2591
date: 2005-12-23
creator: Bonaventure, Saint
viewed: 2660
title: Les meditations de la vie du Christ. Traduites en fracais par Henry de Riancey.
abstract: St. Bonaventure is proclaimed a Doctor of the Church by the Roman Catholic Church. He was Cardinal-Bishop of Albano, Minister General of the Friars Minor, born at Bagnorea in the vicinity of Viterbo in 1221; died at Lyons, 16 July, 1274. Bonaventure's theological writings may be classed under four heads: dogmatic, mystic, exegetical, and homiletic. Only a small part of Bonaventure's writings is properly mystical. These are characterized by brevity and by a faithful adherence to the teaching of the Gospel. Perhaps the best known of Bonaventure's other mystical and ascetical writings is a series of forty-eight devout meditations on the life of Christ.

url: http://hdl.handle.net/1813/2592
date: 2005-12-23
creator:
viewed: 3054
title: A translation of the treatise Chagigah from the Babylonian Talmud
abstract: Other Names: Streane, A. W. (Annesley William), 1844-1915. Other Titles: The Babylonian TalmudThe Talmud is among the great books of wisdom. This work was the first attempt to set Talmudic treatises, with both Mishnah and Gemara, in its entirety before the English reader. Translated by A.W. Stearne.

url: http://hdl.handle.net/1813/2593
date: 2005-12-23
creator: Lee, Annie Jieun
viewed: 2588
title: The Effects of the Physical Environment on Physical Activity of Older Adults
abstract: With obesity-related health problems on the rise among older Americans in the past few decades, physical activity has been a major focus in the fight to overcome the obesity epidemic. The evidence to date suggests that the built environment, specifically walkable neighborhoods and features, is associated with physical activity among all ages.
This study examined the associations between environmental walkability and physical activity levels of older adults, and compared the data in two different areas of two cities: the downtown and suburban-rural sites of San Diego, CA and Ithaca, NY.
Results indicate similar physical activity levels among older adults in objectively walkable, downtown sites versus less walkable, suburban/rural sites, and suggest perceived neighborhood environment and personal factors as particularly significant factors. Specifically, neighborhoods that were perceived to have high diversity of land use mix, aesthetic attributes, and walking and cycling facilities were significantly associated with higher physical activity. Recommendations are also given regarding the importance of examining other factors such as weather, acculturation, walking purpose, and travel mode, to further understand the complexity of the relationship between the physical environment and older adults' physical activity.

url: http://hdl.handle.net/1813/2594
date: 2005-12-23
creator: Hayes, Paul
viewed: 1673
title: STRATEGIC INTEGRATION, CONTRACT ADMINISTRATION, AND COMPREHENSIVE CONTRACT CAMPAIGN EFFECTIVENESS: A CASE STUDY OF THE CULINARY WORKERS UNION, HERE LOCAL 226'S 2002 COMPREHENSIVE CONTRACT CAMPAIGN
abstract: ? 2006 Paul Everett Hayes This thesis is a case study of the comprehensive contract campaign that the Culinary Union, HERE Local 226 utilized in its 2002 round of negotiations with casino operators in Las Vegas. The focus of this study is on how the comprehensive contract campaign strategy used by the Culinary Union increased the local's bargaining power in the negotiations. This case study links the success of the 2002 comprehensive contract campaign to the local's prior practices, long-term strategies, as well as its organizational structure and culture. This case study also examines how the political, social, and economic context of Las Vegas's casino industry influenced the Culinary Union's comprehensive contract campaign. It describes the interactive relationship between these external contextual factors, the local's strategic choices, and industrial relations outcomes in Las Vegas's casino industry. This case study describes how the Culinary Union, by using the organizing model of contract administration, created an organizational culture and structure that lead to increases in the quality and quantity of rank-and-file participation in the union, and how this benefited the union in its 2002 comprehensive contract campaign. In addition to citing specific examples from the 2002 contract campaign itself, this case study uses the industrial relations literature relating to union commitment and participation, in order to support this argument.

url: http://hdl.handle.net/1813/2595
date: 2005-12-29
creator: Graninger, Charles Denver
viewed: 3042
title: The Regional Cults of Thessaly
abstract: Regionalism was a defining feature of Greek society in all periods of antiquity. The implications of this regionalism for the history of religion are crucial: No two areas of the Greek world worshipped the same pantheon of gods in the same way. Regional variation was the norm. This dissertation focuses on Thessaly, a large frontier area of mainland Greece which has yet to receive systematic attention in the field of history of religion, and analyzes its regional cults. By regional cult, I mean those cults which are attested in more than one place in Thessaly but do not have a near-panhellenic distribution outside of Thessaly.
The problem is approached through a detailed study of the available literary, archaeological, numismatic and epigraphic sources. After providing an outline of major currents in Thessalian social and political history, I consider in succession the Thessalian calendar, Thessaly's "federal" sanctuaries and other regional cults. Thessaly is found to be home to a wide variety of idiosyncratic cults, including: Apollo Kerdoios, Apollo Leschanorios, Artemis Throsia, Athena Itonia, Dionysus Karpios, Ennodia, Poseidon Petraios, Themis, Zeus Eleutherios, Zeus Homoloios and Zeus Thaulios, among others.

url: http://hdl.handle.net/1813/2596
date: 2006-01-03
creator: Bhambore, Meghna
viewed: 4224
title: UNDERSTANDING THE IMPACT OF PHYSICAL ENVIRONMENT ON THE CREATIVE PROBLEM SOLVING PROCESS AT BRAINSTORE LTD
abstract: Attn: Minnie. As per your comments I have changed the "acknowledgements" spelling and have

PDF the files.
Please note you have the signed Abstract & Title page for my thesis. Experimental research in creativity suggests an inter-relationship between the physical environment and individual creativity. But can the physical environment also influence the creative problem-solving process in organizations, which depend as much on the organization's processes as the individual people for their creative production? To begin to answer this question, this study examines the impact of the physical environment on the creative problem-solving process of a highly acclaimed, European consulting firm which specializes in "ideas". The research design employs a hybrid methodology, which combines traditional case study method with narrative inquiry. Data on how the physical environment was perceived to impact this firm's creative problem-solving process was gathered through open ended, semi-structured interviews of the organization's key employees, including the project managers, CEOs of a typical project, and also through direct, informal observation of the creative problem-solving process. Key clients from the project case were also interviewed. Published material on the organization and the organization's official Web site was used to collect additional data. All interview data was taped, transcribed verbatim, analyzed for major themes. A narrative or story was then developed using Labov's six-point framework. The narrative entitled "The Tacit Dimension" gives a real account of the client's subjective experience of the creative problem-solving process and how the physical environment influences it. Results indicate three major functions of the physical environment in supporting creative problem solving: 1) knowledge management, 2) symbolic communication, 3) functional support. The first major function of the physical environment in supporting creative process is to create and dissipate knowledge to both employees and clients alike, about the functioning of the creative problem solving process ? knowledge management The second major function employs signs and symbols in the environment to build appropriate expectations and mindsets which support a healthy creative problem solving process ? symbolic communication. The narrative shows that the clients depended on the symbolism embedded within the physical environment of the organization as an assurance of its creative ability thereby making them more receptive to nontraditional procedures and building trust in the process. The symbolic communication also promoted the creative problem solving abilities in the employees. Lastly, the environment should be functional to support idea generation by allowing adequate flexibility ? functional support. By providing spaces that efficiently support the work processes but are also flexible enough to adapt and improvise, creatively and functionally empowers the employees to generate creative ideas.

url: http://hdl.handle.net/1813/2597
date: 2006-01-03
creator: Tennenbaum, Stephen
viewed: 3970
title: A Two-Sex, Age-Structured Population Model in Discrete-Time
abstract: This work examines how the life history parameters effect the stable age distribution of the different classes and compares these results with the standard single sex model. The conditions necessary for a population projected forward in time to reach a stable age distribution is analyzed. The conditions for existence are dependent on the nature of the mating function, i.e. the rate at which the two sexes find each other and mate. In addition, the assumptions under which these mating functions are constructed have important implications for the dynamics of the population and ultimate age distribution, stable or not. An analysis of when including both sexes becomes essential to the understanding of reproductive strategies, examination of whether a population fulfils the necessary assumptions about mating to make certain statements about population growth, growth rates and relative fitness, and outlining an accessible approach to modeling the joint life histories will be of practical value. Toward this end, a framework for discrete-time two-sex models with age structure is developed. In addition a marriage (mating) function based on an analogy with foraging theory and preferences based on the predispositions of one age group for another is proposed. Some of the properties of these models and their solutions are also investigated.

url: http://hdl.handle.net/1813/2598
date: 2006-01-03
creator: Edelman, Hendrik
viewed: 3476
title: Intelligent Design and the Evolution of American Research Library Collections
abstract: The text of the paper given by Hendrik Edelman at the Janus Conference on Research Library Collections, Cornell University, Ithaca New York, October 9, 2005This paper discusses the the forces that have shaped American research library collections, how collection development emerged as a professional responsibility in the second part of the 20th century, and how the profession has empowered itself through research, methodology, documentation and education.

url: http://hdl.handle.net/1813/2598
date: 2006-01-03
creator: Edelman, Hendrik
viewed: 3476
title: Intelligent Design and the Evolution of American Research Library Collections
abstract: The text of the paper given by Hendrik Edelman at the Janus Conference on Research Library Collections, Cornell University, Ithaca New York, October 9, 2005This paper discusses the the forces that have shaped American research library collections, how collection development emerged as a professional responsibility in the second part of the 20th century, and how the profession has empowered itself through research, methodology, documentation and education.

url: http://hdl.handle.net/1813/2599
date: 2006-01-04
creator: Ericksen, Gerald
viewed: 2565
title: Workforce Alignment, Human Resource Scalability, and Small Business Sales Growth
abstract: This study contributes to the field of strategic human resource management by providing initial insights into the extent to which, and the conditions under which, workforce alignment leads to higher levels of firm performance. Using data collected from the CEOs of 196 small businesses, I develop a measure of workforce alignment and demonstrate that workforce alignment mediates the relationship between high-performance work system use and sales growth. I also show that firms that achieve workforce alignment through either internal scalability or external scalability (but not both) are more likely to obtain high sales growth than firms that achieve workforce alignment though HR stability. Finally, I reveal other circumstances such as involuntary turnover, contract worker use, and market volatility that moderate the relationship between workforce alignment and sales growth in expected and surprising ways. Gevity; Cornell's Center for Advanced Human Resource Studies; Cornell's Benjamin Miller Scholarship Fund

url: http://hdl.handle.net/1813/2600
date: 2006-01-04
creator: Steinhart, Gail; Rupp, Nathan
viewed: 2385
title: Keeping Current with RSS
abstract: Introduction to RSS and its uses.

url: http://hdl.handle.net/1813/2601
date: 2006-01-04

creator: Foley, Jennifer
viewed: 2456
title: "DISCOVERING" CAMBODIA: VIEWS OF ANGKOR IN FRENCH COLONIAL CAMBODIA (1863-1954)
abstract: This dissertation is an examination of descriptions, writings, and photographic and architectural reproductions of Angkor in Europe and the United States during Cambodia's colonial period, which began in 1863 and lasted until 1953. Using the work of Mary Louise Pratt on colonial era narratives and Mieke Bal on the construction of narratives in museum exhibitions, this examination focuses on the narrative that came to represent Cambodia in Europe and the United States, and is conducted with an eye on what these works expose about their Western, and predominately French, producers. Angkor captured the imagination of readers in France even before the colonial period in Cambodia had officially begun. The posthumously published journals of the naturalist Henri Mouhot brought to the minds of many visions of lost civilizations disintegrating in the jungle. This initial view of Angkor proved to be surprisingly resilient, surviving not only throughout the colonial period, but even to the present day. This dissertation seeks to follow the evolution of the conflation of Cambodia and Angkor in the French ?narrative? of Cambodia, from the initial exposures, such as Mouhot?s writing, through the close of colonial period. In addition, this dissertation will examine the resilience of this vision of Cambodia in the continued production of this narrative, to the exclusion of the numerous changes that were taking place in the country. Finally, I will be using French colonial archival sources in order to examine measures that were taken by the French colonial administration in order to take greater control over the area that constituted the Angkor Historical Park, and to implement preventative measures and physical alterations designed to keep the view of Angkor aligned with this narrative.

url: http://hdl.handle.net/1813/2602
date: 2006-01-05
creator: Nolan, Jennifer A.
viewed: 2363
title: Religious Participation Effects on Mental and Physical Health
abstract: The first section of the dissertation provides a review of the literature, conceptual distinctions between religiousness and spirituality, and four key hypothesized pathways identified and categorized from the literature, posited to explain the effects of religious participation on health.

The second section investigates the relationship of religious participation to physical health, mental health and depression and the mediating behavioral pathway of cigarette and alcohol use. The study focuses on a sample of 2,102 individuals followed from 1979 to 2000, utilizing data from the National Longitudinal Survey of Youth 79 (NLSY79). The main findings are the following. Cross-sectional analysis revealed a positive U-shaped relationship between religious attendance and physical health in the year 2000, controlling for sociodemographic variables of gender, race, marital status, education, number of children living in a household, work amount, and income. Attendance levels of once per week to infrequent were related to better physical health scores. Attendance among individuals of low socio-economic status (SES) was associated with better physical health compared with no attendance. African Americans reported better mental health and lower depression scores with higher attendance levels compared to no attendance; Caucasians showed the opposite trend. Examining the data longitudinally from 1982 to 2000, early attendance in young adulthood was found to be positively associated with better mental health and less depression in mid-adulthood, controlling for key sociodemographic variables. The behavior of cigarette smoking frequency was a mediator between the relationship of religious attendance and depression, controlling for key sociodemographic variables. Alcohol abuse/dependency and heavy drinking showed evidence of mild mediation. Attendance in young adulthood was protective against alcohol abuse/dependency, heavy drinking and smoking in mid-adulthood.

In addition, the dissertation includes the development of a framework for future qualitative analysis of exploratory interviews with professionals at international humanitarian organizations on how religious beliefs

and practices of a targeted population are taken into account in health projects. Major themes explored are conceptualizations of religiousness, spirituality and health, theorized mediating pathways, field experiences and institutional policies.

Overall this research provides evidence to support the relationship between religious participation and mental health, depression and physical health.

url: http://hdl.handle.net/1813/2603
date: 2006-01-06
creator: Jyoti, Diana
viewed: 2952
title: MODIFYING EFFECTS OF PARTICIPATION IN FEDERAL CHILD NUTRITION PROGRAMS ON THE DEVELOPMENTAL CONSEQUENCES OF HOUSEHOLD FOOD INSECURITY FOR CHILDREN
abstract: Committee Chair: Edward Frongillo Committee Members: David Pelletier, Martha StipanukFood insecurity remains a persistent public health problem for children in the U.S. and is thought to have consequences for child physical, social and academic development. The School Breakfast Program, the National School Lunch Program, and Supplemental Food and Nutrition Program for Women, Infants and Children (WIC) are federally funded programs intended to avert food insecurity and its consequences for children. These nutrition programs have also been associated with child physical, social and academic developmental outcomes. Further research is needed to investigate the complex relations between variables and to establish greater plausibility that associations are causal in nature. This study investigated the causal effects of household food insecurity and child nutrition program participation by using longitudinal data and statistical methods to account for potential bias. Fixed-effects modeling was utilized to minimize bias resulting from selection to participate and to take advantage of dynamic changes in household food insecurity status and program participation between kindergarten and 3rd grade. Household food insecurity, independent of household income and other child- and household-level factors, was associated with poorer social skills and reading performance development among girls, and with greater weight gain among boys. National School Lunch Program participation was associated with better mathematics and reading performance for children. The effects of National School Lunch Program participation were stronger for children with greater socioeconomic need compared to those with less socioeconomic need, suggesting that food assistance participation may impact child development by modifying the effects of stress-related hardships. Neither school breakfast participation nor school lunch participation was associated with greater weight gain. In conclusion, food insecurity may exert its detrimental effects through nutritional and non-nutritional (i.e., stress-related) mechanisms. Similarly, school nutrition programs may protect children against the effects of food insecurity through nutritional and non-nutritional mechanisms. Further research into potential mechanisms underlying these associations is warranted. Policy implications of the findings are discussed.U.S. Department of Agriculture Economic Research Service cooperative agreement 43-3AEM-3-80104

url: http://hdl.handle.net/1813/2604
date: 2006-01-06
creator: Bernier, Joel
viewed: 2538
title: On the Use of Diffraction in Quantifying the Structure and Micromechanical State of Polycrystalline Materials
abstract: This dissertation essentially consists of three related studies concerned with quantifying the structure and micromechanical state of bulk polycrystalline materials. They are contained in Chapters 1, 2 and 3, which may be read independently. The emphasis is on the development of new methods for the analysis and interpretation of generalized pole figure data.

Chapter 1 contains an expanded version of a manuscript my coauthors and I have submitted for review [3].

In it, a robust method for obtaining an orientation distribu- tion function (ODF) from pole density functions (PDFs) is presented. The method uses the gradient norm of the ODF for conditional control of the solution in the context of a constrained minimization problem. The introduction has been expanded to include a detailed definition of the ODF and PDF. Several additional sample applications of the method have also been included, as well as several appendices that elaborate on the mathematical formalism of orientations and other technical aspects of the implementation.

Chapter 2 is largely similar to a second manuscript that has been provisionally accepted for publication in the Journal of Applied Crystallography [5]. In it, the methods developed in Chapter 1 have been adapted to obtain a lattice strain distribution function (LSDF) from strain pole figures (SPFs). The proposed SPF inversion method utilizes conditional control formulated independently of any kinematic linking assumptions.

In Chapter 3, a methodology is presented for extracting generalized pole figure data from 2-d powder diffraction images. An example application of this analysis, along with the methods presented in Chapters 1 and 2, is provided using data obtained via an in situ loading/diffraction experiment performed at the Cornell High Energy Synchrotron Source.

The fourth and final chapter provides a summary of the salient scientific contributions of this dissertation, along with proposed extensions of the research. Together, the 3 methods presented in this dissertation provide a set of tools for characterizing the structure and micro-mechanical state of polycrystalline materials at the bulk scale. Most importantly, the resulting distributions are suitable for direct comparison to the predictions of structure-based models of polycrystalline materials.GRA under AFOSR Award #F49620-02-1-0047 TA under the Sibley School of Mechanical & Aerospace Engineering CSIP GK-12 teaching fellowship under NSF Award #0231913

url: http://hdl.handle.net/1813/2605
date: 2006-01-06
creator: Spitz, Laura M.
viewed: 2948
title: When Constitutions Collide: North American Free Trade, Economic Globalization and Transnational Integration
abstract: Attached as a file.

url: http://hdl.handle.net/1813/2606
date: 2006-01-06
creator: Taylor, Joie Chiana
viewed: 2435
title: Applications of Spectral Analysis to Hydrology and Chemical Transport
abstract: Tammo Steenhuis, M. Todd Walter, Wilfred Brutsaert, Proxy: Jean Yves Parlange This dissertation investigates and describes several ways of using spectral analysis as a frequency domain approach for mathematical hydrological modeling. Hydrologists have used spectral analysis for modeling in the past in various ways. However, one of the novelties of this research is that it is a simplification of previous techniques, which involved acquiring information about several parameters. Many of these parameters are time consuming to collect as data or are only estimated using intricate mathematical equations. In the first chapter the relationship between stream discharge and wetland water elevations in a watershed located in North Madison, CT was successfully modeled using exclusively independent measurements of discharge and wetland water elevations. This relationship was previously modeled using six parameters, three of which had to be estimated for their instantaneous behavior. Using the methods developed in this study conserved time and effort and produced the same results. The second chapter describes how to model discharge with measures of water table elevations in a runoff source area using the same techniques described in the first chapter. Using water table elevations across a lower part of the hillslope and in a near stream area of

Townbrook watershed in the Catskills of New York, spectral analysis was used to determine the rate of water transport at these various locations and to successfully model stream discharge. The third chapter describes a method of using spectral analysis to determine chemical transport throughout a catchment area. Three watersheds were analyzed to describe a relationship between wet deposition and stream water concentrations of chloride (Cl) and nitrate (NO3). Spectral analysis was also used to define a distribution of travel times associated with the transport of input concentrations of Cl, NO3, ammonium (NH4), total Phosphorus (TP), total dissolved phosphorus (TDP), total particulate phosphorus (TPP), soluble reactive phosphorus (SRP) suspended solids (SS), total kjeldahl nitrogen (TKN), and total organic carbon (TOC). All of these studies combined indicate that spectral analysis is a tool than can be of further use in many aspects of hydrology and in studies of water quality and chemical transport.NSF

url: http://hdl.handle.net/1813/2607
date: 2006-01-06
creator: Chan, Douglas S.
viewed: 2822
title: Random Multiple Access Communications on Multipacket Reception Channels
abstract: By applying multiuser detection techniques, receivers today can decode multiple packets transmitted simultaneously over a channel. Known as multipacket reception (MPR), this presents a physical layer model significantly different from the one that practical design and theoretical analysis of many network protocols have traditionally assumed. The principal objective of this study is to consider the design of efficient multiple access communication systems for this new model.

Specifically, we investigate the maximum stable throughput attainable with decentralized control using channel sense multiple access (CSMA), which has not previously been studied with MPR. We show CSMA provides throughput gain over slotted ALOHA (S-ALOHA), the non-channel-sensing protocol of choice. However, we also find that this gain diminishes as the physical layer strength increases, thereby diminishing the need for channel sensing.

Searching for improvements, we investigate the generalized CSMA protocols which allow new transmissions to begin even when the channel is already in use, provided the usage level is below capacity. In addition, we also analyze the effects of implementing collision detection (CD). We find that generalized CSMA provides a moderate improvement in throughput compared to the significant improvement that CD affords. This is attributable to CD's shortening of the time that corrupted transmissions occupy the MPR channel, thus increasing any new transmission's success probability. As generalized CSMA/CD offers little improvement over the simpler classical CSMA/CD, we conclude the latter suffices for satisfactory improvement. We also present a novel CD method applicable not only to wireline but also to wireless networks.

Finally we investigate the general multiaccess protocol's capacity with MPR. We find that, if the expected number of successes is maximized in the limit of infinitely many simultaneous transmissions, then S-ALOHA and CSMA are optimal. We also establish an upper bound on the throughput of decentralized multiaccess protocols operating on channels not satisfying this condition. The gap between the channel capacity and said upper bound is informative about the cost of decentralization. This gap also narrows as the physical layer's ability to separate packets gets stronger, thus corroborating existing theories that suggest there is less need for multiple accessing for strong MPR channels.NSF Grants No. CCR-0330059 and CCR-1980616, the School of Electrical and Computer Engineering at Cornell University and the Symbol Technologies Fellowship.

url: http://hdl.handle.net/1813/2608
date: 2006-01-09
creator: Atkinson, Ross
viewed: 3470
title: Introduction for the Break-Out Sessions: Six Key Challenges for the Future of Collection

Development
abstract: The text and figures of Ross Atkinson's talk at the Janus Conference on Research Library Collections, Cornell University October 10, 2005.This article presents an overview of a range of key challenges facing collection development. It first considers the evolving nature of collections, and in so doing, confirms that the concept of the collection in the new environment remains valid and crucial to scholarship and services. It discusses the main players in the information exchange process. Finally, it outlines six key challenges in collection development for academic research libraries

url: http://hdl.handle.net/1813/2608
date: 2006-01-09
creator: Atkinson, Ross
viewed: 3470
title: Introduction for the Break-Out Sessions: Six Key Challenges for the Future of Collection Development
abstract: The text and figures of Ross Atkinson's talk at the Janus Conference on Research Library Collections, Cornell University October 10, 2005.This article presents an overview of a range of key challenges facing collection development. It first considers the evolving nature of collections, and in so doing, confirms that the concept of the collection in the new environment remains valid and crucial to scholarship and services. It discusses the main players in the information exchange process. Finally, it outlines six key challenges in collection development for academic research libraries

url: http://hdl.handle.net/1813/2609
date: 2006-01-10
creator: Germain, Claire
viewed: 3208
title: Digital Legal Information: Ensuring Access To The "Official" Word Of The Law
abstract: This article was published in Cornell Law Forum, Vol. 26 No. 1, July 1999, 11-14.In the United States today, digital versions of current decisions, bills, statutes, and regulations issued by federal and state entities are widely available on publicly accessible Internet Web sites. Worldwide, official legal information issued by international organizations and foreign governments is also becoming available on the Web. However, there are currently no standards for the production and authentication of digital documents. Moreover, the information is sometimes available only for a short time and then disappears from the site. Most of that digital information provides only a right of access, and no ownership, or control over the data, unless it is downloaded on a server, or stored on a CD. The long-term access to digital legal information is a matter of concern. What is at stake is the transmission of official documents, "the word of the law," to future generations.

url: http://hdl.handle.net/1813/2610
date: 2006-01-10
creator: Suggs, Aaron; Andrews, Camille
viewed: 2432
title: Blogs
abstract: Introduction to blogs and how to read and publish them.

url: http://hdl.handle.net/1813/2611
date: 2006-01-16
creator: Cutilla, Monica; Price, Corrinne; Leibowitz, Bronna; Russell, Robert; Wheeler, Shannon
viewed: 1517
title: Development of a Drug Delivery System with a Constant Rate of Release

abstract:

url: http://hdl.handle.net/1813/2612
date: 2006-01-16
creator: Mak, Angela; Ou, Jing Rui; Kou, Peng Meng; Lu, Franklin; Ouyang, Hui
viewed: 2923
title: Drug Delivery Mechanism and Efficiency of Liposomes into Skin
abstract:

url: http://hdl.handle.net/1813/2613
date: 2006-01-16
creator: Sheido Yodit; Tandon, Meera Lita; Hung, Robert
viewed: 3376
title: When Motion Sickness Can't Wait
abstract:

url: http://hdl.handle.net/1813/2614
date: 2006-01-16
creator: Kuo, Johnathan; Lim, Nansae; Choi, Semyung; Day, David; Lee, Nancy
viewed: 3110
title: Modeling Oxygen Flow through Continuous Wear Contact Lens-Cornea System with Increasing Protein Layer Build-up
abstract:

url: http://hdl.handle.net/1813/2615
date: 2006-01-16
creator: Perlmutter, Jason; Hsu, Jennifer; Chen, William; Fallick, Jesse; Saifi, Comron
viewed: 2557
title: Chemotherapy: Drug Diffusion through Solid Tumor
abstract:

url: http://hdl.handle.net/1813/2616
date: 2006-01-16
creator: Gillen, Elizabeth; Ortiz, Michael; Haery, Leila; Chang, Cindy; Green, Angela
viewed: 3902
title: Effects of Moisture Content on Oxygen Diffusion through a Contact Lens
abstract:

url: http://hdl.handle.net/1813/2617
date: 2006-01-16
creator: Woods, Virginia; Serna, Carol; Sailor, Jessica; Reid, Shenee; Arenz, Jacqueline
viewed: 3446
title: The Dermal Diffusion of Methyl Salicylate in Over-the-Counter Pain Relief Cream
abstract:

url: http://hdl.handle.net/1813/2618
date: 2006-01-16
creator: Jawahar, Rachel;Keegan, Joshua;Khan, Saif;Moore, Francis;Tomlinson, Joy

viewed: 3771
title: Nitrogen Elimination in the Alveoli
abstract:

url: http://hdl.handle.net/1813/2619
date: 2006-01-16
creator: Lambert, William; Wang, Katie; Chi, Ashley; Kim, John; Lee, Katherine
viewed: 2203
title: Effect of Drug-eluting Stents in Coronary Arteries
abstract:

url: http://hdl.handle.net/1813/2620
date: 2006-01-16
creator: Zheng, Howie; Wang, Jigye; Deitemeyer, Patrick; Carnrite, Erica; Magnano, Christopher
viewed: 2333
title: Stunt Safety: Modeling and Effectiveness Assessment of Flame Retardant Materials on Human Skin
abstract:

url: http://hdl.handle.net/1813/2621
date: 2006-01-19
creator: Te Punga Somerville, Alice Anne
viewed: 2969
title: Nau te rourou, Nau te rakau: the Oceanic, Indigenous, Postcolonial and New Zealand comparative contexts of Maori writing in English
abstract: While there is increased academic interest in Maori writing in English, both inside and outside Aotearoa, little of the current scholarship has attended self-consciously to the issue of critical methodologies that pertain to this material. This dissertation explores, in theory and in practice, the comparative 'umbrellas' within which Maori texts are most often considered. Holding that a broad definition of what counts as a 'text' is crucial to Maori literary studies, I identify the intersections and disconnections of Maori writing with Oceanic, Indigenous, Postcolonial and New Zealand literary and critical works.
This project draws together critical work in the areas of Indigenous, Minority, Postcolonial, New Zealand and Pacific literary studies, along with research about critical Maori academic methodologies such as 'Kaupapa Maori' scholarship. A specific whakatauki ('Nau te rourou, naku te rourou, ka ora ai te iwi; nau te rakau, naku te rakau, ka mate te hoariri') provides the structure of the project and, thereby, the methodology by which I explore the possibilities (rourou), and also the limitations (rakau), of reading Maori writing in English within each of these four comparative critical contexts. Considering these texts comparatively has implications for the 'categories' we call Oceanic, Indigenous, Postcolonial and New Zealand, as well as, indeed, for the conceptualisation of 'Maori.' Maori writing in English is not reducible to any one of the comparative frames I explore: it is Pacific/ Oceanic, but also Postcolonial; it is Indigenous but also New Zealand. I propose that none of these critical frameworks is singularly sufficient, and yet the intersection of each with the respective preoccupations/ contexts/ histories/ politics/ thematics in Maori writing means that none of them is removable either. At the same time, I point to potential flaws, problems, disconnects and invisibilities in and between the various frameworks, and I suggest ways in which these - especially Postcolonial and New Zealand - might make critical amends for their exclusions. As well as examining the features of these specific frames, I foreground and preliminarily theorize the very process of intra-linguistic comparison on which this kind of criticism is dependent, and reflect on the unanticipated prominence throughout the chapters of the complex relationship between literary studies, Maori texts, Maori communities and the experience of Maori students in the literature classroom.

url: http://hdl.handle.net/1813/2622
date: 2006-01-20
creator: Jessup, Stephen
viewed: 2963
title: An Examination of the Climatology and Environmental Characteristics of Flash Flooding for the Binghamton, New York County Warning Area
abstract: Committee members: Dr. Arthur DeGaetano, Dr. Stephen Colucci, Dr. Wilfried Brutsaert; proxy member Dr. M. Todd Walter This study uses the publication Storm Data to compile a climatology of flash floods reported in the Binghamton, NY (BGM) County Warning Area (CWA) of the National Weather Service (NWS). This work reveals diurnal and seasonal trends in flash flood frequency across the CWA. Also evident is a spatial disparity in the number of flash flood reports in different portions of the CWA. In some cases, adjacent counties with similar topography reported a dissimilar number of flash floods. Because those counties reporting a strikingly smaller number of floods tended to be less populous than the neighboring counties reporting a larger number of events, a reporting bias may be to blame. Possible reporting biases aside, regional differences in the number flash flood reports across the CWA suggest that some areas are more prone to flash flooding than others.

The more significant component of the project is to analyze the environmental characteristics of flash flood events in the BGM CWA in order to refine flash flood forecasting procedures. BGM's flash flood forecasting checklist prior to this study was based on parameters and thresholds found to be significant at nearby NWS offices, rather than site-specific for BGM. Additionally, the study seeks to identify any differences between flash flood and non-flooding heavy precipitation events so as to reduce the false alarm rate. Quantitative (discriminant analysis) and qualitative (composite map) analysis has been performed to discover parameters and combinations of parameters that differ between flood and non-flood events.

The datasets are comprised of warm-season, non-tropical, meteorologically-induced flash floods, heavy precipitation events, and days in which flash flood watches were issued but flash flooding did not occur. That is, events such as dam breaks, ice jam floods, and snow melt events are excluded from the study. Events resulting from tropical systems are excluded, as the concern is primarily to identify those conditions associated with convective warm-season events. Additionally, a data set comprised of a random year assigned to the calendar date of each flash flood event is included to represent a climatology based on the annual distribution of floods.

The results indicate that flash floods and non-floods differ most significantly in antecedent precipitation and antecedent soil moisture. Flash floods appear more likely to occur during periods of above-normal precipitation than non-floods. Wind direction at 850 mb and storm motion direction also show differences between flood and non-flood events. In particular, an easterly to southeasterly 850-mb wind or storm motion is almost always associated with flash flooding. Lastly, some parameters that had been included on the Binghamton checklist were found to be unreliable. For these parameters, the threshold values on the checklist were infrequently exceeded during flash floods, or these thresholds were more likely to generate false alarms of non-events than to warn of a flash flood.Cooperative Program for Operational Meteorology, Education, and Training (COMET) Outreach Project
S05-52254

url: http://hdl.handle.net/1813/2623
date: 2006-01-20
creator: Riley, Mary Elizabeth
viewed: 2911
title: Assessing the Impact of Interannual Climate Variability on New York City's Reservoir System
abstract: New York City's reservoir system supplies about nine million residents with approximately 1.3

billion gallons of water each day. Such dependence on the system requires a thorough understanding of the natural controls of its variability, as well as that of regional streamflow and precipitation. Prior studies suggest that climate variability in the Northeast depends upon large-scale northern hemisphere atmospheric and oceanic circulation patterns. In this study, the impact of large-scale climate variability on New York's reservoir system and whether interdecadal climate variations alter the influence of shorter interannual climate modes on water availability is examined. Also of importance is the interaction between these atmospheric oscillations and how these relationships might change during the different climatic regimes. Explored in this study are the influences of the Pacific Decadal Oscillation (PDO), El Nino-Southern Oscillation (ENSO), Pacific-North American Oscillation (PNA), North Atlantic Oscillation (NAO), and Atlantic Multidecadal Oscillation (AMO) on precipitation and hydrology in New York City's watershed. The direct impact of the large-scale oscillations on the quantity of water in New York's seven-reservoir system is also investigated. Statistical analysis has been performed on the data for 1951-2004, during which all data sets were available and, separately, for positive and negative PDO phases (1977-97 and 1951-76/1998-2004, respectively). The interactions between hydrological/meteorological factors and the reservoir system levels in the separate phases have also been examined. Statistically significant differences in most interactions have been found between the separate PDO phases. The results of this study indicate that the potential for predicting reservoir behavior exists. Although statistically significant, the relationships are not well enough understood to prescribe using this information for watershed management at this point. However, the study results do warrant further exploration of the relationships between atmospheric/ oceanic oscillations and the reservoir system for practical watershed management applications.

url: http://hdl.handle.net/1813/2624
date: 2006-01-20
creator: Griggs, Carol Bliss
viewed: 2660
title: A Tale of Two: Reconstructing Climate from Tree-Rings of the North Aegean, AD 1089-1989, and Pleistocene to Present: Dendrochronology in Upstate New York
abstract: Warren D. Allmon, Peter I. Kuniholm, Arthur T. DeGaetanoA TALE OF TWO: RECONSTRUCTING CLIMATE FROM TREE-RINGS OF THE NORTH AEGEAN, AD 1089-1989, AND LATE PLEISTOCENE TO PRESENT: DENDROCHRONOLOGY IN UPSTATE NEW YORK Carol Bliss Griggs, Ph.D. Cornell University 2006 In the first two chapters, oak samples from the north Aegean (39-42 degrees N, 22-37 degrees E) are used in dendroclimatological research. In the first chapter, the precipitation of May and June is shown to be the primary limiting factor in annual ring growth and is reconstructed from a tree-ring chronology of historic building and modern forest samples, AD 1089 to 1989. Removing all but the high-frequency variability plus normalizing the oak data sets gives an accurate regional precipitation reconstruction. The low-frequency variance in the same chronology filtered with a 24-kernel Gaussian filter explains 91.6% of the variance in the filtered North Atlantic Oscillation (NAO) May index, 1915-1967, but not before that period. In the second chapter, the oak chronology is divided into three grids, west to east. The May NAO is recorded in the western grid chronology from 1833-1967. Using the similarities and differences in the three grids' filtered oak chronologies over time as indicators of the effect of the May NAO on the region, the low-frequency May NAO is reconstructed for AD 1181 to 1967. The third and fourth chapters examine the tree-ring record of samples collected in New York State (41-45 degrees N, 73-80 degrees W). Over 30 tree-ring chronologies that represent various windows of time from 15,000 years ago to the present have been constructed from tree-ring measurements of wood collected from six modern woodlands, seven historical structures and timbers, and eight river, stream, and pond sediments. Chapter 3 focuses on the oldest samples dating from the late Pleistocene Epoch, including wood sections found in three mastodon excavations in New York State. The oldest wood macrofossils are spruce and their respective radiocarbon dates reflect the southeast to northwest retreat of the ice sheet and subsequent migration of arboreal species across New York

State. Chapter four is a compendium of the collected wood samples from the Holocene Epoch. Regional modern and historic chronologies date from AD 1625 to 2004 for oak, AD 1593 to 2003 for hemlock, and AD 1681 to 1848 for pine. Floating chronologies date throughout the Holocene, from ca. 9500 BC to the mid-fourteenth century AD.NSF BCS-0314282 and SBR-9905389

url: http://hdl.handle.net/1813/2625
date: 2006-01-23
creator: Cohen, Jennifer
viewed: 2774
title: Making Time: Toward a Historical Materialist Fashion
abstract: This thesis analyzes the social significance of the abstract phenomenon of fashion, with reference to sartorial examples from the Fashion industry, using Walter Benjamin's writing on surrealism and fashion as a theoretical model. Examples primarily come from "deconstructive" designers including Martin Margiela and Rei Kawakubo, and post-deconstruction designers such as Jun Takahashi and everyday wearers who make or remake their own garments at home. Benjamin's arguments are presented in terms of his wider political project, demonstrating the continued relevance of his thought in understanding contemporary aesthetic, commercial and material practices. In addition, the thesis refers Georg Simmel and Ernst Bloch, as well as historian Pierre Nora, in order to define the relations between past and present, making and wearing, and production and consumption in "deconstructive" garments.
The thesis accompanies an exhibition of clothing, texts and images entitled "Made with Love: Fashion, Craft, and Other Beautiful Illusions," which was held from May 21st to 27th, 2005 in an empty retail space in Ithaca, New York. Mounting the show and collecting feedback from it formed the concepts in the thesis, while the writing underpinned the ideas in the show. The simultaneous exploration both in writing and fashion gives the rhetorical argument immediate practical relevance, while providing the practice with a theoretical armature, already far more composed than is usual in fashion design. The interdisciplinary nature of this study links and expands the theoretical study of material culture and the practice of idea-led design.
The College of Human Ecology Graduate Student Research Awards Fund

url: http://hdl.handle.net/1813/2626
date: 2006-01-26
creator: Adejumo, B.; Adetunji, J.; Ajav, E.; Ajisegiri, E.; Al-Kufaishi, S.; Annuk, A.; Aradas, M.; Arranja, C.; Assaad, V.; Aviara, M.; Bamgboye, A.; Max, J.; Mijinyawa, Y.; Mohammed, U.; Mollo, M.; Morsing, S.; Munack, A.; Mutwiwa, U.; Naas, I.; Prochnow, A.; Negi, S.; Sivakumar, S.; Ngadi, M.; Nimmermark, S.; Oard, D.; Ojolo, S.; Olamutu, A.; Omisakin, O.; Oni, K.; Ozturk, T.; Pan, L.; Qian, Y.; Soni, P.; Pandorfi, H.; Patil, K.; Pedersen, S.; Pereira, L.; Queiroz, M.; Quendler, E.; Raghavan, G.; Raji, A.; Reimann, W.; Bastola, S.; Sourell, H.; Rijo, M.; Roy, K.; Sagara, Y.; Sakamoto, Y.; Salgado, D.; Salokhe, V.; Sampaio, C.; Sanno, J-O.; Sarkar, B.; Schelle, H.; Srivastava, A.; Bayrakh, M.; Schmersahl, R.; Schmidt, D.; Scholz, V.; Schrock, M.; Schroeder, O.; Schueller, J.; Segre, A.; Seo, Y.; Shao, P.; Stein, H.; Shrestha, S.; Bellmer, D.; Silva, K.; Singh, H.; Strom, J.; Sullivan, M.; Tambunan, A.; Blackmore, S.; Tantau, H.; Hoffman, T.; Tiwari, G.;T omson, T.; Ullman, J.; Umar, B.; Veinla, V.; Veith, P.; Wagner, A.; Wang, N.; Woods, S.; Bora, G.; Hou, J.; Yiljep, Y.; Yoshida, M.; Yuan, J.; von Wachenfelt, E.; Bowser, T.; Boxberger, J.; Buenger, J.; Buescher, W.; Burks, T.; Bux, M.; Huhnke, R.; Campos, S.; Carvalho, V.; Da Silva, I.; Dhakal, U.; Dong, R.; Drenckhan, A.; Durairaj, C. Divaker; Ehsani, M. Reza; Endo, R.; Fumen, G.; Hultgren, J.; Furll, Ch.; Gasparetto, E.; Gavioli, G.; Ghobadian, B.; Goodrich, P.; Grimm, J.; Gustafsson, G.; Hassan-Beygi, S.; Hassenberg, K.; Haubenschild, D.; Idler, Chr.; Hayward, G.; Heiermann, M.; Heinloo, M.; Herbst, L.; Ido, S.; Jacobsen, L.; Jekayinfa, S.; Jeppsson, K-H.; Jiang, S.; Petrics, H.; Jofriet, J.; Kathirvel, K.; Kaufmann, A.; Kawagoe, Y.; Kazama, F.; Kazemi, S.; Kitani, O.; Kolb, T.; Krahl, J.; Kushwaha, H.; Pohl, A.; Kyei-Baffour, N.; Lee, W.; Leola, T.; Li, S.; Linke, B.; Lui, G.; Mahnert, P.; Maletti, G.; Maly, P.; Mamman, E.; Prasher, S.; Manian, R.; Massafera, V.

viewed: 4247
title: CIGR E-Journal Volume 7
abstract: Peer Reviewed Original Research Articles --- 1.) A. Tambunan, Y. Sagara, Y. Seo, and Y. Kawagoe. Image Analysis on Temperature Distribution within Lettuce Undergoing Vacuum Cooling. Manuscript FP 04 002. Vol. VII. January 2005. --- 2.) S. Nimmermark and G. Gustafsson. Influence of Temperature, Humidity, and Ventilation Rate on the Release of Odour and Ammonia in a Floor Housing System for Laying Hens. Manuscript BC 04 008. Vol. VII. March 2005. --- 3.) S. Hassan-Beygi and B. Ghobadian. Noise Attenuation Characteristics of Different Road Surfaces During Power Tiller Transport. Manuscript PM 04 009. Vol.VII. March 2005. 4.) L. Pan, P. Shao, and S. Jiang. Separation of Phytosterol and Synthesized VE Succinate from Rapeseed Oil Deodorizer Distillate. Manuscript FP 04 010. March 2005. --- 5.) S. Shrestha, F. Kazama, Y. Sakamoto, and S. Bastola. Statistical Modeling of Pollutant Load in Subbasins of the Fuji River Basin, Japan. Manuscript LW 05 001. Vol. VII. March, 2005. --- 6.) M. Rijo and C. Arranja. Hydraulic Performance of a Downstream Controlled Irrigation Canal Equipped with Different Offtake Types. Manuscript LW 04 014. Vol. VII. March, 2005. --- 7.) J. Krahl, A. Munack, O. Schroeder, H. Stein, L. Herbst, A. Kaufmann, and J. Buenger. Fuel Design as Constructional Element with the Example of Biogenic and Fossil Diesel Fuels. Manuscript EE 04 008. Vol. VII. March, 2005. --- 8.) M. Aradas, I. Naas, and D. Salgado. Comparing the Thermal Environment in Broiler Houses Using Two Bird Densities Under Tropical Conditions. Manuscript BC 03 017. Vol. VII. March, 2005. 9.) N. Kyei-Baffour. The Effect of Quality of Rising Capillary Water on Soil Surface Sodicity. Manuscript LW 04 013. April, 2005. 10.) P. Soni, V. Salokhe, and H. Tantau. Effect of Screen Porosity on Selected Microclimatic Parameters of Naturally Ventilated Tropical Greenhouses. Manuscript BC 05 002. Vol. VII. April, 2005. --- 11.) I. Naas, S. Campos, and K. Silva. Comparison of Manual and Electronic Traceability in Swine Production. Manuscript IT 05 001. Vol. VII. April, 2005. --- 12.) V. Assaad, J. Jofriet, S. Negi, and G. Hayward. Corrosion of Reinforced Concrete Specimens Exposed to Hydrogen Sulfide and Sodium Sulfate. Manuscript BC 03 013. Vol. VII. April, 2005. 13.) S. Sivakumar, R. Manian, K. Kathirvel, and G. Raghavan. Investigation on the Influence of Machine and Operational Parameters for the Development of a Manually-Drawn Rice Seeder for Direct Sowing. Manuscript PM 04 008. Vol. VII. May, 2005. --- 14.) S. Jekayinfa and O. Omisakin. The Energy Potentials of some Agricultural Wastes as Local Fuel Materials in Nigeria. Manuscript EE 05 003. Vol. VII. May, 2005. --- 15.) S. Pedersen, S. Morsing, and J. Strom. Simulation of Heat Requirement and Air Quality in Weaner Houses for Three Climate Regions Using CIGR 2002 Heat Production Equations. Manuscript BC 05 001. Vol. VII. June, 2005. --- 16.) V. Carvalho, I. Naas, M. Mollo, and V. Massafera. Prediction of the Occurrence of Lameness in Dairy Cows using a Fuzzy-Logic Based Expert System??t I. Manuscript IT 05 002. Vol. VII. June, 2005. --- 17.) H. Pandorfi and I. Da Silva. Evaluation of the Behavior of Piglets in Different Heating Systems using Analysis of Image and Electronic Identification. BC 03 021. Vol. VII. August, 2005. 18.) T. Ozturk and M. Bayrakh. The Possibilities of using Tobacco Wastes in Producing Lightweight Concrete. Manuscript BC 05 006. Vol. VII. August, 2005. --- 19.) P. Goodrich, D. Schmidt, and D. Haubenschild. Anaerobic Digestion for Energy and Pollution Control. Manuscript EE 03 001. Vol. VII. August, 2005. --- 20.) W. Lee, J. Schueller, and T. Burks. Wagon-Based Silage Yield Mapping System. Manuscript IT 05 003. Vol. VII. August, 2005. 21.) M. Heinloo, T. Leola, and V. Veinla. Synthesis of the Manipulator for the Scraper of a Press Manure Removal. Manuscript MES 05 002. Vol. VII. August, 2005. --- 22.) T. Tomson and A. Annuk. Wind Energy in Estonian Western Highlands. Manuscript EE 04 001. Vol. VII. September, 2005. --- 23.) G. Bora, M. Schrock, D. Oard, J. Grimm, and T. Kolb. Performance of a Stacked Valve Multipoint Pulse Width Modulation (PWM) Manifold for Variable Rate Anhydrous Ammonia Application. Manuscript PM 05 005. Vol.VII. September, 2005. --- 24.) E. Quendler, P. Veith, A. Pohl, and J. Boxberger. More Security for Kids Around Moving Vehicles on Farms. Manuscript SAFETY 05 001. Vol. VII. September, 2005. --- 25.) M. Queiroz, I. Naas, C. Sampaio. Estimating Thermal Comfort for Piglets Considering Ammonia Concentration. Manuscript IT 05 004/BC 05 005. Vol. VII. September, 2005. --- 26.) S. Ojolo and A. Bamgboye. Thermochemical Conversion of Municipal Solid Waste to Produce Fuel and Reduce Waste. Manuscript EE 05 006. Vol. VII. September, 2005. --- 27.) Y. Mijinyawa

and J. Adetunji. Evaluation of Farm Transportation System in Osun and Oyo States of Nigeria. Manuscript LW 05 004. Vol. VII. September, 2005. --- 28.) S. Morsing, S. Pedersen, J. Strom, and L. Jacobsen. Energy Consumption and Air Quality in Growing-Finishing Pig Houses for Three Climate Regions Using CIGR 2002 Heat Production Equations. Manuscript BC 05 007. Vol. VII. September, 2005. --- 29.) R. Schmersahl and V. Scholz. Testing a PEM Fuel Cell System with Biogas Fuel. Manuscript EE 05 002. Vol. VII. September, 2005. --- 30.) U. Mutwiwa and H. Tantau. Suitability of a UV Lamp for Trapping the Greenhouse Whitefly Trialeurodes vaporariorum Westwood (Hom: Aleyrodidae). Manuscript BC 05 004. Vol. VII. September, 2005. --- 31.) S. Kazemi, N. Wang, M. Ngadi, and S. Prasher. Evaluation of Frying Oil Quality Using VIS/NIR Hyperspectral Analysis. Manuscript FP 05 001. Vol. VII. September, 2005. --- 32.) W. Reimann. Down Streaming of Lactic Acid from Hydrolysate of Barley after Fermentation. Manuscript FP 05 004. Vol. VII. September, 2005. --- 33.) B. Sarkar and G. Tiwari. Thermal Modeling of a Greenhouse Fish Pond System. Manuscript BC 05 015. Vol. VII. October, 2005. 34.) S. Ido and M. Bux. Prediction of Evaporation Rate in a Solar Dryer for Sewage Sludge. Manuscript EE 05 009. Vol. VII. October, 2005. --- 35.) U. Dhakal, V. Salokhe, H. Tantau, and J. Max. Development of a Greenhouse Nutrient Recycling System for Tomato Production in the Humid Tropics. Manuscript BC 05 008. Vol. VII. October, 2005. --- 36.) E. Ajav and B. Adejumo. Performance Evaluation of an Okra Thresher. Manuscript PM 04 006. Vol. VII. October, 2005. --- 37.) K. Patil, T. Bowser, D. Bellmer, and R. Huhnke. Fluidization Characteristics of Sand and Chopped Switchgrass-Sand Mixtures. Manuscript EE 04 005. Vol. VII. October, 2005. --- 38.) S. Al-Kufaishi, S. Blackmore, H. Sourell, and G. Maletti. Assessment of Two Variable Rate Irrigation Controllers used on a Centre-Pivot. Manuscript LW 05 002. Vol. VII. October, 2005. --- 39.) P. Maly, T. Hoffman, and Ch. Furll. Gentle Harvest of Potatoes in Storage Boxes. Manuscript FP 05 002. Vol. VII. October, 2005. --- 40.) M. Reza Ehsani, C. Divaker Durairaj, S. Woods, and M. Sullivan. Potential Application of Electrical Conductivity(EC) Map for Variable Rate Seeding. Manuscript IT 05 006. Vol. VII. November, 2005. --- 41.) O. Kitani, K. Roy, M. Yoshida, and R. Endo. Control of Water Environment of Plants using Waste Biomass. Manuscript LW 05 007. Vol. VII. November, 2005. --- 42.) J. Hou, Y. Qian, G. Lui, and R. Dong. The Influence of Temperature, pH, and C/N Ratio on the Growth and Survival of Earthworms in Municipal Solid Waste. Manuscript FP 04 014. Vol VII. November, 2005. --- 43.) G. Gustafsson, K-H. Jeppsson, J. Hultgren, and J-O. Sanno. Techniques to Reduce the Ammonia Release from a Cowshed with Tied Dairy Cattle. Manuscript BC 04 010. Vol. VII. November, 2005. --- 44.) K. Hassenberg and Chr. Idler. Influence of Washing Method on the Quality of Prepacked Iceberg Lettuce. Manuscript FP 05 003. Vol. VII. November, 2005. --- 45.) E. Mamman and K. Oni. Draught Performance of a Range of Model Chisel Furrowers. Manuscript PM 05 003. Vol. VII. November, 2005. --- 46.) E. Mamman, B. Umar, and N. Aviara. Effect of Moisture Content and Loading Orientation on the Mechanical Properties of Balanites Aegyptiaca Nuts. Manuscript FP 04 015. Vol. VII. December, 2005. --- 47.) Y. Yiljep, G. Fumen, and E. Ajisegiri. The Effects of Peeling, Splitting and Drying on Ginger Quality and Oil/oleoresin Content. Manuscript FP 05 009. Vol. VII. December, 2005. --- 48.) Y. Yiljep and U. Mohammed. Effect of Knife Velocity on Cutting Energy and Efficiency during Impact Cutting of Sorghum Stalk. Manuscript PM 05 004. Vol. VII. December, 2005. --- 49.) G. Gustafsson and E. von Wachenfelt. Measures against Ammonia Release in a Floor Housing System for Laying Hens. Manuscript BC 05 003. Vol. VII. December, 2005. --- 50.) A. Prochnow, M. Heiermann, A. Drenckhan, and H. Schelle. Seasonal Pattern of Biomethanisation of Grass from Landscape Managemant. Manuscript EE 05 011. Vol. VII. December, 2005. --- 51.) A. Wagner and W. Buescher. Compression Characteristics of Wilted Grass. Manuscript IT 05 007. Vol. VII. December, 2005. --- 52.) H. Kushwaha, A. Srivastava, and H. Singh. Development and Performance Evaluation of an Okra Seed Extractor. Manuscript PM 05 001. Vol. VII. December, 2005. ---- 53.) P. Mahnert, M. Heiermann, and B. Linke. Batch- and Semicontinuous Biogas Production from Different Grass Species. Manuscript EE 05 010. Vol. VII. December, 2005. ---

Invited Overview Articles --- 1.) L. Pereira. Water and Agriculture: Facing Water Scarcity and Environmental Challenges. Invited Overview. Vol. VII. February 2005. --- 2.) A. Raji and A. Olamutu. Prospects of Computer Vision Automated Sorting Systems in Agricultural Process Operations in Nigeria. Invited Overview. Vol.

VII. February 2005. --- 3.) J. Yuan. The Status of China's Agricultural Machinery Industry and the Prospects for International Cooperation. Invited Overview. Club of Bologna. Vol. VII. March, 2005. --- 4.) S. Li. Agricultural Mechanization Promotion in China-Current Situation and Future. Invited Overview. Club of Bologna. Vol. VII. March, 2005. --- 5.) G. Gavioli. Cost Benefits of the Platform Principles for Tractors and Other Agricultural Machinery. Invited Overview. Club of Bologna. Vol. VII. March, 2005. --- 6.) G. Gavioli. Cost Benefits of the Platform Principles for Tractors and Other Agricultural Machinery. Invited Overview. Power Point Slides. Club of Bologna. Vol. VII. March, 2005. --- 7.) A. Segre and H. Petrics. EU Enlargement and its Influence on Agriculture and Mechanisation. Invited Overview. Club of Bologna. Vol. VII. March, 2005. --- 8.) E. Gasparetto. Conclusions and recommendations. Invited Overview. Club of Bologna. Vol. VII. March, 2005. --- 9.) J. Ullman. Remedial Activities to Reduce Atmospheric Pollutants from Animal Feeding Operations. Invited Overview. Vol. VII. June, 2005. --- 10.) Y. Mijinyawa. Agricultural Engineering Education in Nigeria. Invited Overview. Vol. VII. August. 2005.

url: http://hdl.handle.net/1813/2633
date: 2006-02-01
creator: Rosenkrantz, Marcy E.
viewed: 998
title: Cornell Library's Institutional Repositories
abstract: This is a pdf file of a presentation made to representatives of the Hiroshima University Library. The presentation was made at the Cornell University Library (CUL) on February 1, 2006. Its subject matter concerns CUL's various repositories used to promote and support open access to scholarly output: http://techreports.library.cornell.edu, http://dspace.library.cornell.edu, and http://www.arxiv.org

url: http://hdl.handle.net/1813/2634
date: 2006-02-02
creator: Kenney, Anne
viewed: 2530
title: Future of Public Services presentation for Academic Assembly
abstract: In this audio recording of the presentation given to Academic Assembly on Feb. 2, 2006, Anne Kenney, AUL for Instruction, Research, and Information Services, shares her vision of the future of public services over the next five years.

url: http://hdl.handle.net/1813/2634
date: 2006-02-02
creator: Kenney, Anne
viewed: 2530
title: Future of Public Services presentation for Academic Assembly
abstract: In this audio recording of the presentation given to Academic Assembly on Feb. 2, 2006, Anne Kenney, AUL for Instruction, Research, and Information Services, shares her vision of the future of public services over the next five years.

url: http://hdl.handle.net/1813/2634
date: 2006-02-02
creator: Kenney, Anne
viewed: 2530
title: Future of Public Services presentation for Academic Assembly
abstract: In this audio recording of the presentation given to Academic Assembly on Feb. 2, 2006, Anne Kenney, AUL for Instruction, Research, and Information Services, shares her vision of the future of public

services over the next five years.

url: http://hdl.handle.net/1813/2636
date: 2006-02-06
creator: Reichman, Daniel Ross
viewed: 3129
title: Broken Idols: Migration, Globalization, and Cultural Change in Honduras
abstract: Terence Turner, Dominic Boyer, Maria Cristina Garcia This is an ethnographic study of a coffee-growing community in Honduras, which was in the midst of a transition to economic reliance on migration to the United States from 2001 to 2004, when field research was conducted by the author. The author focuses on the origins and contemporary dynamics of Honduran emigration, and explores the impact of emigration on local society and culture. He argues that migration has led to a profound sense of confusion within a single community, identified by the pseudonym of "La Quebrada." In this town, migration is generally described in negative terms, and migrants are often seen as the cause of socioeconomic crisis, rather than its victims. The author describes two local responses to emigration in La Quebrada: the rise of evangelical churches and the establishment of a fair trade coffee cooperative. Evangelical churches offer solutions to many of the social problems caused by emigration, and fair trade production offers an economic alternative to migration for coffee farmers. He draws a parallel between local criticisms of migrants as the source of social decline, the explanations of social crisis offered by the evangelical churches, and the philosophy of fair trade. In each case, people express concern about the manner in which their community has been integrated into the global economy, but they believe that individual behavior is the only viable source of social reform. This emphasis on the individual, abstracted from social totalities, limits the political potential of these movements. The author concludes that these movements articulate a sense of popular anxiety over the community's future, and a desire to refashion society for the collective good. However, the forms that these popular responses have taken is based on a belief that no political institution can mediate between the individual and the global market. The tendency to conceptualize sociopolitical reform in individualized terms, he argues, reflects macro-level cultural changes that have occurred around the globe in the past twenty years.

url: http://hdl.handle.net/1813/2637
date: 2006-02-06
creator: THAIRU, LUCY
viewed: 2662
title: ETHNOGRAPHY OF INFANT FEEDING IN SUB-SAHARAN AFRICA: CASE STUDIES IN THE CONTEXT OF HIV/AIDS AND NEWBORN CARE
abstract: The three ethnographic case studies described in this dissertation provide a cultural description of breastfeeding behavior with respect to HIV/AIDS and newborn care, and with a focus on early infancy.
Study 1: Influences on infant feeding decisions were investigated in-depth interviews with a sample of 22 HIV-positive mothers from Kwa-Zulu Natal, South Africa. Five themes were identified: social stigma of HIV infection; maternal age and family influences on feeding practices; economic circumstances; beliefs about HIV transmission through breastmilk; and beliefs about the quality of breastmilk compared to formula. Mothers knew that breastmilk can infect the infant with HIV, but a dominant theme was that breastmilk protects children and is superior to formula.
Study 2: Local feeding practices for the newborn, and how these "fit" within the repertoire of newborn care giving practices were assessed in Pemba Island, Tanzania. In-depth interviews were conducted with 13 peri-urban mothers and 30 rural mothers. Beliefs underlying neonatal care-giving practices included: a) fear of maternal and/or newborn death at the time of delivery; b) vulnerability of the newborn; c) ritual pollution after childbirth and d) feeding strategies believed to enhance newborn health and survival. From a pile sort exercise conducted with a literate sub-sample, infant feeding was found to be conceptualized as

distinct from other newborn care giving practices.
Study 3: The 30 rural women from study 2 were provided with advice to improve feeding behavior during pregnancy. Their responses to the advice were assessed postpartum. Breastfeeding newborns was part of cultural expectation and practice, but exclusive breastfeeding was not. In all three communities, breastfeeding is highly valued and is culturally normative. The first study results offer a glimpse of the forces that influence HIV positive women as they attempt to make an informed choice about feeding their infants. Results from the second study suggest that interventions could specifically target feeding without having to affect other domains of newborn care. Results from the third study offer guidance for designing education messages for promoting exclusive breastfeeding during the first few weeks of infant life. Taken together, the three studies provide useful information for breastfeeding promotion activities.

url: http://hdl.handle.net/1813/2638
date: 2006-02-06
creator: Marcynyszyn, Lyscha
viewed: 2639
title: Contributions of Attentional and Behavioral Regulation to Socioemotional Adjustment and Early Academic Success Among Head Start Graduates
abstract: I am grateful to C. Cybele Raver, the Principal Investigator of the Cornell Early Social Development Study, for providing me with the opportunity to use and collect data related to this longitudinal project. I would like to thank the teachers throughout western New York State who gave their time to assess classroom behaviors, the school administrators who made report card collection possible, and the children and parents who participated in the Early Social Development Study. The multiple pathways linking 4-year-olds' self-regulation to their adjustment (defined as teacher-reported socioemotional functioning and academic achievement) among a sample of children from ethnically and geographically diverse low-income families (Time 1 N = 163) were examined at two time points over the transition from preschool to first grade. Self-regulation was defined in terms of attentional and behavioral regulation and inhibitory control. Three research questions were investigated in separate papers. In all analyses, demographic factors such as maternal age, education, workforce entry, family income category, and child age were statistically controlled.
In the first paper, I investigated whether self-regulation mediates the relationship between caregivers' limit-setting practices and children's adjustment. Findings indicate that the extent to which children were able to engage in attentional and behavioral forms of regulation fully explained the relations between limit-setting practices and early reading achievement in first grade. Contrary to hypotheses, attention and behavior regulation did not mediate the effect of limit-setting on children's socially competent, externalizing, and internalizing behaviors.
In the second paper, I tried to explicate the known relations between inhibitory control and adjustment by examining the mediating role of behavior regulation measured longitudinally at Time 1 and concurrently at Time 2. Support was found for the mediating role of behavior regulation in the relations between inhibitory control and children's reading and writing achievement. Comparable support was not found for children's socioemotional outcomes. Limited support was detected for the indirect effect of inhibitory control through behavior regulation on social competence, but only for children from married families at Time 1.
In the third paper, I examined whether negative emotionality (defined as anger/frustration) moderated the relationship between self-regulation and child adjustment. Results suggest that negative emotionality moderated the relationship between attention regulation and children's reading grades: Children with fewer attention regulation skills and higher levels of frustration received lower reading grades compared with peers who also displayed few attention regulation skills but were low in frustration at Time 1. Contrary to predictions, the paths from behavioral regulation to achievement did not vary as a function of child frustration. For all three papers, policy implications are discussed. This dissertation research was supported in part by a Predoctoral Kirschstein-National Research Service Award (NRSA) from the National Institute of Mental

Health, 1 F31 MH68089-01A1 (2003-2004), a Dissertation Research Award from the American Psychological Association's Science Directorate (2003), a Flora Rose Fellowship (2002-2003), and a Dissertation Grant (2003) from the College of Human Ecology at Cornell University, and a Summer Fellowship (2002) from the Department of Human Development at Cornell University. The Cornell University Graduate School, the College of Human Ecology, and the Department of Human Development funded travel to professional meetings, conventions and conferences to present preliminary thesis findings (2003-2004).

url: http://hdl.handle.net/1813/2640
date: 2006-02-08
creator: Crainiceanu, Adina
viewed: 3016
title: Answering Complex Queries in Peer-to-Peer Systems
abstract: Peer-to-peer (P2P) systems provide a robust, scalable and decentralized way to share and publish data. However, most existing P2P systems only support equality or keyword search queries. We believe that future P2P applications, such as digital libraries, resource discovery on a grid, or military applications, will require more complex query functionality, as users will publish semantically rich data.

Towards the goal of supporting complex queries in P2P systems, this dissertation focuses on developing index structures that allow fast access to distributed data. We introduce first a general modular indexing framework that identifies and separates the different functional components of a P2P index structure. One of the benefits of such a framework is that it allows \eat{tailoring the index structure to the needs of the different applications, with different requirements. Another benefit is that it allows }reusing the existing algorithms for different components rather than implementing everything anew. We can thus concentrate on creating algorithms that provide new functionality.

We introduce P-Tree, a distributed fault-tolerant index structure. P-Trees support range queries in addition to equality queries in P2P systems in which each user (peer) publishes a small number of data items. We describe algorithms to maintain a P-Tree under insertions and deletions of data items/peers, and evaluate its performance using both a simulation and a real distributed implementation. Our results show the efficacy of our approach.

We introduce then P-Ring, a novel index structure based on our framework, that supports both equality and range queries, is fault-tolerant, efficiently supports large sets of data items per peer (as opposed to P-Tree), and provides guaranteed logarithmic search performance in a stable system.

In a thorough Wide Area Network experimental study we evaluate the performance of P-Ring and \eat{ we quantify the performance trade-offs of the different system components. We also }compare P-Ring with three other P2P index structures, Chord, Skip Graphs, and Online Balancing, implemented in the context of our indexing framework. Our performance results indicate that P-Ring outperforms Skip Graphs in terms of both query and maintenance cost. P-Ring offers a better load balance than Online Balancing, at a lower cost. P-Ring outperforms Chord in terms of search performance and supports a larger class of queries, with a low overhead.

url: http://hdl.handle.net/1813/2641
date: 2006-02-09
creator: Colosi, Laura
viewed: 2985
title: Non-marital Births, Poverty and Welfare Reform
abstract: The central question this paper addresses is what effect will the provisions to reduce non-marital births in the Personal Responsibility and Work Opportunity Reconciliation Act of 1996 have on non-marital birth rates? Data from state waivers prior to the 1996 legislation is used to capture the policy environment in which a non-marital birth occurred in several states between 1992 and 1996; and to assess variation(s)

in fertility behavior among those states. Creation of policy variables based on state waiver data allowed for further estimates of the impact (in selected states) of the specific policy provisions in the PRWORA aimed at reducing out of wedlock childbearing, and subsequent welfare receipt.

A review and summary of research regarding the strength of association between non-marital child bearing and welfare receipt is provided and includes both a brief review of general literature about non-marital births and a more focused review of literature specific to the antecedents of non-marital births. The empirical analysis in this work utilizes data from the Urban Institute's National Survey of American Families (conducted in 1997 and 1999 after the Federal legislation was implemented) to examine two questions: whether or not the policy provisions and program efforts from the PRWORA accounted for the differences in determinants of non-marital births for teenage women and women over the age of twenty; and whether or not emphasis should have been placed on reducing teen pregnancy as a means to reducing welfare receipt and poverty in the 1996 PRWORA. Regression analysis estimated the impact of demographic variables on non-marital births in addition to the effect of specific welfare policies in selected states, and shows that the determinants of a non-marital birth differ by age of the mother, and the focus on reducing teen pregnancy is warranted despite the fact that adolescent women account for only 30% of non-marital births. Three areas in the legislation that require further analysis are identified and recommendations for addressing these shortcomings in the legislation are also offered to increase self-sufficiency of poor families in the context of legislative reauthorization, and future reform efforts.

url: http://hdl.handle.net/1813/2642
date: 2006-02-13
creator: Jackson, Brendan
viewed: 2596
title: Species of Meanings: A Study of Semantic Kinds and Semantic Structure
abstract:

url: http://hdl.handle.net/1813/2643
date: 2006-02-15
creator: Campbell, Timothy
viewed: 1914
title: Violent Cities: Umberto Lenzi's Polizieschi and B-Movie Fascism
abstract: This paper examines the critical failure to treat the Italian cop film, or poliziesco, as anything other than a poor cousin of the American crime film. I argue that such a blindness has prevented discussions of the cop film's intervention in larger cultural narratives of postwar Italy, which in turn makes urgent a discussion of the ways the Italian genre departs from the Hollywood prototype. Where most studies of Italian paracinema have noted the generic schizophrenia of Italian trash, the blurred boundaries among all the favored genres of Bruno Mattei, Umberto Lenzi, Sergio Martino, and Ruggiero Deodato, this paper focuses on the cultural and critical worries that the polizieschi embody and their relation with the theoretical and historical elaborations of gender that occurred in the same period in Italy. A study of the Italian cop film and one of its signature directors provide a number of access points to a more wide-ranging examination of trash cinema and its place within Italian cultural formations of the postwar period, in particular with regard to the discourse of virility.

url: http://hdl.handle.net/1813/2644
date: 2006-02-16
creator: Righi, Andrea
viewed: 2327
title: Teorie dell?avanguardia tra materialismo e idealismo

abstract: Paper presented February 17, 2006The paper's opening paragraph follows:

? ormai opinione unanime nella critica mettere in relazione diretta l?avvento della moderna societ? capitalista con la nascita delle avanguardie. (tra gli altri Asor Rosa 2004: 43; B?rger 1990: XI; Calinescu 1977; 96; Curi 2001: 106; Ferroni 1996: 117-118; Murphy 1999: 6; Mann 1991: 7; Poggioli 1962: 124; Rossi-Landi 1994: 104 Russell 1985: 5) Questo ? l?orizzonte discorsivo che prendo in considerazione. In generale, sembra legittimo affermare anche che l?avanguardia coglie e rielabora le contraddizioni del capitale prima elencate. Storicamente tende ad un universalismo che supera le mere connotazioni nazionali. Questo ? valido sia per quanto riguarda gli obiettivi pragmatici delle varie poetiche ? si veda l?idea di ?alfabeto stellare? di Velemir Chlebnikov (1885-1922) ? sia per la dimensione transnazionale degli stessi movimenti ? il surrealismo, ad esempio, contamina vari sistemi letterari dell?Europa continentale, fino alle isole Canarie e all?America Latina. (Morelli 1998: 183-208) L?avanguardia inoltre si confronta e a volte assimila l?impatto sociale e antropologico dell?innovazione tecnologia. Secondo la prospettiva dei rispettivi movimenti, a volte ne assume in pieno il carattere migliorista ? ? il caso della ?modernolatria marinettiana? (Sanguineti 2001: 36) ? a volte, le oppone un rifiuto integrale, denuncia l?alienazione che ha cancellato il sogno di un?epoca pi? piena ? ? il caso dell?espressionismo di Georg Trakl (1887-1914). Infine, ma questa ? una caratteristica che taglia diagonalmente l?arte moderna, la produzione e il recupero del nuovo passa attraverso una distruzione necessaria della tradizione artistica preesistente ? tra i tanti possibili esempi, citerei la veemenza della polemica anti-passatista dei futuristi.Italian Studies Colloquium @ Cornell

url: http://hdl.handle.net/1813/2645
date: 2006-02-20
creator: Rymarquis, Linda
viewed: 3057
title: Nucleus-encoded Factors Involved in 5' and 3' Processing of Chloroplast Transcripts in Chlamydomonas reinhardtii
abstract: Chloroplast RNA maturation and degradation are regulated by nucleus-encoded factors that interact with sequences and structures within the RNA. Although several transcript-specific factors have been identified, those involved globally in RNA metabolism, apart from ribonucleases, have mostly remained elusive. Three pleiotropic nuclear mutations, mcd3, mcd4, and mcd5, appear to affect this global RNA metabolism, since they impact 5' end and 3' end maturation of two or more chloroplast transcripts in Chlamydomonas reinhardtii. These mutants were initially isolated as photoautotrophic suppressors of the 5' UTR mutations LS2 and LS6, which destabilized petD transcripts, but analysis of transcripts from 32 chloroplast genes showed that mcd3 and mcd4 displayed altered RNA transcript patterns for 17 genes, whereas three were altered in mcd5. The transcript patterns observed in mcd3, mcd4, and mcd5 are consistent with defects in endonucleolytic cleavage. Since the role of endonucleolytic cleavage in atpB 3' maturation has been well characterized, a series of reporter strains containing the ectopically-expressed atpB processing determinant, which consists of an inverted repeat and endonuclease cleavage site (ECS), were used to further evaluate the role of mcd4 in endonucleolytic cleavage as well as the sequences with which it might interact. These experiments suggested that mcd4 suppresses endonucleolytic cleavage involved in atpB 3' maturation, and that it is involved in endonucleolytic cleavages that initiate degradation. MCD4 likely interacts with the inverted repeat, the ECS CCand/or nucleotides 15-39 downstream of the ECS in facilitating this 3' maturation. To further characterize the role of MCD3, MCD4, and MCD5, a series of map-based cloning tools and methods were generated. Using these methods, MCD4 has been isolated to a 1,300 kb region and candidate gene analysis is underway. Taken together, these studies suggest that MCD3, MCD4, and MCD5 may be components of multiprotein complexes responsible for RNA maturation and degradation in Chlamydomonas chloroplasts that are recruited by gene-specific proteins such as MCD1, or RNA sequences and structures such as those found for atpB. David Stern NSF awards MCB-0235878 and MCB-0091020 NSF

Graduate Research Fellowship

url: http://hdl.handle.net/1813/2648
date: 2006-02-24
creator: Collins, John F.; Adleman, Marvin I.
viewed: 4728
title: Livable Landscape Design
abstract: This timeless publication will assist homeowners, landscape designers, nursery workers or contractors in the design process of the home landscape. This publication uses well constructed diagrams to aid users to create practical, economical, environmentally sound landscapes that are visually appealing.
This highly sought after publication has been out of print for several years, but due to its timeless nature and steady demand, it is being made available for download.

url: http://hdl.handle.net/1813/2650
date: 2006-02-28
creator: Andrews, Camille; Rupp, Nathan
viewed: 2769
title: Keeping Current on Research and News in Less Time
abstract: Provides an overview of RSS feeds, blogs, and social bookmarking.

url: http://hdl.handle.net/1813/2651
date: 2006-02-28
creator: Padron, Sonya
viewed: 3393
title: BEHAVIORAL RESPONSES OF PANAEUS VANNAMEI TO INCREASED RESTING AREAS AS AFFECTED BY STOCKING DENSITY
abstract: An observational study was constructed to determine the behavioral effects on Penaeus vannamei of shelf addition to densely stocked aquaria. Trials were conducted in a recirculating system at the University of Southern Mississippi's Gulf Coast Research Lab in Ocean Springs, Mississippi. Initial studies focused on the addition of multiple stacked-shelf units into six low density (77 shrimp per square meter) rearing tanks. Observing zero shrimp occupancy on the stacked shelving units, two alternate scenarios were constructed. Long, single shelves made of either white corrugated plastic or standard black mesh nylon screen were introduced into tanks. Shrimp reaction to shelves was observed for four stocking densities: 77, 179, 407 and 623 shrimp per square meter. Shrimp density was increased during a five-day period and shrimp behavior was noted as either swimming, on shelf, or on floor in five-minute increments during hour blocks from July 6-9th, 2002. Increased stocking densities positively correlated with an observed increase of shrimp occupancy on single shelf units. Preference for mesh-shelf over solid-shelf units occurred at the highest stocking density of 623 shrimp per square meter.

url: http://hdl.handle.net/1813/2652
date: 2006-02-28
creator: Baker, Robert C.
viewed: 6587
title: Barbecued Chicken and Other Meats
abstract: This is the famous Cornell Chicken Recipe, as written by its creator, Dr. Robert C. Baker, Professor Emeritus of the Department of Animal Sciences at the New York State College of Agriculture and Life Sciences at Cornell University. This Recipe was used by Dr. Baker at the "Chicken Coop," his legendary restaurant at the New York State Fair. This Publication also offers suggestions for Turkey, Pork and Fish. If you don't have

the perfect BBQ pit for broilers, plans are included for building a simple backyard cinder block pit, as well as the large collapsable metal ones used by fire departments everywhere.
This publication is no longer available in print form, but due to steady demand, it is being made available via a free pdf download.

url: http://hdl.handle.net/1813/2653
date: 2006-02-28
creator: Nowogrodzki, Richard; Morse, Roger A.; Seeley, Thomas D.
viewed: 2465
title: Bait Hives for Honey Bees
abstract: Capturing swarms of bees can be achieved by following the recommendations in this classic, easy to read publication. The authors researched and tested different sizes and locations and the results are given along with methods for taking down and transporting the hive.

url: http://hdl.handle.net/1813/2654
date: 2006-02-28
creator: Testa, Carlo
viewed: 1946
title: Italian political cinema: Surveying a once glorious genrein times of anguish
abstract: A paper presented in February 2005 to the colloquium. Because in the Entralogos context I will dwell in some detail on the theoretical issues underpinning my interest in literature and culture, in the present pages I shall focus instead on some specific historical aspects of the dialectics between Italian society and Italian cinema. In particular, I shall concentrate on what it has become customary to describe by the term "political cinema," as well as some of its reverberations in a genre not normally associated with it: the "comedy Italian style." The two sections on cinema politico and commedia all?italiana will thus constitute the two main articulations of my argument. However, since I cannot assume a specific familiarity with post-WWII Italy among the interdisciplinary community of my readers, I shall introduce those two mini-chapters by a prologue presenting, in broad strokes, the relevant socio-historical context of the peninsula. At the end, I shall return to considerations of a more general cultural import about the challenges of the times in which we live. Italian Studies Colloquium

url: http://hdl.handle.net/1813/2656
date: 2006-03-01
creator: Agrawal, Yogesh C.; Boss, Emmanuel; Clavano, Wilhelmina R.
viewed: 3626
title: Backscattering anisotropy near 180°: an indication of particle size and shape
abstract: By modelling the single scattering of particles in the exact backward direction (180°) and 5° around, the field of view of an instrument measuring backscattering is simulated. Calculations of the scattering Mueller matrix M_{ij} using a development of the extended boundary condition method [1] are made for spheroidal particles with sizes (D in μ), shapes (defined by spheroidal aspect ratio $\frac{s}{t}$) and refractive indices similar to ($m = 1.05 + 0.01i$) marine particles found in the natural environment.
Results show that information about size and shape can be gathered from the intensity patterns of the backscattering for particles within the anomalous diffraction region. Comparison between the polarised scattering intensity patterns ($I_{\parallel}$ and $I_{\perp}$) produced by these non-spheres and their volume-equivalent spheres provides insight into the information available from backscattering polarimetry on the effects of size and shape in light scattering by differently shaped particles.ONR Ocean Optics and Biology

url: http://hdl.handle.net/1813/2657
date: 2006-03-02
creator: Keen, Sarah
viewed: 2791
title: Home Economics - More Than Meets the Eye OR The Challenges in Organizing and Describing the Records of an Evolving Organization
abstract: This presentation addresses the challenges encountered in organizing and describing the records of the American Association of Family and Consumer Sciences, an active and evolving organization. The original talk included examples from the archival collection, which was transferred to the Division of Rare and Manuscript Collections in the summer of 2004. The presentation also discusses the history of the AAFCS and a few of its connections to Cornell, past and present.

url: http://hdl.handle.net/1813/2663
date: 2006-03-03
creator: Kurth, Martin
viewed: 3547
title: Establishing a Metadata Service
abstract: Presentation on establishing a metadata service in a library technical services operation, given to the Association for Library Collections and Technical Services Leadership Development Committee, January 2003, Philadelphia, PA.

url: http://hdl.handle.net/1813/2664
date: 2006-03-03
creator: Rompala, Kevin Robert
viewed: 2792
title: Dynamics of Three Coupled Van Der Pol Oscillators With Application to Circadian Rhythms
abstract: In this thesis we study the dynamics of the in-phase mode for a system of three coupled van der Pol oscillators. Two of the oscillators are taken to be identical and coupled indirectly via a third oscillator whose natural frequency may vary. We use the singular perturbation method known as two-variable expansion to obtain a slow-flow, which is then analyzed using the computer algebra system MACSYMA. We find analytical representations for saddle-node and Hopf bifurcation curves in the parameter space and explore the dynamics found in the in-phase phase space.
The motivation for this work comes from the presence of circadian melatonin rhythms in the eyes of Japanese quail. Recent experiments showing the rhythms in the eyes to be tightly coupled and in-phase with each other have strengthened the hypothesis that the eyes are the location of the central pacemaker for Japanese quail. The melatonin rhythm in each eye is modeled as a van der Pol limit-cycle oscillator. Furthermore, the eyes cannot directly communicate to each other, but do so via a connection to an extra-ocular circadian system, here represented by the third oscillator.

url: http://hdl.handle.net/1813/2665
date: 2006-03-03
creator: Castania, Kathy
viewed: 2189
title: The Evolving Langauge of Diversity
abstract: Language used to define people and groups can be used to express bias and prejudice or be used as a tool for empowerment. Most people prefer to use the most respectful terms, but even the most well intentioned can unconsciously belittle other persons or groups. This paper explores common language uses gives general rules, cites misused terms and terms that simply don't work. The paper has been used nationwide

for diversity and inclusiveness training, and is being made available in this format to reach people wanting guidance in the Language of Diversity. Department of Human Development, College of Human Ecology, Cornell University

url: http://hdl.handle.net/1813/2666
date: 2006-03-03
creator: Philpot, William D.;Clavano, Wilhelmina R.
viewed: 3553
title: The off-specular peak and polarisation effects of an undulating underwater surface
abstract: http://www.hydrooptics.spb.ru/onw2005/index.phpPeriodic undulations are used to describe underwater bottom roughness. An expression of the bi-directional reflectance distribution function (BRDF) is given that is dependent on the given roughness metric. Highlights include an off-specular peak and polarisation effects. For an undulating underwater surface, we have shown through geometric optics that reflectance from a rough diffuse surface increases as the viewing direction approaches the backward direction even in the absence of shadowing and/or self-shading (Clavano & Philpot (2003), see also Cox & Munk (1956)). The effects of shadowing and self-shading are equivalent to applying a geometrical attenuation factor to specular reflectance, which is similar to an analysis of morphological effects using triangular waves by Zaneveld & Boss (2003). We show that a reflectance peak displaced away from the specular direction occurs at large angles of incidence (relative to the global normal) as the surface gets rougher (part of work in Clavano & Philpot (2004)). Similar results have been shown for oil films on ocean surfaces using Monte Carlo methods by Otremba & Piskozub (2004) and Otremba (2004). As a general result, an expression of the full bi-directional reflectance distribution function (BRDF) is given. While geometrical effects play a significant role in the reflectance distribution, we consider polarisation effects (as in Mullamaa (1962, 1964)) to gain more insight into real-world reflectances and compare with empirical distributions described by Cox & Munk (1956).Cornell University Graduate School

url: http://hdl.handle.net/1813/2667
date: 2006-03-04
creator: Philpot, William D.; Clavano, Wilhelmina R.
viewed: 2359
title: Reflections and the focusing effect from an ideal three-dimensional rough surface
abstract: An analytical expression for higher-order reflectances from a shallow-water homogeneous ocean bottom modeled as an egg-carton surface is presented. Roughness of this ideal surface is expressed as the amplitude-to-length ratio of its basic sinusoidal function. Any real surface that can be approximated by an egg-carton function will effectively have a comparable roughness metric. Incidence and reflection directions are considered in full azimuthal variation. The detector is located just below the water surface so that only in-water reflections are considered and there are no air-water transmission effects. Furthermore, this setup allows for an understanding of reflections that occur in media with any index of refraction or absorption coefficient. Fixing the detector footprint but adjusting its field-of-view enables the observation of the same bottom surface area as the depth varies while keeping the roughness and the number of waveforms viewed constant.
First-order reflectance decreases as the roughness increases, as was shown in the two-dimensional case. This is true as the roughness varies, regardless of the bottom reference level chosen. Focusing effects are expected from (but are not limited to) second-order reflectance and are due to parts of the bottom whose angles maximize both incoming light and the reflections toward the detector. Along a plane about the vertical axis, the roughness ratio for a fixed-length waveform that returns the highest reflectance can be found. In three dimensions, this phenomenon is complicated by reflections from all hemispherical directions. Shadowing and obscuration behave similarly as in the two-dimensional case although shadowed areas will have an

increased potential to reflect light from other directions (than the plane defined by the source incidence and the vertical directions). This is expected to cause higher order reflections to increase as the roughness increases. Cornell University Graduate School ONR Ocean Optics and Biology

url: http://hdl.handle.net/1813/2669
date: 2006-03-06
creator: Thomas, Sarah
viewed: 2027
title: Quality in Bibliographic Control
abstract: The Quality of cataloging is an issue that has engendered much discussion over decades of bibliographic control. Juxtaposed against the standard of full, accurate, and timely bibliographic records is the pressure to produce reliable access in a cost-effective manner. In reviewing the definition of quality at the Library of Congress (LC), the relationship of quality cataloging to copy cataloging, minimal level cataloging, the core bibliographic record, and outsourcing, the author concludes that the definition of quality is dynamic and dependent on the values and needs of catalog users.

url: http://hdl.handle.net/1813/2670
date: 2006-03-06
creator: Calhoun, Karen
viewed: 8013
title: The Changing Nature of the Catalog and its Integration with Other Discovery Tools: Draft 2B
abstract: This report, commissioned by the Library of Congress, analyzes research library catalogs and suggests options for their future. Includes a preliminary assessment of the feasibility of next steps and a blueprint for change. Structured interviews of noted library and information science professionals provide context for the recommendations. Library of Congress, Cornell University Library

url: http://hdl.handle.net/1813/2671
date: 2006-03-07
creator: Gur, Nurit
viewed: 3208
title: A COGNITIVE PRIMING APPROACH TO THE STUDY OF ADULT ATTACHMENT
abstract: In recent years, no single area of research in personality/social psychology has attracted more interest than the application of attachment theory to the study of adult romantic relationships. This research has focused almost exclusively on individual differences. To date the field lacks a set of objective standards for determining whether participants in attachment research are, in fact, attached. The current study explores the validity of a self-report measure of attachment (i.e., the WHOTO). This self-report measure identifies the figures toward whom individuals direct the four behaviors that define attachment (i.e., proximity maintenance, safe haven, separation distress and secure base). Using a lexical decision task, I recorded the relative speed with which participants recognize the names of reported significant people following a subliminally-presented threat or neutral word prime. I hypothesized that participants who direct all four attachment behaviors toward one figure will react faster to the significant person's name after a threat word prime compared with a neutral one. A total of 127 participants took part in Study 1, in which the prime was an attachment-related threat (i.e., the word "separation"), and 69 participants took part in Study 2, in which the prime was an attachment-unrelated threat (i.e., participant's idiosyncratic fear). I found that participants who direct all attachment behaviors toward the significant person were faster to recognize the figure's name after a threatening word compared with a neutral one, whereas the opposite was true for participants who do not direct all attachment behaviors toward the significant person. These results contribute to further validation of the WHOTO as a measure of normative attachment that can be used to distinguish between

relationships that have some attachment components and relationships that qualify as full-blown attachments. In addition, participants who direct all attachment behaviors toward their romantic partner reacted faster to his/her name after a threatening word compared with a neutral one only if they were cohabiting. This finding highlights the importance of physical proximity in adult romantic attachment.

url: http://hdl.handle.net/1813/2672
date: 2006-03-08
creator: Pivarski, James
viewed: 1475
title: A High-Precision Measurement of the Di-Electron Widths of the Upsilon(1S), Upsilon(2S), and Upsilon(3S) Mesons at CLEO-III
abstract: The di-electron width of an Upsilon meson is the decay rate of the Upsilon into an electron-positron pair, expressed in units of energy. We measure the di-electron width of the Upsilon(1S) meson to be 1.252 +- 0.004 +- 0.019 keV (the first uncertainty is statistical and the second is systematic), the di-electron width of the Upsilon(2S) to be 0.581 +- 0.004 +- 0.009 keV and that of the Upsilon(3S) to be 0.413 +- 0.004 +- 0.006 keV. We determine these values with better than 2% precision by integrating the Upsilon production cross-section from electron-positron collisions over their collision energy. Our incident electrons and positrons were accelerated and collided in the Cornell Electron Storage Ring, and the Upsilon decay products were observed by the CLEO-III detector. The di-electron widths probe the wavefunctions of the Strongly-interacting bottom quarks that constitute the three Upsilon mesons, information which is especially interesting to check high-precision Lattice QCD calculations of the nuclear Strong force. This work was supported by the A.P. Sloan Foundation, the National Science Foundation, and the U.S. Department of Energy.

url: http://hdl.handle.net/1813/2685
date: 2006-03-10
creator: Chiu, Imes
viewed: 4291
title: When New Things Were Old
abstract: How does a novel artifact become a mainstream device? Three case studies on the transition from muscle to motor power indicate that the transfer of practices from old to new technologies facilitates technological change and diffusion. Case One examines the horseless carriage industry in the United States during the first decade of the twentieth century. To understand manufacturers' efforts to generate consumer demand, this study reflects upon printed advertisements, manuals, and social commentaries prior to mass production of the automobile.

Case Two examines motorization in a highly resistant environment--the post-WWI US Cavalry. Cavalry service and drill regulations manuals serve as the basis for understanding the centrality of the horse to the cavalry's fighting strategy and the cavalryman's identity as a combatant. The Cavalry Journal, an internal military publication, provides evidence of the role military horse culture played in impeding--and eventually facilitating--motorization. Mechanisms employed to maintain equine traditions gave birth to the jeep. The use of the jeep under battlefield conditions replicated cavalry style maneuvers and fighting principles. Similar to the cavalryman and his warhorse, the American GI and his jeep became inseparable.

Case Three addresses the domestication of the jeep in the Philippines, where successful motorization was again attributable to horse culture. Photographs, paintings, and observations from travelers, including the Philippine Commission Report of 1900-1901, and contemporary accounts and reflections of local scholars supplemented with phone interviews conducted in the Ilocano and Tagalog (Filipino) dialects prove useful sources for understanding the influence of horse legacy on motorization.

Results show that in each case the shift from muscle to motor power required a forced likeness between the motorcar and the horse. Automotive ubiquity did not occur simply because cars became much cleaner, more

efficient, and more affordable than horses. In each case, the motorcar relied upon society's long-standing working relationship with the horse in order to be understood and accepted. When cars began to be perceived as functioning like horses, rapid diffusion ensued as socioeconomic and cultural practices built around the horse were transferred to the motorcar.

url: http://hdl.handle.net/1813/2686
date: 2006-03-13
creator: Hahn, Alan J.; Knack, Diane Y.
viewed: 2002
title: Public Policy Education, Five Case Studies with Commentary and Discussion Questions
abstract: Case Studies: Canandaigua Lake Watershed Management, Dutchess County Farmland Preservation, Wastewise, Citizen Education on Solid Waste Disposal, Dutchess County Housing for the Elderly, Child Care Council of the Fingerlakes. The democratic process dictates that citizens act on matters that affect the society and environment in which they live. This bulletin uses five case studies where individuals utilized the wealth of knowledge that is Cornell University through the Cooperative Extension System to influence local environmental policy and create a child care council. This bulletin is a wonderful resource for Extension Educators or anyone wishing to teach empowerment to shape and affect local policy.

url: http://hdl.handle.net/1813/2699
date: 2006-03-14
creator: Le Bourg, Anne
viewed: 1978
title: STEROL REGULATION OF HEPATIC LIPASE. A NOVEL ROLE FOR STEROL REGULATORY ELEMENT BINDING PROTEIN IN CHOLESTEROL HOMEOSTASIS
abstract: Hepatic lipase (HL) plays a critical role in the modulation of plasma lipoprotein concentrations and specifically the concentrations of high density lipoproteins and small low density lipoproteins. HL is likely to play a role in cellular cholesterol homeostasis. Despite numerous studies aimed at characterizing HL regulation, the role of cholesterol in controlling HL expression and/or activity levels remains unclear. In Fu5AH and McA-RH7777 rat hepatoma cells, cholesterol treatment resulted in a marked decrease in secreted rat HL (rHL) mass. Similarly, the acyl-CoA:cholesterol acyltransferase inhibitor 58-035 decreased rHL secretion, suggesting that unesterified cholesterol mediated the downregulation. Cholesterol alone or in combination with 25-hydroxy-cholesterol, or 58-035 decreased rHL mRNA levels without affecting mRNA degradation rate. Sterol Regulatory Element Binding Proteins (SREBPs) are the major transcription factors mediating the feedback regulation of cholesterol levels. Sterol treatments decreased nuclear SREBPs in human HepG2 cells without affecting the activity of a -1480/+14 human HL (hHL) promoter luciferase construct in rat or human cells. In HepG2 cells, statin (compactin) treatment or over-expression of nuclear SREBP1a (nSREBP1a) decreased the activity of a -117/+14 hHL promoter construct and HL mRNA levels. Forced expression of nSREBP1a reversed the Upstream Stimulatory Factor 1 (USF1)-mediated activation of hHL promoter constructs. Gel-shift and supershift assays identified binding sites for Hepatocyte Nuclear Factor 1 (HNF1), HNF4 and USF1 within the hHL promoter at -70/-48, -252/-218, and -317/-298 respectively. Binding of these factors was diminished using nuclear extracts from sterol or compactin treated cells. No direct binding of nSREBP to the hHL promoter was identified. SREBP1a bound to USF1 in co-immunoprecipitation experiments, suggesting inhibition of HL transcription by cholesterol or compactin may occur through SREBP1 interaction with USF1 or its co-activators. In rat cells, cholesterol or 58-035 decreased rHL protein synthesis while protein turnover was unchanged. In vitro translation assays demonstrated a decrease in HL translation efficiency in sterol-treated cytoplasmic extracts. These experiments provide evidence for a novel aspect of the function of SREBPs in the crosstalk between cholesterol and fatty acid/triglyceride metabolism.

url: http://hdl.handle.net/1813/2703
date: 2006-03-15
creator: Rosenkrantz, Marcy E.
viewed: 3013
title: Advances in Scholarly Communication: Institutional Repositories
abstract: How do you make your research available to the widest possible public? How do you and others in your field measure its influence? How do you preserve it for the future? This semester Mann library is offering a series of presentations that deal with these pressing questions particularly for faculty, staff and graduate students.
With the rapid changes in scholarly communication in the digital age and the call for more open and economically sustainable methods of publication, institutional repositories--digital libraries where faculty and graduate students can deposit online copies of their publications, theses and data--have arisen as viable avenues for disseminating and preserving research. In this presentation, Marcy Rosenkrantz, Director of Cornell University Library Systems, will demonstrate DSpace, Cornell's institutional repository, and explain how it can help make scholarly work more accessible to a greater number of people, increase its citation, and store it for the future. This event was co-sponsored with Olin Library Mann Library Olin Library

url: http://hdl.handle.net/1813/2704
date: 2006-03-15
creator: Hartman, D. A.
viewed: 3512
title: Dairy Cattle Judging Made Easy
abstract: This handy 15-page bulletin teaches the basics of Dairy Cattle Judging, using photographs of examples and explanations of what to look for while judging. The bulletin describes scoring, timing and how to develop a system of observation. Reasons given orally or written are discussed, and advice and examples of a well-stated case are given. Dairy Cattle Judging Made Easy is no longer available in print form but it is made available here to help those looking for straightforward Judging techniques.

url: http://hdl.handle.net/1813/2707
date: 2006-03-15
creator: Howard, Ronald A. Jr.
viewed: 5174
title: Basic Fly Tying
abstract: This classic publication gives an introductory lesson in the art of creating your own wet and dry flies. Step by step instructions are given for creating a couple of dozen of the most popular flies. Directions written in plain language, a list of materials and tools, diagrams and color pictures round out this timeless Cooperative Extension and 4-H Bulletin.

url: http://hdl.handle.net/1813/2708
date: 2006-03-15
creator: Barrett, Christopher B.
viewed: 3330
title: Food aid after fifty years : recasting its role
abstract: Video recording of Christopher B. Barrett's talk about his book "Food aid after fifty years : recasting its role." Talk was held at Cornell University's Albert R. Mann Library on February 7, 2006.

url: http://hdl.handle.net/1813/2708

date: 2006-03-15
creator: Barrett, Christopher B.
viewed: 3330
title: Food aid after fifty years : recasting its role
abstract: Video recording of Christopher B. Barrett's talk about his book "Food aid after fifty years : recasting its role." Talk was held at Cornell University's Albert R. Mann Library on February 7, 2006.

url: http://hdl.handle.net/1813/2710
date: 2006-03-20
creator: Shoemaker, Christine A.;Tolson, Bryan A.
viewed: 1473
title: Watershed modeling of the Cannonsville Basin using SWAT2000: Model
abstract: This report describes the calibration and validation of a spatially distributed watershed model of the Cannonsville Reservoir Basin. The Soil and Water Assessment Tool 2000 (SWAT2000) was selected as the watershed model. A set of SWAT2000 inputs representative of the watershed conditions was derived from a wide array of data sources. Important methods were developed for converting available information to SWAT2000 inputs for groundwater soluble phosphorus concentrations, initial soil phosphorus levels and daily manure application. The Cannonsville Reservoir is a New York City water supply reservoir located in upstate New York that has historically experienced water quality problems associated with phosphorus loading. As a result, the watershed has been subjected to multiple water quality regulations including a recent Total Maximum Daily Load (TMDL) assessment for phosphorus. The reservoir watershed covers an 1178 km2 area and is dominated by agriculture, particularly dairy farming. The SWAT2000 model of the Cannonsville Reservoir Watershed is a valuable tool that can be used to help identify and evaluate quantitatively the long-term effects of various phosphorus management options for mitigating loading to the reservoir. SWAT2000 was developed by the Agricultural Research Service of the United States Department of Agriculture. SWAT2000 simulates through time the daily soil water balance, growth of plants, build-up and subsequent transport of soil nutrients to surface waters in response to agricultural management practices. The simulated mass balance of soil phosphorus in SWAT2000 is an important aspect of any watershed model that is to be used for regulatory purposes. The authors modified a few of the SWAT model equations to better simulate measured flows, sediment loading and phosphorus loading during the winter. The model was calibrated and validated for the prediction of dissolved and particulate phosphorus transport, and therefore also flow and sediment transport, against a large set of monitoring data. Extensive continuous flow and water quality data over a 10-year period from multiple locations within the basin were used for model calibration and validation. Sensitive model parameters were adjusted within their feasible ranges during calibration to minimize model prediction errors for daily flows and monthly sediment and phosphorus loading. At the main flow gauging station in the basin (Walton), draining almost 80% of the watershed, daily calibration resulted in model predictions of average flow within 1.0% of the measured average flow while the daily Nash-Sutcliffe (NS) measure was 0.79. Daily validation results at Walton showed the model predicted average flow within 4.5% of the measured average flow with a NS of 0.78. At the main water quality gauging station in the basin (Beerston), just downstream of Walton, the calibration results showed the model predicted the average monthly sediment and total phosphorus loading within 3% and 6% of their respective measured average monthly loadings. The monthly calibration NS values at Beerston for sediment and total phosphorus loading were 0.66 and 0.68, respectively. Validation results at Beerston showed the model predicted the average monthly sediment and total phosphorus loading within 27% and 9% of their respective measured average monthly loadings. The monthly validation NS values at Beerston for sediment and total phosphorus loading were 0.51 and 0.61, respectively. The largest errors in model predictions for phosphorus and sediment loading were always associated with peak flow prediction errors. Model predictions were also shown to qualitatively replicate bi-weekly sampling of total phosphorus concentrations taken from 10 different locations across

the watershed. Model simulation results over the calibration and validation period (1990-2000) highlighted a number of useful findings. The model predicted that 68% of the total phosphorus loading to surface waters in the watershed originates from active agricultural lands. Corn land use was simulated as the major source of agricultural phosphorus loading even though it covered only 1.2% of the watershed area. Areas North and East of the Town of Delhi tended to have the largest rates of phosphorus loading per unit area. Areas immediately surrounding the Cannonsville Reservoir that are not monitored were simulated to have substantially lower non-point source phosphorus (NPS) unit area loading rates than the monitored portion of the watershed.

url: http://hdl.handle.net/1813/2712
date: 2006-03-20
creator: Moon, Francis C.
viewed: 2483
title: Franz Reuleaux: Contributions to 19th C. Kinematics and Theory of
abstract: This review surveys late 19th century kinematics and the theory of machines as seen through the contributions of the German engineering scientist, Franz Reuleaux (1829-1905), often called the "father of kinematics". Extremely famous in his time and one of the first honorary members of ASME, Reuleaux was largely forgotten in much of modern mechanics literature in English until the recent rediscovery of some of his work. In addition to his contributions to kinematics, we review Reuleaux's ideas about design synthesis, optimization and aesthetics in design, engineering education as well as his early contributions to biomechanics. A unique aspect of this review has been the use of Reuleaux's kinematic models at Cornell University and in the Deutsches Museum as a tool to rediscover lost engineering and kinematic knowledge of 19th century history of machine.

url: http://hdl.handle.net/1813/2713
date: 2006-03-20
creator: Taimina, Daina
viewed: 2077
title: How it was to study and to teach mathematics in Cornell at the end of
abstract: Cornell University's Kroch Library Rare Book and Manuscript Division has a collection called "Department of Mathematics records 1877-1976". It was used already as case studies of the emergence of mathematical research at Cornell University in several publications; but I will talk about my experience going through these records and trying to imagine what mathematics students had learned before entering Cornell University (looking at entrance exams they were given). The earlier publications reported that mathematics entrance requirements to Cornell "were minimal by today's standards" but I found that this was not the case. Many of the students taking the entrance exams were engineering students. At that time the Reuleaux kinematic models collection was used to bring mathematical ideas into engineering curriculum. Preliminary report partially supported by National Science Foundation's National Science, Technology, Engineering, and Mathematics Education Digital Library (NSDL) Program under grant DUE-0226238. (Based on a talk given at AMS- MAA Joint Conference Special Session in History of Mathematics, January 18, 2003, Baltimore.)

url: http://hdl.handle.net/1813/2714
date: 2006-03-20
creator: Taimina, Daina; Henderson, David W.
viewed: 2456
title: Experiencing Meanings in Geometry
abstract: It is deep experience of meanings in geometry (and indeed in all of mathematics and well as art and engineering) that we believe deserve to be called aesthetic experiences. We believe that mathematics is

a natural and deep part of human experience and that experiences of meaning in mathematics should be accessible to everyone. Much of mathematics is not accessible through formal approaches except to those with specialized learning. However, through the use of non-formal experience and geometric imagery, many levels of meaning in mathematics can be opened up in a way that most people can experience and find intellectually challenging and stimulating. Many formal aspects of mathematics have now been mechanized and this mechanization is widely available on personal computers or even handheld calculators, but the experience of meaning in mathematics is still a human enterprise. Experiencing meanings is vital for anyone who wishes to understand mathematics, or anyone wishing to understand something in their experience through the vehicle of mathematics. We observe in ourselves and in our students that these are, at their core, aesthetic experiences. In this paper we will tell some stories of our experience of meanings in geometry and art. David's story starts with art and ends with geometry, while Daina's story starts with geometry and ends with art. However we both share the bulk in the middle, including experiences of non-Euclidean geometries and kinematics models.

url: http://hdl.handle.net/1813/2715
date: 2006-03-20
creator: Paventi, Carlo; Hai, Jimmy; Moon, Francis C.; Lipson, Hod
viewed: 2247
title: 3D-Printing the History of Mechanisms
abstract: Physical models of machines have played an important role in the history of engineering for teaching, analyzing, and exploring mechanical concepts. Many of these models have been replaced today by computational representations, but new rapid-prototyping technology allows reintroduction of physical models as an intuitive way to demonstrate mechanical concepts. This paper reports on the use of computer-aided modeling tools and rapid prototyping technology to document, preserve, and reproduce in three dimensions, historic machines and mechanisms. We have reproduced several pre-assembled, fully-functional historic mechanisms such as early straight line mechanisms, ratchets, pumps, and clock escapements, including various kinematic components such as links, joints, gears, worms, nuts, bolts, and springs. The historic mechanisms come from the Cornell Collection of Reuleaux Kinematic Models as well as models based on the work of Leonardo da Vinci. The models are available as part of a new online museum of mechanism, which allows visitors not only to read descriptions and view pictures and videos, but now also download, 3D-print and interact with their own physical replicas. Our aim in this paper is to demonstrate the ability of this technology to reproduce accurate historical kinematic models and machines as a tool for both artifact conservancy as well as for teaching, and to demonstrate this for a wide range of mechanism types. We expect that this new form of ?physical? preservation will become prevalent in future archives. We describe the background and history of the collection as well as aspects of modeling and printing such functional replicas.

url: http://hdl.handle.net/1813/2716
date: 2006-03-20
creator: Henderson, David W.; Taimina, Daina
viewed: 2946
title: How to Use History to Clarify Common Confusions in Geometry
abstract: We have found that students and even mathematicians are often confused about the history of geometry. Many expository descriptions of geometry (especially non-Euclidean geometry) contain confusing and sometimes-incorrect statements. Therefore, we found it very important to give some historical perspective of the development of geometry, clearing up many common misconceptions. In this paper we use history to clarify the following questions, which often have confusing or misleading (or incorrect) answers: 1. What is the first non-Euclidean geometry? 2. Does Euclid's parallel postulate distinguish the non-Euclidean geometries from Euclidean geometry? 3. Is there a potentially infinite surface in 3-space whose intrinsic

geometry is hyperbolic? 4. In what sense are the Models of Hyperbolic Geometry 'models'? 5. What does 'straight' mean in geometry? How can we draw a straight line? We noticed that most confusions related to the above questions come from not recognizing certain strands in the history of geometry. The main aspects of geometry today emerged from four strands of early human activity that seem to have occurred in most cultures: art/patterns, building structures, motion in machines, and navigation/stargazing. These strands developed more or less independently into varying studies and practices that eventually from the 19th century on were woven into what we now call geometry. In this paper we describe how these strands can be used to clarify issues surrounding these questions.

url: http://hdl.handle.net/1813/2717
date: 2006-03-20
creator: Henderson, David; Hembrooke, Helene; Saylor, John; Gay, Geri; Pan, Bing
viewed: 2911
title: Usability, Learning, and Subjective Experience: User Evaluation of
abstract: This paper describes an evaluation effort of the use of the Kinematic Model for Design Digital Library (K-MODDL) in an undergraduate mathematics class. Based on CIAO! framework, the research revealed usability problems and users? subjective experience when using K-MODDL, confirmed the usefulness of various physical and digital models in facilitating learning, and revealed interesting relationships among usability, learning, and subjective experience.

url: http://hdl.handle.net/1813/2718
date: 2006-03-20
creator: Taimina, Daina
viewed: 3809
title: Historical Mechanisms for Drawing Curves
abstract: Mechanical devices such as linkages for drawing curves are known already from Ancient Greece. Later linkages found use in different mechanical devices and machines like we can see it in 13th century drawings by Honnecourt or in 16th century machine drawings by Agricola. In 17th century Descartes accepted only those curves that had a mechanical device to draw them. Mechanical curve drawing devices later became incorporated into different machine design. In this paper examples from Reuleaux kinematic model collection in Cornell University are given and some history of linkages discussed.

url: http://hdl.handle.net/1813/2719
date: 2006-03-20
creator: Hirtle, Peter B.
viewed: 4634
title: Research, Libraries, and Fair Use: The Gentlemen's Agreement of 1935
abstract: The Gentlemen's Agreement of 1935 was a voluntary agreement that set guidelines for the limits of acceptable reproduction of copyrighted materials on behalf of scholars. Developed in response to the challenge posed by the easy and inexpensive photographic reproduction of research materials, the Agreement allowed library, archives, museum, or similar institutions to make single photographic copies of a part of a copyrighted work in lieu of loaning the physical item. The copies were not supposed to substitute for the purchase of the original work, and they were intended solely to facilitate research. Liability for misuse was to rest with the individual requesting the copy, and not with the institution making the reproduction.
The Gentlemen's Agreement has long been recognized as one of the most important landmarks in the history of the fair use privilege. In addition, the model of consensual voluntary guidelines agreed to by copyright owners and users, first used with the Gentlemen's Agreement, has become an important technique in clarifying the limits of fair use. Yet little attention has been paid to its genesis or intended audience. Most commentators

view the agreement as primarily a product of long and thoughtful negotiation with librarians, and hence a reflection of their interests. A closer examination of the history of the creation of the Gentlemen's Agreement, however, reveals both the limitations of the common assumptions about the Gentlemen's Agreement and also the limitations of mutually-agreed upon guidelines. The individuals involved with the negotiations from both the scholarly and publishing side were far from representative of their respective areas, and had no authority to negotiate on behalf of their respective spheres. The Agreement itself was largely a product of one afternoon's meeting, with limited discussion and review afterwards.

Furthermore, the Gentlemen's Agreement was intended to serve the needs of research scholars, not librarians. Through an accident of history, however, it was a librarian who conducted the primary negotiations with publishers. As a result, library interests, and not the interests of the research community, came to dominate. Furthermore, the librarian who led the negotiations was different from most of his colleagues in both his professional dependence on the good will of New York publishers and the limited scope of his own library's involvement with library reproduction. As a result, broader issues, such as the educational use of copyrighted material or the extent of acceptable copying under fair use, were consciously excluded from the discussions.

Most of all, the Agreement began the process of subjecting to legal scrutiny private behaviors that up to that point had existed outside of the copyright system. Private actions that had needed no defense in the past came to be viewed as potential infringements of copyright that needed the permission of the copyright owner. Copyright, which up to this time had been a system for controlling publication and widespread commercial distribution of material, began to be seen as a system for controlling private reproduction and use of copyrighted material.

Codifying an agreed-upon set of sanctioned behaviors was not without its dangers. In particular, behaviors that were not part of the initial discussions and hence were not officially sanctioned by the Agreement suddenly seemed suspect rather than simply unresolved. The Gentlemen's Agreement thus began to be seen by some as a defacto cap on the extent of acceptable reproduction by librarians and researchers.

In the 1976 Copyright Act, the limited vision of acceptable behavior by librarians acting on behalf of researchers became codified in law in Section 108. In very real ways, researchers, librarians, archivists, and museum specialists still live with the consequences of the process that led to the development of the Gentlemen's Agreement.

url: http://hdl.handle.net/1813/2720
date: 2006-03-23
creator: Peck, Gregory
viewed: 1975
title: ORCHARD PRODUCTIVITY AND APPLE FRUIT QUALITY OF ORGANIC, CONVENTIONAL, AND INTEGRATED FARM MANAGEMENT SYSTEMS
abstract: A thesis submitted in partial fulfillment of the requirements for the degree of MASTER OF SCIENCE WASHINGTON STATE UNIVERSITY Department of Horticulture and Landscape Architecture May 2004 The first of two studies undertaken in this thesis analyzed Washington State's organic apple (Malus domestica Borkh.) exports to the European Union (EU) as a case study of the internationalization of the organic marketplace. Washington's organic apple plantings have grown exponentially and as a result price premiums, which traditionally offset the greater costs of production and motivated many Washington growers to certify their apple orchards, have shrunk. At the same time, demand for organic apples in the EU has been outpacing production, thus making EU member states the most important export market for Washington's organic apples. However, an entanglement of regulatory bodies from around the world are involved in the certification of organic products, therefore making international sales very difficult. In this paper, I explored the expansion in the organic marketplace and the adjustments undertaken by growers, marketers, and regulatory agencies.

As part of a long-term comparison of organic, conventional, and integrated apple farm management systems in the Yakima Valley of Washington State, the second study investigated the productivity and fruit quality of ?Gala? apples during the ninth and tenth growing seasons. We found that the technology available for the organic system limited suitable crop load management and, therefore, consistent yields. Pest and weed control and fertility management were more difficult to manage in the organic system, as they all appeared to contribute to its limited productivity. However, organic apples had 6-10 N higher flesh firmness than conventional apples, and 4-7 N higher firmness than integrated apples. Additionally, consumers consistently rated organic apples to be firmer and to have better textural properties. Few consistent results were found for fruit flavor as measured by soluble solids concentration or titratable acidity, and this was also reflected in consumer panels. Total antioxidant activity was 10-15% higher in organic apples than conventional apples and 5-12% higher than integrated apples. The conventional and integrated apple farm management systems were more similar to each other than either was to the organic system throughout this study. Although organic apple production provided more management challenges than conventional systems, the superior quality of organic apples was a notable finding.

url: http://hdl.handle.net/1813/2722
date: 2006-03-23
creator: Rupp, Nathan; Andrews, Camille
viewed: 2436
title: Recording Narration for PowerPoint
abstract: This is a tutorial on recording narration for PowerPoint originally created for NS 315.

url: http://hdl.handle.net/1813/2723
date: 2006-03-24
creator: Andrews, Camille
viewed: 5123
title: Keeping Current with Educational Resources
abstract: From the presentation given on May 24, 2006 for Teacher Professional Development Day: “Are you so busy that you don’t have time to find new resources for your classes or keep up with your own professional development? Do you find great resources and then never have the time and ability to find or check them again? Wonder what other teachers are doing and thinking but never have enough time to chat? Have you heard your students talking about Blogger, Bloglines, and del.icio.us and wondered what they are and how you can use them? The latest web tools, like blogs, RSS (Really Simple Syndication), and social bookmarking and other personalized information services, can help. They can bring information to you automatically rather than you having to search for it and can let you know what a community of teachers is reading, thinking and talking about all with minimal effort from you. In a little over two hours, this hands-on workshop will show you how to:
Find and read educational blogs in order to keep up with current educational thinking and resources
Find and subscribe to RSS (Really Simple Syndication) feeds which arrive like your daily newspaper in web-based tool called Bloglines in order to have information and curriculum resources come to you automatically
Use social bookmarking tools (particularly del.icio.us and Scuttledu) in order to save and access the Internet resources you find from anywhere and to find out what other educators are interested in
Create a blog using Blogger software in order to communicate with other teachers and your students

url: http://hdl.handle.net/1813/2724
date: 2006-03-27
creator: Sam, Crowe

viewed: 2777
title: Purple Gallinule
abstract: Photographed on South Padre Island, Texas.

url: http://hdl.handle.net/1813/2725
date: 2006-03-27
creator: Sam, Crowe
viewed: 1538
title: Fulvous Whistling-Duck
abstract: Photographed on Galveston Island, Texas.

url: http://hdl.handle.net/1813/2740
date: 2006-04-03
creator: Toutonghi, Pauls Harijs
viewed: 2354
title: A World Without Maps: Post-National, English-Language Literature in the Late Twentieth Century
abstract: A consideration of a constellation of authors working in the fiction marketplace of the late twentieth century. The works of Michael Ondaatje, Jhumpa Lahiri, Aleksandar Hemon, and Anne Michaels are considered. The works are particularly analyzed for the way that they choose to depict the process of crossing borders and refugee life. The authors are grouped together along certain broad critical lines -- particularly along the way that they present the refugee experience with the voice of interiority. Links are then provided to the textual predecessors of these texts and writers, many of whom belong to the Modernist moment: Forster, Conrad, Kipling, and others. Some work is done to establish and define the term, post-national.

url: http://hdl.handle.net/1813/2741
date: 2006-04-03
creator: Chandler, Adam
viewed: 2896
title: Electronic Resource Management: Driving Factors: III Directors Symposium Berkeley, CA, March 14, 2006
abstract: This presentation presents a possible scenario for how electronic resource management (ERM) systems will evolve to serve libraries.

url: http://hdl.handle.net/1813/2744
date: 2006-04-06
creator: Garrett, Katherine
viewed: 2631
title: Diagnosis and management of glaucoma in a horse
abstract: Senior seminar (D.V.M.)--Cornell University, 2003.
Includes bibliographical references (leaves 10-12)."Sunny," a 15-year-old Quarter Horse mare, presented to the Cornell University Hospital for Animals on January 21, 2003 with a chief complaint of corneal edema and discomfort of her left eye. Upon presentation, Sunny was systemically healthy. Her left eye was mildly buphthalmic with an intraocular pressure of 32 mmHg (normal ? 30 mmHg) and it had severe, diffuse corneal edema. Her right eye was normal with the exception of a few keratic precipitates, suggesting a history of recurrent uveitis. Based upon these clinical signs, a diagnosis of left eye glaucoma was made. Medical management was attempted, but it proved to be unsuccessful. An experimental surgical option was pursued. An Ahmed anterior chamber shunt was implanted and portions of the ciliary body epithelium were destroyed with trans-scleral diode laser cyclophotocoagulation. This seminar will focus on the various treatment

options available for glaucoma therapy in horses. Dr. Katherine Cutter

url: http://hdl.handle.net/1813/2745
date: 2006-04-06
creator: Geiger, David A.
viewed: 3033
title: Canine thromboembolic disease : a case study and review
abstract: Senior seminar (D.V.M.)--Cornell University, 2003.
Includes bibliographical references (leaves 14-15).An adult castrated male golden retriever presented with signs of acute onset, progressive, peripheral neuromuscular disease. A complete medical work-up revealed massive thrombosis of the caudal aorta, femoral arteries, and right femoral vein, and a diagnosis of ischemic neuromyopathy was made. Underlying disease included hypercoagulability secondary to protein-losing nephropathy. Canine thromboembolic disease, although relatively uncommon, is associated with a wide range of underlying disorders and clinical presentations. Diagnosis and treatment of patients can be challenging, and clinical decisions may be complicated by limited data regarding efficacy of various therapeutic options. An overview of the etiology of canine thromboembolic disease, available diagnostic methods, and various treatment modalities, including thrombolytic therapies, will be presented. Advisor: Scott Schatzberg, DVM / Clinicians: Sharon Center, DVM, ACVIM; Scott Schatzberg, DVM

url: http://hdl.handle.net/1813/2746
date: 2006-04-06
creator: Good, Jennifer
viewed: 2839
title: Canine immune-mediated hemolytic anemia : presentation and treatment
abstract: Senior seminar (D.V.M.)--Cornell University, 2003. Includes bibliographical references (leaves 11-12). Canine immune mediated hemolytic anemia (IMHA) is an autoimmune disease characterized by the increased destruction of red blood cells by autoantibodies. A type two hypersensitivity reaction, it can be primary or secondary in nature. Most cases are primary (idiopathic) but secondary IMHA can occur with concurrent infection, such as with the blood parasites (Ehrlichia and Babesia) or leptospirosis, with inflammation or immune mediated processes such as systemic lupus erythematosus or with lymphoid malignancies. Viral infection can also predispose an animal to IMHA, in particular parvovirus and distemper. Treatment of IMHA centers on finding the causative agent, in the case of secondary disease, and on immunosuppressive therapy with drugs such as corticosteroids, cyclosporine, azathioprine and cyclophosphamide. The short-term prognosis for dogs with IMHA is guarded due to the multiple complications inherent in the acute stages of the disease. If an animal survives acute disease the long term prognosis is fair. Dogs frequently experience relapse and may become refractory to previous therapies with each relapse. This study centers on the case of Scooter DePew, an English bulldog, who was diagnosed at Cornell University's Hospital for Animals with IMHA in June of 2002.Advisor: Dr. Tristan Weinkle / Clinicians: Dr. Richard Goldstein, Dr. Stephen Barr, Dr. Tristan Weinkle

url: http://hdl.handle.net/1813/2747
date: 2006-04-06
creator: Gordon, Chris
viewed: 2653
title: Shaker syndrome in a cat
abstract: Senior seminar (D.V.M.)--Cornell University, 2003. Includes bibliographical references (leaf (11)).A 17-month old, castrated male, domestic shorthaired cat, presented for a 6-week history of whole body, generalized tremors, which had developed suddenly and were non-progressive. He had no history of exposure

to toxins. His tremors were most pronounced in his head and worsened when he was stressed or excited. He had jerky, erratic eye movements, which were thought to be another manifestation of his tremor disorder. The cat's neuroanatomic localization was a diffuse central nervous system disorder. CBC and Chemistry panel results ruled out extraneural causes for the tremors. Serologic tests for infectious diseases were negative. No significant abnormalities were appreciated on CT scan or CSF analysis. Muscle and nerve biopsies were normal. Because diagnostic tests and history failed to reveal an inflammatory, infectious, or toxic cause for tremors and because his signs were consistent with a steroid responsive tremor syndrome seen in dogs, he was treated with immunosuppressive doses of prednisone. His condition improved dramatically within a few days and full recovery was reached within 2 weeks. Dr. Scott Schatzberg

url: http://hdl.handle.net/1813/2748
date: 2006-04-06
creator: Greenberg, Marc J.
viewed: 1141
title: Bilateral slipped capital femoral epiphyses secondary to physeal dysplasia in a cat
abstract: Senior seminar (D.V.M.)--Cornell University, 2003. Includes bibliographical references (leaf 10). Slipped capital femoral epiphysis is a well-described phenomenon in humans, characterized by an atraumatic separation of the femoral head from the femoral neck at the capital physis. The syndrome most commonly affects overweight to obese adolescent males. A similar syndrome has been described in cats, pigs, and dogs. In all species, the histopathologic lesions are similar, consisting of irregular clusters of chondrocytes surrounded by abundant chondroid matrix on either side of an unusually wide physis. This lesion in cats has been called physeal dysplasia. The etiology is idiopathic, but is believed to be multifactorial, with genetic, nutritional, endocrine, and other mechanisms involved in the pathogenesis. Slipped capital femoral epiphysis is a recently described entity in veterinary medicine, and should be included in the differential diagnosis for a young cat or dog with an acute or insidious onset of unilateral or bilateral hip lameness or pain with no history of trauma. Dr. Eric Trotter

url: http://hdl.handle.net/1813/2749
date: 2006-04-06
creator: Groocock, Geof.
viewed: 1794
title: Rinderpest surveillance in eastern African wildlife
abstract: Senior seminar (D.V.M.)--Cornell University, 2003. Includes bibliographical references (leaves 11-12).Rinderpest is a morbillivirus that affects many arteriodactyls, particularly cattle, Cape buffalo (Syncerus caffer), lesser kudu (Tragelaphus imberbis) and eland (Taurotragus oryx). Designated by the Office Internationals des Epizooties (OIE) as a Class A disease, it has many world trade ramifications. It presently exists in regions of India, the Middle East and Eastern Africa, where there was a wildlife epidemic between 1993 and 1997. The disease is spread by direct or close contact of aerosolized virus, and epitheliotrophic clinical signs are observed. Diagnosis is achieved at necropsy or through use of serological screening tests including ELISA, virus neutralization and immunoflourescence. In the 1990's a wildlife epidemiosurveillance network was established to investigate and control rinderpest in Eastern Africa, including Kenya, Uganda, Tanzania and Ethiopia. Many wildlife species were immobilized for serological sampling. The epidemic zone was determined in Kenya and prevalence of rinderpest in buffalo during the 1993-1997 epidemic was calculated at 95%. A minimum sampling fraction of 2% during an epidemic was determined. This project established a permanent serosurveillance network and results carried many epidemiological implications for rinderpest monitoring and control. Dr. Richard Kock

url: http://hdl.handle.net/1813/2750

date: 2006-04-06
creator: Haverly, Christopher P.
viewed: 2846
title: Vascular ring anomaly resulting in esophageal stricture in a cat
abstract: Senior seminar (D.V.M.)--Cornell University, 2003. Includes bibliographical references (leaves 13-14). Vascular rings are the result of developmental anomalies of which there are six anatomical variations that will result in an esophageal stricture. Of these, by far the most common is a retained right fourth aortic arch and a left sixth ligamentum arteriosum. Vascular rings can effect multiple animals in the same litter with no sex predilection. They are more common in medium to large breed dogs with a much higher incidence in German shepherds, Irish Setters, Great Danes, and Boston Terriers. Vascular ring anomalies are uncommon in cats with about half of the reported cases occurring in Siamese and Persian breeds. Diagnosis of a vascular ring anomaly is based on history, physical examination, clinical signs, radiographs, an esophagram, and esophagoscopy. Treatment consists of stabilization and surgical correction via division of the vascular ring and periesophageal fibrous bands. This can be accomplished with an intercostals thoracotomy or via thoracoscopic surgery. James A. Flanders

url: http://hdl.handle.net/1813/2751
date: 2006-04-06
creator: Hawley, Bridget
viewed: 1951
title: Equine corneal ulcer with keratomalacia : medical management
abstract: Senior seminar (D.V.M.)--Cornell University, 2003. Includes bibliographical references (leaf (10)).”Rodeo” is an 8-year-old thoroughbred stallion that presented to the Emergency service at Cornell for treatment of a melting corneal ulcer. Rodeo had sustained a traumatic injury to the left eye three days prior to presentation. The referring veterinarian had begun treatment with topical neomycin-polymixin-bacitracin ointment and topical tobramycin alternating every two hours throughout the day. Oral flunixin meglumine and topical atropine were given for management of secondary uveitis and no treatments were performed at night. On presentation at Cornell, Rodeo was excited, alert, and responsive. Except for his left eye, physical exam was unremarkable. Rodeo was sedated and the auriculopalpebral and supraorbital nerves were blocked, and a complete ophthalmic exam was performed. His left eye was found to have an axial, deep stromal melting ulcer approximately 2cm in diameter. The most central 4mm was much deeper with only about 1/5 of corneal stromal thickness remaining. Due to insurance concerns medical management was elected. A subpalpebral lavage system was placed to facilitate hourly application of topical medications. Rodeo was treated with several different antibiotics as well as anticollagenases to control the keratomalacia (melting). Atropine was used at varying frequencies to control the secondary uveitis. After much time and dedication the eye healed well with minimal scarring.

url: http://hdl.handle.net/1813/2752
date: 2006-04-06
creator: Huckell, Alisa
viewed: 2801
title: Pulmonary thromboemboli : a case of acute respiratory distress in a shih tzu : recognition, diagnosis, and treatment options
abstract: Senior seminar (D.V.M.)--Cornell University, 2003. Includes bibliographical references (leaves 14-15).Pulmonary thromboembolism is an uncommon but likely under-diagnosed condition in small animal medicine owing to both lack of awareness and difficulty in making an antemortum diagnosis (1). Pulmonary thromboembolism (PTE) occurs when a thrombus, thrombi, embolism, or emboli causes occlusion of one or more pulmonary arteries (1). Besides hypoxemia, this occlusion of the perfusion to the lungs can result

in severe pulmonary hypertension, eventually leading to right sided heart failure (cor pulmonale.) Because of this ventilation/perfusion mismatch and secondary right-sided heart failure, patients with pulmonary thromboembolism often present in acute respiratory distress. Pulmonary thromboembolism carries with it a guarded to grave prognosis, despite proper diagnosis, intervention, and treatment. The goal of this report is to use a real case of pulmonary thromboembolism to distinguish pulmonary thromboemboli from other causes of acute respiratory distress; to identify common presenting complaints and associated clinical signs, physical exam findings, and predisposing factors for pulmonary thromboemboli; and to discuss diagnostic and treatment options available. Dr. Jason Pintar

url: http://hdl.handle.net/1813/2753
date: 2006-04-06
creator: Hutten, Erica
viewed: 1807
title: Intra-abdominal abscess causing jejunal obstruction in a mare
abstract: Senior seminar (D.V.M.)--Cornell University, 2003. Includes bibliographical references (leaf 9).A 12-year-old Standardbred mare was evaluated for colic. An intra-abdominal mass causing jejunal obstruction was found during emergency exploratory celiotomy. Following surgical removal of the mass, the mare made a full recovery, and the mass was determined to be an abscess. Initial aerobic culture of the abscess revealed Rhodococcus equi, and it was suspected that this was a rare case of Rhodococcus equi infection in an adult horse. Anaerobic culture results and histopathologic evaluation of the abscess instead proved that the abscess was secondary to intestinal perforation and contamination of the peritoneal cavity by enteric bacteria. Dr. Woodie

url: http://hdl.handle.net/1813/2754
date: 2006-04-06
creator: Jensen, Kristen
viewed: 1789
title: Free ranging rhesus monkeys (Macaca mulatta) and herpesvirus B : public health risks in Puerto Rico
abstract: Senior seminar (D.V.M.)--Cornell University, 2003. Includes bibliographical references (leaves (10-11)).Two species of introduced non-human primates currently thrive on the island of Puerto Rico: rhesus macaques (Macaca mulatta) and patas monkeys (Erythrocebus patas). While most of the monkeys live in groups in the southwest region of Puerto Rico, recent events have indicated the primates may be dispersing or are being introduced to other areas on the island, including urban areas. Both species are thought to have originated from the La Parguera Primate Facility (LPPF), which was administered by the Caribbean Primate Research Center (CPRC) of the University of Puerto Rico's Medical Science Campus from 1961 until 1982. While both species are a concern as agricultural nuisances and as exotic species competing with indigenous fauna, the rhesus monkey presents a serious public health concern due to the potential for carrying and transmitting herpesvirus B. As macaque populations continue to grow and encounters with humans become more common, risk of transmission of herpesvirus B to humans has become a serious consideration and ongoing challenge for public health officials in Puerto Rico. While this disease has been the focus of attention in primate research and laboratory environments across the United States over the past seventy years, public knowledge of risks involved with interacting with rhesus monkeys is deficient. Puerto Rico faces a formidable challenge, as the majority of their population, including much of the healthcare community, is unaware of zoonotic risks presented by this introduced species. A recent exposure of 25 persons to a seropositive rhesus macaque in Bayamon, Puerto Rico underscores the importance of public education regarding these health risks associated with interactions between humans and non-human primates.

url: http://hdl.handle.net/1813/2755
date: 2006-04-06
creator: Johnson, JoAnne
viewed: 2810
title: Ozzy's oronasal fistula : case study of congenital cleft palate in a bulldog puppy
abstract: Senior seminar (D.V.M.)--Cornell University, 2003. Includes bibliographical references (leaves 12-13).A 10-week-old male Bulldog puppy was evaluated by the Soft Tissue Surgery Service at Cornell University Hospital for Animals in early September 2002 for surgical consultation and possible correction of a cleft palate. Dr. Jim Flanders
url: http://hdl.handle.net/1813/2756
date: 2006-04-06
creator: Kearns, Margaret
viewed: 3190
title: Systemic lupus erythematosus in a dog : diagnosis and treatment
abstract: Senior seminar (D.V.M.)--Cornell University, 2003. Includes bibliographical references (leaves 14-15). The following case report describes the presentation, diagnostic workup, and treatment of a 9-year-old female spayed Lhasa Apso who presented to the Emergency Service at Cornell University Hospital for Animals with a presumptive diagnosis of systemic lupus erythematosus (SLE) from the referring veterinarian. Definitive diagnosis of SLE is often complicated given the many clinical manifestations of the disease. A discussion of the diagnostic procedures, diagnostic criteria, as well as the theoretical pathogenesis of the disease, follows. Canine SLE is the animal model for the more common disorder of human SLE. Therefore, though the disease is not very prevalent in the canine population, it is an area of intense research.Tristan Weinkle, DVM

url: http://hdl.handle.net/1813/2757
date: 2006-04-06
creator: Koelemeyer, Shawn
viewed: 2371
title: Metabolic bone disease in the green iguana (Iguana iguana) for the general small animal clinician
abstract: Senior seminar (D.V.M.)--Cornell University, 2003. Includes bibliographical references (leaf 15). Metabolic bone disease (MBD) is a pathologic demineralization of the skeleton occurring in numerous species due to various factors. MBD affects a great number of captive green iguanas (Iguana iguana), most cases are the result of failure of the owner to provide a proper diet and environment. Typically the failure to provide adequate husbandry results in a condition in which a juvenile green iguana experiences skeletal demineralization and develops skeletal deformities. A less common presentation of MBD that is occurring with greater frequency is a condition in which the adult green iguana develops renal dysfunction that leads to loss of calcium homeostasis that results in muscle tetany and skeletal demineralization. Two cases presented to Cornell University's Hospital for Animals exotic animal clinic are discussed that exemplify different presentations, diagnoses, pathophysiology and treatments of MBD in the green iguana. Dr. James K. Morrisey

url: http://hdl.handle.net/1813/2758
date: 2006-04-06
creator: Lamphere, Dawna Voelkl
viewed: 1231
title: Investigation into a suspected outbreak of teratospermia due to pyrethroid poisoning at a bull stud
abstract: Senior seminar (D.V.M.)--Cornell University, 2003. Includes bibliographical references (leaf 13).The possibility that exposure to bifenthrin induced an outbreak of teratospermia at a bull stud was investigated. Semen evaluation and clinical examination of reproductive organs were performed weekly on hospitalized

sentinel cases and at critical intervals on bulls remaining at stud. During the 13 days following exposure to bifenthrin, semen quality was poor, with significantly decreased progressive motility, high percent of distal midpiece reflexes, and reduced ejaculate volume. However, clinical examination of bulls revealed no gross abnormalities of reproductive organs. Evaluation 26 days following exposure showed overall improvement in semen quality, with progressive motility increased, percent distal midpiece reflexes reduced, and ejaculate volume trending upwards. Clinical examination continued to demonstrate no abnormalities of reproductive organs. Semen quality recovered to levels nearly equivalent to those observed before exposure and was similar when re-evaluated at 64-days postexposure. These data suggest a potential deleterious effect of bifenthrin on epididymal, but not testicular function. Dietrich Volkmann, BVSc, MMedVet (Gyn)

url: http://hdl.handle.net/1813/2759
date: 2006-04-06
creator: MacLeod, Alexander G.
viewed: 1517
title: Management of acute renal failure in a cat
abstract: Senior seminar (D.V.M.)--Cornell University, 2003. Includes bibliographical references (leaves 16-17).A 6 year-old, spayed female, domestic shorthair cat was admitted for evaluation of a pathologic fracture of the right calcaneus associated with a soft-tissue mass. The patient became anuric and inappetant 2 days following a right pelvic limb amputation. Complete blood count and serum biochemical analysis revealed anemia, severe azotemia and metabolic acidosis. Acute oliguric renal failure was diagnosed and intravenous fluid and diuretic therapy were initiated. The azotemia, electrolyte imbalances, and acidosis were refractory to 6 days of intensive medical management. The patient was transferred to a facility with hemodialysis. Hemodialysis therapy was successful in reducing the metabolic abnormalities, and the patient was discharged. One month later, the patient presented for evaluation of heart failure and presumptive aortic thromboembolism. The patient died in hospital despite aggressive medical treatment. Current therapies in the management of acute renal failure in the cat will be discussed, including intravenous fluid and diuretic therapy, peritoneal dialysis, hemodialysis, and renal transplantation. Dr. John F. Randolph, Dr. Olivier Toulza

url: http://hdl.handle.net/1813/2760
date: 2006-04-06
creator: Martel, Django
viewed: 2895
title: Adrenocortical disease in the ferret
abstract: Senior seminar (D.V.M.)--Cornell University, 2003. Includes bibliographical references (leaves (15-16)).Adrenocortical disease is a common condition that afflicts the domestic ferret. This paper will explore a case history as an example of this problem and then will examine ferret adrenocortical disease in general. Dr. James K. Morrisey

url: http://hdl.handle.net/1813/2761
date: 2006-04-06
creator: McMullen, Brendan R.
viewed: 2335
title: Evaluation of chronic weight loss in a horse
abstract: Senior seminar (D.V.M.)--Cornell University, 2003. Includes bibliographical references (leaves 18-19)."Spencer", an 11 year old Thoroughbred gelding, presented to the Equine Hospital at Cornell University on January 28, 2003 for evaluation of chronic weight loss of 6 months duration. "Spencer" was moved from Colorado to Connecticut in August of 2002, at which time he began to lose weight despite excellent care by his owner. The horse was referred for evaluation of the chronic weight loss, depression, persistent

polycythemia, and an unexplained episode of rhabdomyolysis (CK=14,000). This paper will focus on the differential diagnosis for weight loss in a horse, how each was considered, and sequential diagnostic testing to arrive at the presumptive antemortem diagnosis of diffuse alimentary lymphoma, and the complicating factors including difficulty in distinguishing alimentary lymphoma from diffuse inflammatory bowel disease. Although not definitively proven, a histopathologic diagnosis of inclusion body myositis, and clinical diagnosis of polycythemia were also made in this case. Jerome VanBiervliet, DVM

url: http://hdl.handle.net/1813/2762
date: 2006-04-06
creator: Miner, Ed
viewed: 2137
title: Using rectal temperature measurements in fresh cow monitoring programs and treatment protocols
abstract: Senior seminar (D.V.M.)--Cornell University, 2003. Includes bibliographical references (leaf 7).Today's dairy industry is marked by decreasing or stagnant profit margins and tight labor markets. Input costs continue to rise faster than the milk price. At the same time cost of living increases and government regulations have forced farm managers to increase the wages and benefits paid to employees and themselves. Payroll is second only to feed cost, in operating expenses on dairies. This puts farm managers under increasing pressure to use their employees more efficiently and effectively. While our ability to manage the nutrition and genetics of cattle has dramatically increased the productivity of dairy cattle, it also causes additional stresses that need to be managed.

url: http://hdl.handle.net/1813/2763
date: 2006-04-06
creator: Morgan, Erica D.
viewed: 3962
title: Canine muscular dystrophy : case presentation and pathophysiology
abstract: Senior seminar (D.V.M.)--Cornell University, 2003. Includes bibliographical references (leaves 11-12). Canine muscular dystrophy is a rare, inherited disorder. Thus far, all of the mutations characterized in dogs with muscular dystrophy have been in the dystrophin gene. This paper presents a case of muscular dystrophy in a Cocker Spaniel. Preliminary studies suggest that her genetic defect is in one of the sarcoglycan genes.

url: http://hdl.handle.net/1813/2764
date: 2006-04-06
creator: Nichols, R.W., III.
viewed: 1540
title: Balancing career and personal life : practice ownership models for the next generation of veterinary medicine
abstract: Senior seminar (D.V.M.)--Cornell University, 2003. Includes bibliographical references (leaves (10-11)).This seminar analyzes both the ongoing gender shift in the veterinary medical profession and the changing social expectations regarding the roles of males and females in the workplace and in the home. It then considers the impact of these trends on the career aspirations of veterinarians. Finally, it identifies strategies employed by four practice owners in their effort to balance their careers and their personal lives. David E. Lee, DVM, MBA

url: http://hdl.handle.net/1813/2765
date: 2006-04-06
creator: Olsen, Karin
viewed: 1641

title: Malignant histiocytosis in a cat
abstract: Senior seminar (D.V.M.)--Cornell University, 2003. Includes bibliographical references (leaves 12-13).Tobey Jones, a 13 year-old male castrated Domestic Shorthair cat, presented to the Emergency Service at Cornell University Hospital for Animals for evaluation of dypsnea and acute onset, episodic open-mouth breathing. The cat's history included many months of inappetance, weightloss, and episodic, non-productive coughing. Physical examination revealed generalized poor body condition (body score: II/V), multiple skin nodules, and increased lung sounds. Cytology of multiple skin nodules and of pleural fluid showed a predominance of round cells with abundant cytoplasm. The morphologic of the round cells, combined with a history of pulmonary disease, lead to a cytologic diagnosis of malignant histiocytosis (MH). Malignant histiocytosis (also termed disseminated histiocytic sarcoma) is a type of round cell tumor composed of antigen presenting cells of dendritic cell origin. Histiocytic disease can be broadly classified as either a reactive or neoplastic process, distinguished by clinical behavior, histopathologic features, and immunohistochemical markers. Malignant histiocytosis is an aggressive, systemic, neoplastic condition that is uncommon in the dog, although Bernese Mountain Dogs, Rottweilers, and Retrievers are overrepresented. It is rare in the cat. In both species, MH has a rapidly progressing clinical course and is poorly responsive to chemotherapy. Its prognosis is grave. This paper will focus on the classification of histiocytic disease, and what is known to date about MH in feline patients. Dr. Dennis Bailey, Dr. John Randolph

url: http://hdl.handle.net/1813/2766
date: 2006-04-06
creator: Ospina, Paula
viewed: 2154
title: Artificial insemination in a developing country : a tool for better production
abstract: Senior seminar (D.V.M.)--Cornell University, 2003. Includes bibliographical references (leaf 8).During August and September of 2002, I spent six weeks in Loja, Ecuador working with the Universidad Tecnica Particular de Loja agriculture department on an Expanding Horizons project. The goal of this project was to introduce artificial insemination (AI) to the small farmers of Loja, Ecuador and set up a cooperative group that will continue to use artificial insemination in that area. The project consisted of four 1-week seminars, which served to introduce the farmers to the theory and practice of AI as well as set up the group that will form the cooperative. The participants of the seminar had access to sperm from three bulls from which to choose ten insemination straws. Genex donated the semen for this project with the goal of helping to initiate the use of AI in Loja, Ecuador. The materials and supplies used for this project were purchased with funds from a grant from the Lincoln Ellsworth Foundation as part of an Expanding Horizons project. This paper will talk about artificial insemination and its use as a tool for better production in a developing country, with focus on the work and data collected during my trip to Loja, Ecuador. Dr. Mary Smith

url: http://hdl.handle.net/1813/2767
date: 2006-04-06
creator: Ottosen, Marilyn
viewed: 2689
title: Surgical repair of a corneal laceration in an alpaca
abstract: Senior seminar (D.V.M.)--Cornell University, 2003. Includes bibliographical references (leaf 9).Corneal lesions can be treated medically, surgically, or both, depending on the etiology and extent of the lesion, and the clinician's expertise. This report focuses on the different types of protective and supportive surgical approaches used in management of corneal lesions, and includes a discussion of indications for five different types of surgery. The repair of a corneal laceration in a 10 year old alpaca is used as an example of a combination of two different types of surgical management, as well as medical treatment used for resolution of a traumatic corneal lesion. Dr. Audrey Yu-Speight

url: http://hdl.handle.net/1813/2768
date: 2006-04-10
creator: Perez, Laura M.
viewed: 2162
title: Acute liver failure in a horse
abstract: Senior seminar (D.V.M.)--Cornell University, 2003. Includes bibliographical references (leaf (9))."Rebel," a 13 year old quarter horse gelding, presented to the Large Animal Clinic at Cornell University in mid-June for a four day history of icterus, change in attitude and lethargy. Rebel was kept on a 4 acre pasture with two other horses on which they spent the majority of the day. They were brought in at night and given a small amount of hay and grain to supplement what they ate while out on pasture. One of these horses, a 28 yr old gelding, had what the owners described as an "episode of jaundice" 2-3 months earlier that resolved with treatment with sulfamethadiazines and fluid therapy by the referring DVM. The other horse, Rebel's half brother, JR, had been euthanized by the referring DVM the morning of Rebel's presentation to the LAC. Approximately ten days earlier, JR started acting unusual and wanted to stay inside, specifically in the darkest corner of his stall. A day or two later, he was noticed to be icteric. JR quickly progressed from lethargy and depression, to ataxia, seizuring and head pressing. He was euthanized about one week after the onset of icterus. Abbreviated bloodwork from the referring DVM showed signs of dehydration (elevated hematocrit and total protein), a possible inflammatory process (neutrophilia) and liver damage (elevated gamma-glutamyltransferase). Approximately two days prior to the onset of JR's clinical signs, a large portion of the pasture had been brush hogged. None of these horses had received tetanus antitoxin or other equine serum product in the past 4-6 weeks. Based on the rapid progression of JR's clinical signs and the similarity to Rebel's current clinical signs, his owners decided to bring Rebel to Cornell.

url: http://hdl.handle.net/1813/2769
date: 2006-04-10
creator: Ponzio, Nicole
viewed: 2919
title: Transvenous pacemaker implantation for the treatment of a canine bradyarrhythmia
abstract: Senior seminar (D.V.M.)--Cornell University, 2003. Includes bibliographical references (leaves 15-16).Sammy, a 12-year-old, male, neutered Beagle presented to Cornell University's Hospital for Animals on October 24, 2001 as a referral for an episode of collapse that occurred the previous day. Upon presentation to Cornell, Sammy was quiet, alert, and responsive, but was very lethargic. Physical examination revealed severe bradycardia with audible S4 heart sounds and a grade III/VI left apical systolic murmur. Jugular pulses were present, and femoral pulses were strong bilaterally. An electrocardiogram (ECG) revealed third degree AV block with an atrial rate of 160 bpm and a ventricular escape rhythm of 20-22 bpm. Thoracic radiographs taken at the referring veterinarian revealed mild cardiomegaly with normal pulmonary vasculature. Echocardiography was performed and showed mild to moderate dilation of all four cardiac chambers. The left ventricle was hyperdynamic with an increased fractional shortening (43%). There was moderate mitral insufficiency during both systole and diastole. Severe thickening and prolapsing of the mitral valve was diagnosed as presumptive valvular endocardiosis. The treatment of choice for complete heart block, whether the animal is symptomatic or not, is transvenous pacemaker implantation. That same afternoon, a transvenous permanent pacemaker was surgically implanted in Sammy. Due to the inherent instability of Sammy's ventricular escape rhythm, it was decided that a temporary pacemaker would be placed prior to the implantation of a permanent pacemaker. The pacemaker used in Sammy's case was a single chamber rate responsive pacemaker with a bipolar lead placed in the endocardium of the right ventricle. Dr. N. Sydney Moise, Dr. Amara Estrada

url: http://hdl.handle.net/1813/2770
date: 2006-04-10
creator: Reagan, Kelly
viewed: 1612
title: An orf outbreak in a herd of Boer cross goats
abstract: Senior seminar (D.V.M.)--Cornell University, 2003. Includes bibliographical references (leaf (13)).A goat herd outbreak of skin lesions characterized by scabby, papillomatous dermatitis on the lips and extending into the buccal cavity was investigated. Initial clinical signs in the first animal affected included acute submandibular edema with swollen mandibular lymph nodes. Necrotic areas were observed on the buccal mucosa. Lesions characteristic of orf developed on the muzzle. Over the next seven days, all but one in the group of 38 doe, doeling and wether goats developed similar lesions. A group of 15 buck kids housed separately was initially unaffected, but two developed mild lesions later. This herd of Boer cross goats had no prior history of orf. Lesions in adult animals were similar in severity and duration to those in the younger animals. Orf virus was found in samples of scab material analyzed using PCR and electron microscopy. All cases resolved spontaneously. Orf is an epitheliotropic parapoxvirus that infects sheep and goats. Virulence factors have been identified through research directed at the immunomodulatory characteristics of the virus. Autogenous or commercial vaccines are available, but are fully virulent virus. Orf is zoonotic to humans, typically causing single target lesions on distal extremities, with rare more serious lymphadenopathies described. Control is directed at strategic vaccination, and limiting infectious material buildup in the environment associated with lambing or kidding. Dr. Mary Smith

url: http://hdl.handle.net/1813/2771
date: 2006-04-10
creator: Reiller, Edward M.
viewed: 1972
title: Clinical aspects of canine multiple melanoma
abstract: Senior seminar (D.V.M.)--Cornell University, 2003. Includes bibliographical references (leaves 11-12). Multiple myeloma is a neoplasm of well-differentiated B cell lymphocytes (plasma cells) typically originating from the bone marrow. The malignancy is most often associated with the transformation of a single B cell line, which may secrete a homogenous immunoglobulin product (known as paraprotein or M-component). The most common M-components secreted are IgG or IgA. Several clinical presentations may occur in conjunction with multiple myeloma in the dog. These include hyperviscosity syndrome, immunodeficiency, bone disease, hypercalcemia, bleeding diathesis, renal disease, cardiac failure, and variable cytopenias. This report describes a seven year old, female spayed, mixed breed dog with a two month history of intermittent epistaxis, inappetence, and lethargy. A CBC, chemistry panel, and serum and urine electrophoresis were consistent with multiple myeloma. The dog had several clinical signs associated with multiple myeloma, which will be discussed. Tristan Weinkle

url: http://hdl.handle.net/1813/2772
date: 2006-04-10
creator: Reynders, Marylisa E.
viewed: 1892
title: Deep stromal keratitis in a horse
abstract: Senior seminar (D.V.M.)--Cornell University, 2003. Includes bibliographical references (leaf 9).Infectious ulcerative keratitis, especially keratomycosis is relatively more common among horses than other domestic species. This paper will present surgical management of an infected corneal ulcer in a horse, that was refractory to previous topical medical management. Discussion of several clinically relevant factors will follow. Dr. Audrey Yu-Speight

url: http://hdl.handle.net/1813/2773
date: 2006-04-10
creator: Roland, Risa M.
viewed: 1383
title: Surface ECG reflections of repolarization in the aging beagle and mongrel
abstract: Senior seminar (D.V.M.)--Cornell University, 2003. Includes bibliographical references (leaf 7).To determine whether electrocardiograph (ECG) parameters of repolarization change across age within the beagle or mongrel dog and/or change across breed at the same age. Dr. N. Sydney Moise

url: http://hdl.handle.net/1813/2774
date: 2006-04-10
creator: Rozyczko, Vincent
viewed: 2065
title: Strangles and its complications in a one year old quarter horse
abstract: Senior seminar (D.V.M.)--Cornell University, 2003. Includes bibliographical references (leaf 12). Streptococcus equi subspecies equi infection of horses, commonly known as "strangles", is a highly prevalent bacterial disease that continues to plague the equine population. Although relatively fragile outside of the host, the organism is highly contagious and can be transmitted easily between animals by inhalation or ingestion of aerosolized bacteria. The bacterium, a gram positive, highly encapsulated member of the Lancefield Group C streptococci, primarily causes upper respiratory tract and associated lymph node disease solely in equines, but the organism has the ability to cause pathologic sequelae in other regions of the animal's body. Furthermore, the clinical signs of strangles can greatly increase the risk of infection and colonization by opportunistic pathogens. This report discusses a case of Streptococcus equi infection in a 16 month old Quarter Horse that featured numerous systemic sequelae and coinfection by multiple infectious agents. Dr. Rachel Gardner

url: http://hdl.handle.net/1813/2775
date: 2006-04-10
creator: Schmitt-Weaver, Heidi
viewed: 3128
title: Pleuropneumonia in a Thoroughbred brood mare
abstract: Senior seminar (D.V.M.)--Cornell University, 2003. Includes bibliographical references (leaves 8-9). Pleuropneumonia is a life threatening disease in the horse that requires prompt and aggressive treatment. This paper will present a case of pleuropneumonia in a Thoroughbred brood mare, which developed severe complications of endotoxemia, laminitis, disseminated intravascular coagulation and thrombophlebitis. Treatment, outcome and pathophysiology are discussed. The etiology of pleuropneumonia involves an inciting stress, contamination and infection of the lung paranchyma with oropharyngeal microorganisms and extension of the infection to the pleural membranes. Stress factors include shipping, strenuous exercise, anesthesia, primary viral infection and immunosuppressive disorders. Significant pleural effusion and diminished respiratory capacity results. Anaerobic infection of the lung and pleura occur approximately 5-7 days after the initial signs of pneumonia. Secondary complications are common. A delay in aggressive treatment and the presence of an anaerobic infection lend to a poor prognosis. Dr. Gillian Perkins, Dr. Rachel Gardner

url: http://hdl.handle.net/1813/2776
date: 2006-04-10
creator: Schnee, Steven

viewed: 2278
title: Cryptorchid testicular teratoma in a horse
abstract: Senior seminar (D.V.M.)--Cornell University, 2003. Includes bibliographical references (leaf 8).Maplewood Rusty was a two year old male Clydesdale horse that presented with a chief complaint of stallion-like behavior following removal of the right testicle, which was the only one that had descended. Physical exam revealed a healthy horse, and a left testicle that could not be palpated. Laparoscopy was performed to remove the abdominally cryptorchid testicle, and a large cystic structure associated with the testicle was found. 3.5 liters of clear yellow fluid were drained off the cyst to allow removal of the testicle. The testicle was submitted for histopathology, which revealed a mix of testicular, neuronal, salivary, and thyroid tissues. Histologic diagnosis was testicular teratoma. Recovery from surgery was normal, and long term prognosis is excellent. Dr. Christopher Beinlich

url: http://hdl.handle.net/1813/2777
date: 2006-04-10
creator: Schwedt, Heather
viewed: 3049
title: Plumbism in a poodle
abstract: Senior seminar (D.V.M.)--Cornell University, 2003. Includes bibliographical references (leaf 12). Cinnamon is a nine-year-old female spayed toy poodle. She presented to the emergency service at Cornell with a chief complaint of seizures. Cinnamon had had a cluster of seizures including behavior such as convulsions, screaming, and attempts to bite. The seizures lasted for less than a minute each and Cinnamon had no prior history of seizure activity. On presentation, Cinnamon was notably obtunded. She was admitted to the intensive care unit and stabilized. A neurologic examination suggested a prosencephalic lesion with no lateralizing signs. Over the next few days she continued to improve and a diagnosis of Plumbism (lead toxicosis) was obtained. She began chelation therapy at Cornell and made an amazing recovery. The diagnosis and treatment of Plumbism will be discussed. Dr. Jason Pintar

url: http://hdl.handle.net/1813/2778
date: 2006-04-10
creator: Smoliga, James
viewed: 2403
title: Ilial fracture as a cause of lameness in a racing Thoroughbred
abstract: Senior seminar (D.V.M.)--Cornell University, 2003. Includes bibliographical references (leaves 8-9). Buddha is a three year old Thoroughbred colt racehorse who presented to the large animal orthopedic surgery service of the Cornell University Hospital for Animals on July 9, 2002 for a lameness work up. Three weeks prior to presentation, Buddha flipped in his stall and landed on his pelvic region. Since then, Buddha was displaying hindlimb lameness during workouts. He had been receiving non-steroidal anti-inflammatory medications (NSAIDS) as well as acupuncture and massage therapy. Dr. Beinlich, Dr. Fortier, Dr. Nixon

url: http://hdl.handle.net/1813/2779
date: 2006-04-10
creator: Sosa, Daniel
viewed: 1956
title: Canine aggression : recognition and management of common aggressive behavioral problems in dogs
abstract: Senior seminar (D.V.M.)--Cornell University, 2003. Includes bibliographical references (leaf 15).On June 25th, 2002, “Sam”, a 2-year-old male castrated American Cocker Spaniel presented to the Behavioral Service at the Cornell University Hospital for Animals (CUHA) because of his behavioral problem of aggression. According to the owners, this aggressive behavior was directed towards other animals in the

household as well as towards people. In addition, the client claimed that Sam has been easily excitable, unresponsive to verbal commands and difficult to control physically. Sam actually has bitten a 5-year-old child on the face, fortunately only breaking the skin. In another occasion, he bit the client's brother on his leg, resulting in similar superficial injuries. Dr. K. A. Houpt

url: http://hdl.handle.net/1813/2780
date: 2006-04-10
creator: Stalzer, Irene
viewed: 1322
title: Calcium oxalate urolithiasis in the canine patient
abstract: Senior seminar (D.V.M.)--Cornell University, 2003. Includes bibliographical references (leaf 10).A seven year old male castrated Pomeranian, presented to the Cornell Hospital for Animals in January 2003 with a chief complaint of bladder stones and chronic urinary tract infections. Physical exam and bloodwork were within normal limits. Ultrasound and radiographs of the urinary tract at Cornell revealed several calculi in the bladder and penile urethra. A cystotomy was performed and the stones in Tino's bladder were removed. The stones were analyzed and found to be composed of predominantly calcium oxalate. Currently, calcium oxalate is the second most common mineral type identified in canine uroliths. This seminar discusses the prevalence, etiology, pathophysiology, and diagnosis of these stones. Current treatment protocols and prevention measures including dietary recommendations will also be addressed. Dr. Richard Goldstein, Dr. James Flanders

url: http://hdl.handle.net/1813/2781
date: 2006-04-10
creator: Stokowski, Annie
viewed: 2895
title: An outbreak investigation of ionophore toxicity in a group of Jersey heifers
abstract: Senior seminar (D.V.M.)--Cornell University, 2003. Includes bibliographical references (leaves 14-15). Lavender, an 8 month old Jersey heifer, presented to the Cornell Large Animal Hospital on August 8, 2002 for a diagnostic evaluation and necropsy examination as part of a herd outbreak investigation. Eight pastured heifers out of 20 (40%) had died on the farm over the past 12 days. Their clinical signs included anorexia, depression, diarrhea, respiratory distress, muscle tremors, and death. Post-mortem examination on the farm revealed meaty lungs in addition to increased pleural and peritoneal fluid. All pastured heifers received grain once daily that was supplemented with monensin, a monovalent ionophore. No new environmental changes were noted on the farm by the owner. Dr. Gillian Perkins, Dr. Monica Figueiredo

url: http://hdl.handle.net/1813/2782
date: 2006-04-10
creator: Sullivan, Elizabeth
viewed: 2804
title: Feline vaccine-associated sarcoma : a case report and current management options
abstract: Senior seminar (D.V.M.)--Cornell University, 2003. Includes bibliographical references (leaves 10-11).Feline vaccine-associated sarcomas (VASs) are locally aggressive tumors that have presented many challenges to the veterinary profession over the last decade. These tumors are most commonly associated with the administration of killed adjuvanted vaccines, but the etiopathogenesis is yet to be confirmed. Ideal management involves early detection and multimodality treatment, including wide surgical resection, radiation, and chemotherapy. Still, this approach has only achieved modest success. At this point in time, efforts to manage this problem are focused on prevention. This paper presents the case of a 7-year-old spayed female Siamese cat with a recurrent vaccine associated sarcoma. Her presentation is typical of those seen at

referral institutions, and will be used to illustrate the process of diagnosis and considerations for management of the disease. Rodney L. Page, DVM, MS

url: http://hdl.handle.net/1813/2783
date: 2006-04-10
creator: Venator, Kurt R.
viewed: 3485
title: Cytosine arabinoside therapy for meningoencephalitis of unknown etiology in seven dogs
abstract: Senior seminar (D.V.M.)--Cornell University, 2003. Includes bibliographical references (leaf 11). Granulomatous meningoencephalitis (GME) is a sporadic, rapidly progressive disease of unknown etiology. Clinical signs can be quite variable and prognosis is dependent upon the morphologic form of GME and severity of the underlying lesion. Definitive diagnosis necessitates histopathological examination of neuronal tissues and this is often impractical antemortem. Granulomatous meningoencephalitis is likely to be overdiagnosed in patients with encephalitis of unknown etiology. As such, we propose the terminology of meningoencephalitis of unknown etiology (MUE) when clinical signs are consistent with GME but CNS tissues are unavailable for histopathologic studies. Although immunosuppression has formed the cornerstone of MUE therapy, corticosteroids typically are ineffective as a sole therapy for long-term disease control. To date, the use of cytosine arabinoside as a therapeutic agent for the treatment of MUE has received little attention in the veterinary literature. Here, we report the use of a cytosine arabinoside-prednisone therapy protocol for the treatment of MUE in 7 dogs. The 7 patients were included based upon history, clinical signs, CT analysis, CSF analysis, and negative diagnostic investigations for infectious encephalitis. The treatment protocol consisted of administering cytosine arabinoside (Cytosar) at a dose of 50 mg/m2 SQ BID q3 weeks for a duration of 4 months, along with a tapering dose of prednisone. The mean survival time for the 7 dogs in this study was 291 days, with 6 of the 7 dogs alive. Six dogs were categorized as in clinical remission and 1 dog died after 101 days. In a retrospective study, dogs with focal GME that were treated with sole corticosteroid therapy had a mean survival time of 41 days (Munana and Luttgen 1998) suggesting that treatment with corticosteroids alone is unsatisfactory. While preliminary in nature, the case series presented in this report suggest a potentially important role for cytosine arabinoside in the treatment of dogs with MUE. Scott Schatzberg, DVM, PhD

url: http://hdl.handle.net/1813/2784
date: 2006-04-10
creator: Wang, Lotus
viewed: 1824
title: Renal and nutritional causes of secondary hyperparathyroidism
abstract: Senior seminar (D.V.M.)--Cornell University, 2003. Includes bibliographical references (leaf (10)). Secondary hyperparathyroidism is caused by any condition causing a chronic depression in the serum calcium level. Low serum calcium levels lead to conpensatory overactivity of the parathyroid glands. Renal failure is the most common cause of secondary hyperparathyroidism. Nutritional causes such as inadequate calcium intake/absorption or excess phosphorus intake are the other main cause of secondary hyperparathyroidism. Chronic renal insufficiency leads to decreased phosphate excretion and hyperphosphatemia which directly lowers serum calcium levels by the mass law Ca x P = K. Chronic renal insufficiency also leads to decreased levels of the active form of Vitamin D3 which leads to decreased Ca absorption from the gut and hypocalcemia which stimulates the parathyroid gland. (Robbins) Parathyroid hormone (PTH) activates osteoclasts, thereby mobilizing calcium from bone, increases renal tubular reabsorption of calcium, thereby conserving free calcium, increases urinary phosphate excretion, thereby lowering serum phosphate level, and increases conversion of vitamin D to its active dihydroxy form in the kidneys, thereby augmenting GI calcium absorption. Bone resorptive disease is a significant sequelae to longterm hyperparathyroidism.Dr.

Richard Goldstein, Dr. Kevin Wallace

url: http://hdl.handle.net/1813/2785
date: 2006-04-10
creator: Warrell, Brendan M.
viewed: 1282
title: Diagnosis and management of pelvic fractures in the dog
abstract: Senior seminar (D.V.M.)--Cornell University, 2003. Includes bibliographical references (leaf 11)."Mia", an 18 month-old, spayed female mixed breed dog, presented to the Triage Service at the Cornell University Hospital for Animals (CUHA) approximately 24 hours following involvement in a road traffic accident. Initial assessment and stabilization was accomplished at a local emergency veterinary clinic. Mia was then transferred to CUHA for additional diagnostics and treatment. Diagnostics at CUHA revealed pulmonary trauma as well as multiple pelvic fractures and a left femoral fracture. The femoral fracture was plated; the ilial fracture fragment, which involved the cranial aspect of the acetabulum was excised. This paper discusses "Mia's" pre and post surgical treatment, the decision making process in choosing an effective treatment strategy for the pelvic fracture patient, and some common coincidental injuries found in patients sustaining pelvic fractures. Laurel Hays DVM

url: http://hdl.handle.net/1813/2786
date: 2006-04-10
creator: Whittred, Susan
viewed: 1820
title: Traditional age vs. pediatric spays & neuters in cats : is it worth the wait?
abstract: Senior seminar (D.V.M.)--Cornell University, 2003. Includes bibliographical references (leaves 12-14). The problem of companion animal overpopulation in the United States is a serious issue wrought with multifaceted barriers standing in the way of complete elimination. This paper will focus on surgical sterilization as one means to control over-population. Recent studies estimate that 3 to 4 million cats are euthanized annually and these numbers do not include those unwanted animals that are left to starve or to die of trauma or exposure. One of the main reasons cited for relinquishment of animals to a humane society (36.4%) was that the animals were from an unwanted litter. Traditionally, shelters across the country have adopted animals out with contracts mandating that new owners spay or neuter their pets. Studies have shown that there is less than 60% compliance with this mandate, despite preadoption screening, prepayment of surgical fees, reduced surgical fees, neuter contracts, and follow up activity by shelter personnel. Even in those households that do comply, it can be estimated that many of those cats may wander outside prior to gonadectomy to make their contribution to the overpopulation problem. Just a single pair of cats may be the progenitors of 174,760 kittens in 7 years even if they and their offspring are not allowed to reproduce at full potential. Dr. Leslie Appel

url: http://hdl.handle.net/1813/2787
date: 2006-04-10
creator: Yalloff, Barrie
viewed: 3038
title: Extrahepatic portosystemic shunt in a cat : clinical presentation, diagnosis, and treatment
abstract: Senior seminar (D.V.M.)--Cornell University, 2003. Includes bibliographical references (leaves 8-9). Midnight Louie Gehres, a six year old, male-neutered, domestic short haired cat, presented to the Cornell University Hospital for Animals Small Animal Internal Medicine Service in December 2001 for diagnostic tests to investigate a suspected portosystemic shunt. The cat had a three year history of severe, intermittent urinary tract signs, including recurrent urinary tract infections, cystitis, urinary tract obstructions and

cystic calculi. In the three years prior to presentation, the cat had several cystotomies; stone analyses revealed struvite, calcium oxalate, and ammonium biurate stones. In the three months prior to presentation, the cat had elevated post-prandial bile acids on three separate tests. Pre-prandial levels were variable. Tristan Weinkle, DVM

url: http://hdl.handle.net/1813/2788
date: 2006-04-10
creator: Yee, Kristine
viewed: 1301
title: Seronegative myasthenia gravis in a silky terrier
abstract: Senior seminar (D.V.M.)--Cornell University, 2003. Includes bibliographical references (leaves (13-14)). "Bella", a 2-yr FS Silky Terrier, was referred to Cornell University Hospital for Animals on 3/19/02 with a chief complaint of tremors. Bella was acquired from a pet store, and was an indoor dog with no travel history. She had no history of vomiting, diarrhea or sneezing, and Bella was reportedly healthy prior to onset of signs. Since 11/01, Bella stopped voluntarily jumping up onto the owner's bed. In 1/02, Bella may have tumbled down the stairs, perhaps causing, or resulting in, her current clinical signs. In 2/02, Bella started to show signs of decreased appetite, decreased drinking, twitching, tremors, weakness/collapse, and lateral recumbency that was worse in the mornings and seemed to improve through the day. During her episodes of collapse, Bella would try righting herself up, but was too weak to do so. By 3/02, Bella also had epiphora, ptyalism, a weak bark, and a wet cough that was worse in the mornings. Referring complete blood count, chemistry panel, and pre- and post-prandial bile acids were all within normal limits, with creatine kinase levels at the low range of normal. Dr. Scott J. Schatzberg

url: http://hdl.handle.net/1813/2789
date: 2006-04-11
creator: Artacho, Cecilia Alix
viewed: 1557
title: Lobular dissecting hepatitis in a 17 month old cocker spaniel
abstract: Senior seminar (D.V.M.)--Cornell University, 2004. Includes bibliographical references (leaves 15-16). A 17 month old castrated male Cocker Spaniel was evaluated for inflammatory bowel disease, an undefined hepatopathy and gastrointestinal hemorrhage. Preliminary diagnostic testing revealed changes consistent with liver disease and gastrointestinal disease. An abdominal ultrasound showed multiple acquired portosystemic shunts in the area behind the left kidney and minimal small cystic calculi. Because of the concern for varix formation, an exploratory laparotomy was performed in an attempt to localize the source of gastrointestinal hemorrhage and to obtain liver biopsies for histopathology. The presence of multiple acquired portosystemic shunts was confirmed during surgery, but a clear source of gastrointestinal hemorrhage was not identified. Histopathologic findings were consistent with lobular dissecting hepatitis, a type of idiopathic hepatic fibrosis seen in young dogs. Clinical findings could be attributed to portal hypertension secondary to diffuse hepatic fibrosis. Despite repeated attempts at therapy, gastrointestinal hemorrhage persisted. The dog was humanely euthanized three weeks after discharge. John F. Randolph, D.V.M., A.C.V.I.M., Dr. Tristan Weinkle, D.V.M.

url: http://hdl.handle.net/1813/2790
date: 2006-04-11
creator: Benander, Benjamin
viewed: 1735
title: Severe hypertrophic osteodystrophy in a great Dane puppy
abstract: Senior seminar (D.V.M.)--Cornell University, 2004. Includes bibliographical references (leaf 11).

A four month old, intact male Great Dane puppy was examined for progressive lameness, recumbency, fever, anorexia, lethargy, and respiratory distress. Hypertrophic Osteodystrophy was diagnosed based on radiographic findings and clinical signs. An interstitial pattern of unknown etiology was noted on thoracic radiographs, and low grade Disseminated Intravascular Coagulation was presumed based on prolonged coagulation times. Clinical signs, diagnostic testing, pathology, etiology and treatment of HOD are discussed, as well as acute management of systemic inflammatory conditions. Alejandro Aguirre, Carrie Goldkamp

url: http://hdl.handle.net/1813/2791
date: 2006-04-11
creator: Bilderback, Ann
viewed: 3050
title: Generalized tetanus in a four-month-old bull mastiff puppy
abstract: Senior seminar (D.V.M.)--Cornell University, 2004. Includes bibliographical references (leaf 15). "Tucker" Gold, a four-month-old intact male Bull Mastiff puppy, presented to the Emergency Service of the Matthew J. Ryan Veterinary Hospital of the University of Pennsylvania on September 2, 2003 with a twenty-four hour history of trismus, risus sardonicus, difficulty standing, trembling, and dysphagia. A diagnosis of tetanus was made based on history and clinical signs. Despite progression to generalized tetanus and complications due to acute upper airway obstruction and pneumonia, Tucker improved with medical treatment and intensive nursing care. A rare and potentially fatal disease, tetanus is caused by the neurotoxin tetanospasmin produced by Clostridium tetani. This paper will discuss the etiology, pathogenesis, diagnosis, treatment and a case presentation of tetanus. Dr. Alexander de Lahunta

url: http://hdl.handle.net/1813/2792
date: 2006-04-11
creator: Bowen, Julia A.
viewed: 2613
title: Health benefits of the human-animal bond
abstract: Senior seminar (D.V.M.)--Cornell University, 2004. Includes bibliographical references (leaves (8-11)). Although our relationship with companion animals has been assumed to be beneficial by many, scientific proof is still very necessary. Many in the medical and social services fields continue to view a pet as a frivolous expense. Recent research has linked companion animals to numerous benefits including better cardiovascular health, decreased physician visits and prescription costs, and better medication regime adherence. I feel this information is important to publicize so that we may protect the human-animal bond in times of personal crisis. If service providers accept the importance of the human animal bond, they will be more willing to facilitate its preservation. Dr. Emily Levine

url: http://hdl.handle.net/1813/2793
date: 2006-04-11
creator: Campbell, Megan
viewed: 3600
title: A case of male pseudohermaphroditism in a horse
abstract: Senior seminar (D.V.M.)--Cornell University, 2004. Includes bibliographical references (leaf 10). A 2-year-old Arabian filly, presented with the chief complaints of stallion like behavior and abnormal external genitalia present since birth. Examination revealed a cresty neck, a glans penis protruding from the clitoral fossa, and moderate mammary gland development. The patient had a blind-ended vestibule with the urethral papilla present on the ventral floor of the cranial vestibule, but no uterus or ovaries. The chromosomal sex of the patient was 64,XX. Blood estrogen and progesterone levels were consistent with a male or a mare in anestrus. An hCG stimulation test indicated that testicular tissue was present, but levels were more

compatible with those of a cryptorchid stallion. The patient underwent laparoscopic gonadectomy, whereby gonads, both grossly and microscopically appearing to be testicles, were removed. The gonads were located at the entrance to the internal inguinal rings. The external genitalia was reconstructed into a more normal mare appearance. Following gonadectomy, the patient's clinical signs resolved. Dr. Beinlich, Dr. Gradil, Dr. Krekler, Dr. Woodie

url: http://hdl.handle.net/1813/2794
date: 2006-04-11
creator: Carver, Valerie H.
viewed: 3072
title: Coughing in a dog secondary to intrapulmonary migrating foreign body
abstract: Senior seminar (D.V.M.)--Cornell University, 2004. Includes bibliographical references (leaves 12-13). A German shorthaired pointer was presented with a one month history of coughing and a 10-day history of mild lethargy. Physical examination was unremarkable. Hematological abnormalities included normocytic, normochromic, nonregenerative anemia; hyperglobulinemia, hypoalbuminemia, and a stress leukogram. The dog was found to have ingested a wooden kabob stick. The stick was thought to have perforated through the wall of the stomach, liver, and diaphragm, and to have subsequently lodged within the pulmonary parenchyma. Surgical removal of the stick and surrounding lung tissue through thoracotomy and partial lung lobectomies resulted in full clinical recovery. Dr. Michele Steffey

url: http://hdl.handle.net/1813/2795
date: 2006-04-11
creator: Clark, Andrea
viewed: 1934
title: Recurrent hemoabdomen in a polo pony
abstract: Senior seminar (D.V.M.)--Cornell University, 2004. Includes bibliographical references (leaves 11-12). "Nola," a nine year old Thoroughbred mare, presented to the Cornell University Equine and Farm Animal Hospital on March 16, 2003 and September 8, 2003 with a chief complaint of ataxia and weakness, respectively. "Nola" had no other known health problems and competed successfully at professional polo between these presentations. Physical examination at both presentations revealed tachycardia and pale mucous membranes. She had a declining PCV over the first night of both episodes that corrected within two to three days. Neurological examination in March revealed vestibular and general proprioception deficits, with neurological examination in September being normal. Ultrasound examination of the abdomen at both episodes revealed approximately 20 cm of fluid in the abdomen with an echogenicity characteristic of blood. No obvious source of the bleeding could be detected via ultrasound exam. As a definitive diagnosis for the cause of hemoabdomen could not be ascertained, supportive therapy for blood loss was administered. The details of this case and the differential diagnoses for hemoabdomen and for acute onset neurological deficits will be discussed. Dr. Van Biervliet, Dr. Gardner

url: http://hdl.handle.net/1813/2796
date: 2006-04-11
creator: Corcoran, M. Denise
viewed: 2637
title: A case of hypoadrenocorticism (Addison's disease) in a dog
abstract: Senior seminar (D.V.M.)--Cornell University, 2004. Includes bibliographical references (leaf 11). Primary hypoadrenocorticism, or Addison's disease, is an uncommon endocrine disease that is believed to result from immune-mediated destruction of the adrenal cortices. All layers of the adrenal cortex are typically affected, resulting in glucocorticoid, mineralocorticoid, and sex hormone deficiency. The history

and clinical signs are usually vague, nonspecific, and often wax and wane. Clinical pathology often reveals electrolyte abnormalities resulting from the lack of aldosterone. Definitive diagnosis is achieved with the adrenocorticotrophic hormone (ACTH) stimulation test. Therapy involves replacing the deficient mineralocorticoids and glucocorticoids. Addison's disease can be well controlled with medication, and the prognosis for most dogs is good to excellent. In the following case discussion, many of the patient's clinical signs and bloodwork abnormalities were consistent with hypoadrenocorticism; however, other aspects of the clinical presentation made the diagnosis more difficult. Dr. Tabitha Shanies

url: http://hdl.handle.net/1813/2797
date: 2006-04-11
creator: Cruz-Cardona, Janice A.
viewed: 1320
title: Clinical management of chylothorax in a dog
abstract: Senior seminar (D.V.M.)--Cornell University, 2004. Includes bibliographical references (leaf (8)). A ten-month old male castrated Bull Mastiff presented to the Cornell University Hospital for Animals Emergency Service for evaluation of acute respiratory distress. Physical exam, thoracic radiography and thoracocentesis identified pleural effusion. Chylothorax was diagnosed by cytology, triglyceride levels higher than serum and a cholesterol/triglyceride ratio <1. No underlying cause for increased lymphatic and venous pressure or occlusion of lymphatic and venous drainage was found using thoracic and abdominal ultrasonography, echocardiography, thoracic radiography, heartworm serology, CBC and serum chemistry analysis. Medical management in the form of a low fat diet, thoracocentesis and Rutin was instituted. After two additional emergency presentations following medical management, the owners opted for surgery. Thoracic duct ligation, partial pericardiectomy and omentalization were performed with subsequent decrease in effusion volume and change to inflammatory nature. Diaphragmatic hernia from the omentalization site developed post-surgically and was surgically repaired. The chylous effusion had not recurred five months post surgery. Dr. Laurel Hays

url: http://hdl.handle.net/1813/2804
date: 2006-04-11
creator: Villars, Monique T.; Dijkman, Jozef P.M.; Stedinger, Jery R.;v an Beek, Eelco; Loucks, Daniel P.
viewed: 4245
title: Water Resources Systems Planning and Management: An Introduction to Methods, Models and Applications
abstract: Throughout history much of the world has witnessed ever-greater demands for reliable, high-quality and inexpensive water supplies for domestic consumption, agriculture and industry. In recent decades there have also been increasing demands for hydrological regimes that support healthy and diverse ecosystems, provide for water-based recreational activities, reduce if not prevent floods and droughts, and in some cases, provide for the production of hydropower and ensure water levels adequate for ship navigation. Water managers are challenged to meet these multiple and often conflicting demands. At the same time, public stakeholder interest groups have shown an increasing desire to take part in the water resources development and management decision making process. Added to all these management challenges are the uncertainties of natural water supplies and demands due to changes in our climate, changes in people's standards of living, changes in watershed land uses and changes in technology. How can managers develop, or redevelop and restore, and then manage water resources systems - systems ranging from small watersheds to those encompassing large river basins and coastal zones - in a way that meets society's changing objectives and goals? In other words, how can water resources systems become more integrated and sustainable?

url: http://hdl.handle.net/1813/2805

date: 2006-04-11
creator: van Beek, Eelco;Loucks, Daniel P.
viewed: 1915
title: Water Resources Systems Planning and Management - Exercises
abstract: These are exercises associated with each chapter and software of the book: "Water Resources Systems Planning and Management". These exercises are designed to help individuals obtain a better understanding of the subject matter. Some exercises require the use of optimization modeling which can be accomplished by using the "Solver" option of Excel. The book uses the demo version of LINGO software that can be downloaded from "http://www.lindo.com".

url: http://hdl.handle.net/1813/2806
date: 2006-04-11
creator: Tonozzi, Daniel
viewed: 3917
title: Laura Goes Burlesque: The Petrarchan Parodies of Francesco Berni
abstract: From the introduction: Surely, the critical aspect of Berni?s work cannot be ignored. As parody of its poetic predecessors, Berni?s poems operate as what Thomas Greene describes as an ?engagement of a subtext in a dialectic of affectionate malice.? As not only parodic, but burlesque, this malice can at certain times be quite scathing. Berni does in fact himself place his poetic style in direct opposition to highly-stylized standard of Petrarchism: ?Io ho un certo stil da muratori,? he claims in a capitolo addressed to Ippolito de?Medici. In this work, Berni reflects on his poetic project, claiming eels as his poetic muse and humor as his purpose. He admits to singing the song of a poor shepherd and says he is destined ?far versi da boschi e da ville,? instead of crafting odes to Achilles. At the same time, however, Berni?s poetry does not necessarily operate as an outright usurper of the Petrarchan poetic tradition. Rather than debunk the reigning poetic dowager and replace her with pure innovation, Berni?s poetry calls for a reexamination of the Petrarchan original and an appreciation for and engagement of its original interpretive complexity. His jocular work re-identifies a linguistic richness in the original Petrarchan poetry, engages this complexity, and by doing so encourages other poetry to do the same. Thus, contrary to Frantz, Berni?s work is in fact as its most fascinating when it utilizes and engages Petrarchan images, not when it deviates from them. Furthermore, that deviation itself is not so much a militant revolution as it is a fundamentalist renewal of faith, causing the reader to return to Petrarch?s original words and appreciate their interpretive potential. Italian Studies Colloquium

url: http://hdl.handle.net/1813/2807
date: 2006-04-11
creator: van Beek, Eelco;Loucks, Daniel P.
viewed: 1965
title: Water Resources Systems - Exercises: Genetic Algorithms and Artificial Neural Networks
abstract: Some exercises require the use of Genetic Algorithms and Artificial Neural Networks and can be solved using the software named GANLC and ANN together with their help files. Instructors can obtain solutions to the exercises by contacting the authors (DPL3@cornell.edu or Eelco.vanbeek@wldelft.nl). A ZIP file of the software is included which can be used after downloading.

url: http://hdl.handle.net/1813/2808
date: 2006-04-11
creator: van Beek, Eelco;Loucks, Daniel P.
viewed: 2992
title: Water Resources Systems Planning and Management - Facts about Water

abstract: Some selected facts...1 | Facts about water in Africa...9 | Facts about water in Asia...10 | Facts about water in Europe ...14 | Facts about water in Latin America and the Caribbean...15 | Facts about water in the US...16 | Facts on women and water...18 | Facts about water and population...19 | Facts about water and natural disasters...20 | Facts about floods...21 | Facts on desertification and drought...22 | Facts about drylands...24 | Facts about wetlands...25 | Facts about groundwater...26 | Facts about fog...27 | Facts about water quality...28 | Facts about river basins...29 | Facts about water use...30 | Facts about water and energy...32 | Facts about water and cities...33 | Facts on water and (un)sustainable development...34 | Facts about water price...35 | Facts about biodiversity...36 | Facts about water and dams...38 | Facts on water and poverty...39 | Facts about water, religions and beliefs...40 | Facts about the UN millennium development goals...41

url: http://hdl.handle.net/1813/2830
date: 2006-04-13
creator: Loucks, Daniel P.
viewed: 2225
title: Examples Decision Support Systems for River Basin Simulation
abstract: The following are programs designed to simulate water development and management policies in river basins. They are generic in that they are designed to be applicable to a wide variety of specific river basin water resource system configurations, institutional conditions, and management issues. Each of these example programs is based on a nodelink network representation of the water resource system being simulated. Some include optimization that replaces a more detailed representation of operating policies. All contain menudriven graphics based interfaces that facilitate user interaction. These programs are appropriate for use in shared vision exercises involving stakeholder involvement in model building and simulations. The brief descriptions below have been taken from the model web pages.

url: http://hdl.handle.net/1813/2831
date: 2006-04-13
creator: Loucks, Daniel P.
viewed: 1942
title: RIBASIM Version 6.33.13 : River Basin Simulation Model
abstract: This contains the README.txt file for Ribasim system. Also a ZIP file containing the contents of the cd of RIBASIM containing 3 sets of Setup executables each stored in a separate directory : (1) Directory "PROGRAMS" contains all programs and program related files. The windows files will always be stored in the windows system directory... (2) One or more directories "DATA" containing all data for some example basins incl maps... (3) Directory "Manuals" contains the Ribasim User's manual and Technical Reference manual in Pdf-format which you can print with the Acrobat Reader free software for viewing and printing Adobe PDF files. You can download this software from internet site : http://www.adobe.com/products/acrobat/readermain.html... (4) Directory "License files" contains the license file(s) which belong to your hardware key(s) If the license file License.dat is missing then RIBASIM runs in the "No license" mode which means that you can use RIBASIM only for limited network schematizations... (5) Various directories with Ribasim information and Ribasim basin applications.

url: http://hdl.handle.net/1813/2832
date: 2006-04-13
creator: Loucks, Daniel P.
viewed: 2913
title: WEAP ("Water Evaluation And Planning" system)
abstract: WEAP ("Water Evaluation And Planning" system is a user-friendly software tool that takes an integrated approach to water resources planning. Freshwater management challenges are increasingly

common. Allocation of limited water resources between agricultural, municipal and environmental uses now requires the full integration of supply, demand, water quality and ecological considerations. The Water Evaluation and Planning system, or WEAP, aims to incorporate these issues into a practical yet robust tool for integrated water resources planning. WEAP is developed by the Stockholm Environment Institute's Boston Center at the Tellus Institute. For more information check out the web site: http://www.weap21.org/. Included here is a ZIP file of the WEAP system.

url: http://hdl.handle.net/1813/2833
date: 2006-04-13
creator: Loucks, Daniel P.
viewed: 1948
title: WBalMo Software Installation and User's manuals
abstract: WBalMo (Water balance Model) is an interactive simulation system for river-basin management. These manuals were distributed with the UNESCO produced "Water Resources Systems Planning and Management" by Daniel P. Loucks and Eelco van Beek.

url: http://hdl.handle.net/1813/2835
date: 2006-04-17
creator: Riskin, Daniel K.
viewed: 2052
title: Biomechanics of terrestrial locomotion in bats
abstract: This dissertation concerns the way in which bats move on the ground. Chapter one is a literature review on the subject, from an evolutionary perspective, that includes contributions from this thesis.
In chapter two, I test an hypothesis frequently used to explain the poor crawling abilities of bats compared with mammals that do not fly. According to that hypothesis, most bats shuffle awkwardly because their hindlimbs are too long and slender to support their body weights, but vampire bats walk well because their hindlimbs are more robust than those of other bats. I used force plates to test a prediction of the hindlimb-strength hypothesis that the peak hindlimb forces of walking vampire bats should be greater than the forces exerted by the legs of poorly crawling bats. I found that shuffling bats (Pteronotus parnellii) exert larger hindlimb forces than walking vampire bats do (Desmodus rotundus, Diaemus youngi). Additionally, I used a simple engineering model of bone stress to demonstrate that the hindlimbs of vampire bats fall within the range of shapes seen in bats that do not walk well. These results do not support the hindlimb-strength hypothesis.
In chapter three, I describe the running gait of Common Vampire Bats (D. rotundus). At low speeds, these bats use a lateral sequence walking gait, similar to those of other tetrapods, but switch at higher speeds to a bounding gait that is powered by the forelimbs. This gait is unique to vampire bats, and appears to be independently evolved form the running gaits of other tetrapods.
In chapter four, I compare the kinematics of locomotion in Common Vampire Bats to those of another terrestrially adept species, New Zealand short-tailed bats (Mystacina tuberculata). The latter use a lateral sequence walk similar to that of D. rotundus and other tetrapods, but do not perform the bounding run. Using force plates to examine the kinetics of their single kinematic gait, I found that the gait of M. tuberculata is a kinetically run-like, and does not shift from a kinetic walk to kinetic run with increased speed the way the gaits of some other animals do.

url: http://hdl.handle.net/1813/2836
date: 2006-04-18
creator: Shreve, Sara
viewed: 2272
title: A HISTORY WORTH SAVING: THE PALACE OF FINE ARTS AND THE INTERPRETATION OF

HISTORY ON A RECONSTRUCTED SITE
abstract: Sherene Baugher; Daniel Krall This thesis examines the legacy of the Palace of Fine Arts in the history of San Francisco. The first section is a social history of the site looking at its origins as a site designed by Bernard Maybeck as one of the many palaces constructed for the Panama-Pacific International Exposition in 1915. Today, the Palace remains the only site from the Exposition standing in its original location. In the over ninety years since the close of the Exposition the Palace has undergone various preservation campaigns. Most notably, the structures of the site were reconstructed in concrete from 1964-1974.
The second part of this work explores the Palace?s present situation including discussion of a current large-scale effort to stabilize the structures and landscape of the site. Finally, this thesis addresses the question of how best to provide for the future of the Palace of Fine Arts determining that the major needs of the Palace can be divided into education, interpretation, and physical preservation, and providing recommendations for how to approach the implementation of solutions for each.

url: http://hdl.handle.net/1813/2856
date: 2006-04-18
creator: van Beek, Eelco;Loucks, Daniel P.
viewed: 6453
title: Chapter 1 - Figures and Tables
abstract: Figures and Tables from Chapter 1 of "Water Resources Systems Planning and Management: An Introduction to Methods, Models and Applications".

url: http://hdl.handle.net/1813/2857
date: 2006-04-18
creator: Kammen, Carol
viewed: 3007
title: Not the Most Isolated Place on the Eastern Seaboard
abstract: Chapter 1 of the book with the working title, "GLOBAL CORNELL, A History of the University's International Experience".

url: http://hdl.handle.net/1813/2858
date: 2006-04-19
creator: Harrison, Ellen Z.
viewed: 1867
title: Home Garden Use of Milorganite
abstract:

url: http://hdl.handle.net/1813/2859
date: 2006-04-21
creator: Beiting, Daniel
viewed: 2540
title: Regulation of the immune response to the muscle stage of the parasitic nematode Trichinella spiralis
abstract: The parasitic nematode Trichinella spiralis is a natural pathogen of rodents and humans, exhibits a broad host and geographic range, and has served as a valuable model for the study of mucosal immunity. Little is known, however, of the cellular immune response to the chronic and disseminated stage of the parasite that resides within individual, striated skeletal muscle cells. Despite a potent humoral response to muscle stage parasites, there is limited cellular infiltration of infected muscle. We hypothesized that suppression of inflammation was an active process mediated by T helper type 2 (TH2) responses that are characteristic of helminth infections. To address this hypothesis we conducted in vivo experiments using a synchronous

model of infection that bypassed the intestine and allowed us to examine the immune response specifically to muscle-stage parasites. We utilized transgenic mice, adoptive transfer of specific cell populations, flow cytometry, cytokine analysis, histology and immunohistochemistry to characterize the cellular infiltrate that is recruited to infected muscle, identify molecules that modulate this inflammatory response, and finally, to delineate the mechanisms of effector T cell suppression during infection.

The results presented here show that the inflammatory response to muscle larvae is rich in macrophages and CD4 T cells, peaks in intensity at the completion of parasite maturation, and is rapidly down modulated coincident with a shift to T helper type 2 (TH2)-driven response. Our studies in interleukin-10 deficient mice revealed a critical role for this cytokine in controlling inflammation during parasite development, but showed that it is not required during chronic infection. In the absence of IL-10, antigen-specific interferon-? (IFN-?) production and local synthesis of inducible nitric oxide synthase (iNOS) increased dramatically, while TH2 cytokines were unaffected. Our adoptive transfer studies showed that effector T cells were the critical source of IL-10 and are sufficient to protect mice from myositis. In contrast, we found that naturally-occurring regulatory T cells inhibit TH2 responses but do not influence local inflammation. Finally, we provide evidence that, in the absence of IL-10, the pluripotent cytokine transforming growth factor-? (TGF-?) is critical in limiting myositis and protecting parasites in the muscle.

url: http://hdl.handle.net/1813/2860
date: 2006-04-21
creator: Cabrera, Derek Anthony
viewed: 2641
title: Systems Thinking
abstract: This research set out to clarify the construct of systems thinking and to define it as a conceptual framework apart from systems science, systems theory, systems methods, and other perceived synonyms. Greater clarity in the systems thinking construct will assist any one of the many current implementation efforts in which systems thinking is being applied in both scientific disciplines and practical fields. One case of this is the application of systems thinking in public health. The challenges associated with this effort are generalizeable to any of the other fields in which systems thinking is being applied. The ambiguities of the systems thinking construct are central to the challenges people face in understanding and implementing systems thinking.

This exploratory empirical research used structured conceptualization methodology, which mixes qualitative methods with multivariate statistical methods, to investigate the challenges of implementing systems thinking in an applied context. The analysis shows that: (1) the literature reveals that significant ambiguities exist about what constitutes systems thinking and that practitioners are adopting these ambiguities, (2) the methodological review reveals that there are a disproportionate number of descriptive studies and significantly fewer empirical studies and that there are construct validity problems regarding systems thinking in the few existing empirical designs, (3) the results of statistical tests and descriptive statistics across a range of studies show that the aggregate participant sorts in this study are reliable to a high degree, (4) additional statistical tests show low significance in participant ratings and may indicate that the systems thinking construct is sufficiently vague and that participants had difficulty differentiating between clusters with respect to importance, and (5) 25% of clusters representing 48% of the total statements have to do with learning more about systems thinking through educational initiatives, suggesting that participants are unclear about many aspects of systems thinking.

These findings suggest the need for further development and research on four fronts: theoretical, implementational, empirical, and educational. A theory of systems thinking is offered as a first step in these efforts and as a conceptual framework for educational practice. Future research is required to test this theory of systems thinking.This material is based upon work supported by the National Science Foundation under Grant No. IGERT-0333366

url: http://hdl.handle.net/1813/2861
date: 2006-04-21
creator: Thomas, Sarah
viewed: 3232
title: From Double Fold to Double Bind
abstract: This article has been published in The Journal of Academic Librarianship, http://www.elsevier.com/locate/jacalibAcademic libraries see digital preservation as part of their fundamental mission to guarantee enduring access to the record of civilization?s accomplishments and discoveries. The nature of digital documents presents unique complications which challenge a library?s ability to assure long-term availability. Publishers view electronic backfiles as economic assets, and libraries do not control the physical object. Agreements between publishers and libraries require reaching an understanding on technical issues, the degree of access to the data held in a digital repository, and on the financial responsibility for preservation. This paper describes some of the efforts underway in the United States to establish standards for repositories and to implement digital archiving for electronic journals.

url: http://hdl.handle.net/1813/2862
date: 2006-04-24
creator: Valdivia, Maria Vicenta
viewed: 2312
title: HYDROCHEMICAL MODELING OF DISSOLVED ORGANIC CARBON OF A SMALL, UNDISTURBED, OLD-GROWTH FORESTED WATERSHED IN SOUTHERN CHILE
abstract: A simple, mechanistic hydrochemical model for DOC export was developed and tested for a small, old-growth forested watershed on the Chiloe island in southern Chile. Despite the important roles of DOC in both terrestrial and aquatic ecosystems, there are few tested watershed scale DOC models published to date and, in general, they have had modest success in reproducing observed stream DOC fluxes. The model developed here coupled a simple Boussinesq-type hydrological model of lateral subsurface flows from two soil layers and an Arrhenius-type model for DOC production in soil water. One unique aspect of this model is that DOC production is scaled to account for soil saturation. The streamflows were well simulated (r2=0.86). Simulated stream water DOC concentrations also agreed well with observed values (r2=0.80). Simulated soil water DOC concentrations were generally underestimated for the shallow soil layer and overestimated for the deep layer compared to observed values. Lysimeter sampling errors, lack of agreement between modeled and actual soil layers and the relative position of the lysimeters in the watershed are discussed as the possible causes of these deviations. In general, the model presented here captured the DOC stream water trends in this old-growth forest better than similar models used in other ecosystems. The simple structure of this DOC model may offer a good platform to gradually and accurately increase its intricacy, providing a better understanding of the inherent complexity of the processes regulating the carbon dynamics in forested ecosystems.CONICYT - IDB

url: http://hdl.handle.net/1813/2863
date: 2006-04-24
creator: Dhanjal, Jusmeen K.
viewed: 3246
title: A case of equine sarcoids
abstract: Senior seminar (D.V.M.)--Cornell University, 2004. Includes bibliographical references (leaf 11). The following paper summarizes a case of equine sarcoids and describes the complexities of the disease, including the proposed etiology and genetic susceptibility, the diagnosis, and the treatment options. To date, there are no curative therapies for sarcoids. In addition to presenting the various existing immunomodulating

treatments, I will discuss the novel use of an autologous heat shock protein peptide vaccine in the continuing battle against equine sarcoids. Dr. Flaminio, Dr. Woodie

url: http://hdl.handle.net/1813/2864
date: 2006-04-24
creator: Downing, Jessica
viewed: 1960
title: Malignant catarrhal fever in a Holstein heifer
abstract: Senior seminar (D.V.M.)--Cornell University, 2004. Includes bibliographical references (leaves (17-18)). A 20-month-old, red and white Holstein heifer, 6-7 months pregnant, presented to Cornell University's Farm Animal Hospital in September 2003 with the chief complaints of acute onset of recumbency, blindness, anorexia, and weight loss. One week prior to presentation, the heifer became anorexic, separated herself from her herdmates and developed bilateral corneal opacity with blindness. The heifer was from a local herd and kept on a 20-acre pasture with 9 other animals. In the same group, 2 heifers had died 2-3 weeks prior to disease in the heifer. In June of 2003, two spring lambs (age:3-6 months) had been brought onto the farm. The lambs shared a barn with the heifers, but were fenced separately from them by a distance of 3 feet. Diagnostic test results for BVD and IBR, performed by the farm veterinarian, were negative. The farm veterinarian made a tentative diagnosis of Malignant Catarrhal Fever (MCF), based upon clinical signs and a history of contact with sheep. The heifer was referred to Cornell for antemortem testing and necropsy. MCF PCR and MCF CIELISA yielded positive results on antemortem blood. Gross necropsy revealed lesions consistent with MCF, including erosions and ulcerations of the GI tract, bilateral corneal edema, and coronitis. Histopathological lesions revealed a severe diffuse lymphocytic vasculitis and severe lymphocytic keratoconjunctivitis , supportive of MCF. Malignant catarrhal fever is a generalized viral disease of ruminants. It is caused by members of an expanding group of Rhandinoviruses in the Gammaherpesvirinae subfamily. These highly cell associated, lymphotrophic viruses exist in nature as inapparent infections in well-adapted ruminants that serve as reservoir hosts. Transmission of the virus from a reservoir host to a clinically-susceptible species results in a disease that is characterized by high fever, profuse nasal discharge, corneal opacity, ophthalmia, generalized lymphadenopathy, leukopenia, and severe inflammation of the conjunctival, oral, and nasal mucosas. CNS signs, diarrhea, skin lesions, and nonsuppurative arthritis can also be seen. Diagnosis of MCF in a clinically-susceptible species is based upon clinical signs, history of contact with a reservoir host, necropsy with histopathology, and PCR. With the expanding amount of new information, the traditional picture of MCF as a highly fatal, sporadic condition associated with lambing season is becoming less accurate. Clinicians should be aware that MCF can manifest acutely or become latent with recrudescence. While most cattle with clinical MCF die, others may partially or completely recover. Jerome VanBiervliet

url: http://hdl.handle.net/1813/2865
date: 2006-04-24
creator: Eagleson, Joseph S.
viewed: 2213
title: Pseudohypoadrenocorticism to myelinolysis in 5 days
abstract: Senior seminar (D.V.M.)--Cornell University, 2004. Includes bibliographical references (leaf 13). Rapid correction of profound hyponatremia in a dog may have led to delayed neurological dysfunction five days later. The initial electrolyte abnormalities were due to Trichuris vulpis gastrointestinal parasitism. A presumptive diagnosis of myelinolysis was made based on the rapid correction of the hyponatremia and the clinical signs. Myelinolysis is a demyelinating brain disease caused by a rapid increase in plasma osmolality. Most naturally occurring cases of myelinolysis reported in the literature have been following rapid correction of hyponatremia due to Trichuris vulpis. The dog recovered, but still has some permanent neurological dysfunction. By following guidelines for proper correction of hyponatremia and prudent monitoring of plasma

electrolytes, myelinolysis, an iatrogenic disease, can be prevented. Richard Goldstein, Tristan Weinkle

url: http://hdl.handle.net/1813/2866
date: 2006-04-24
creator: Thomas, Sarah
viewed: 3385
title: Think Globally, Act Locally: Electronic Resources and Collection Development
abstract: Despite numerous cooperative collection development endeavors, the building of library collections has remained a highly individual and local practice. The physicality of bound volumes has posed a distinct limitation on our ability to share collections, although libraries have made huge strides in recent years. Electronic resources and the ability to digitize our physical holdings offer the potential to redirect our investments in collection building to the creation of a global network that would serve an international community of scholars. By facilitating the creation of disciplinary-based portals to knowledge resources, librarians can channel their efforts to the benefit of many without sacrificing the quality of local relationships. To accomplish this, libraries need to develop collectively built and managed web sites that supplant the need for autonomous, selector-created ?webliographies? and that greatly expand the number of sources that can be identified and described. Selectors, freed of the individual responsibility to shoulder the increasingly heavy, and ultimately unsustainable load of tracking a proliferation of resources in a variety of formats and states of publication, can turn their attention to the capture of more elusive, but important, material; to more detailed evaluation of the use of information resources; toward improvements in the user interface of portals; or toward the transformation of scholarly communication, with the discipline-based portal serving as a magnet for attracting new forms of scholarly thought and research.

url: http://hdl.handle.net/1813/2867
date: 2006-04-24
creator: Chang, Hung-Hao
viewed: 3025
title: Economic Analysis of the Interrelationships Among Off-farm Work, Participation in the Conservation Reserve Program, and Farm Productivity of Farm Households in the United States
abstract: Richard N. Boisvert; Gregory L. Poe; David R. JustTo better understand the interaction between the farm business and the farm household, this study identifies those factors that explain participation in two major sources of non-production income of farm households: off-farm employment by the operator and the spouse and the Conservation Reserve Program (CRP). In addition, we investigate the effects of these decisions on farm efficiency and productivity. Since there is always trade-offs between computational demands and model generalization, it is difficult to develop an empirical model that accommodates all of the interrelationships among these decisions. In this study, three specific econometric models are estimated to test if these decisions are made jointly, sequentially or independently by the farm household. Although the focus of each model differs, our empirical findings are quite robust across models. Our results show that CRP participation depends generally on some characteristics of the farm, the farm operator, land quality, and the circumstances in the local economy. It appears that CRP acres response positively to CRP price but it decreases with the increase of low land quality. Environmental factors also play a role of CRP participation. The farm household located in areas where the EBI scores for land currently enrolled are high is more likely to participate in CRP. Our empirical findings also support the reduction in the likelihood of CRP participation due to the increase in decoupled payments. Similar evidence is found for the decision of the farm household to engage in off-farm work. Older farmers or those who have fewer years in farming are more likely to work off the farm. In addition, the operator?s education has a positive effect on the probability of participation in off-farm work.

Another unique finding of this study is the qualification of the impact on farm productivity of CRP

participation and the off-farm work decision of the farm operator. It appears that participation in CRP lowers the technical efficiency and productivity, but participation in off-farm work increases technical efficiency and productivity. These results may imply that efficiency is more adversely affected when land is withdrawn from production without also withdrawn labor. However, the reverse is not true. Economic Research Service, U.S Department of Agriculture

url: http://hdl.handle.net/1813/2868
date: 2006-04-24
creator: Qian, Lichuan
viewed: 1733
title: THREE-DIMENSIONAL CULTURE OF FETAL LIVER CELLS
abstract: This thesis explored the influence of culture environment on proliferation and hepatic differentiation of fetal liver cells. Specifically, signals provided by soluble factors and culture substrates were examined. Comparison of a variety of culture medium conditions suggested that hepatocyte growth factor (HGF) is required throughout the culture period to induce the differentiation of liver stem cells into hepatic precursors, and to ensure the continual proliferation of stem cells and their progeny. On the other hand, timing of the addition of maturation-inducing factors such as oncostatin M (OSM) determines the kinetics of cell maturation. In the presence of HGF, adding OSM from the beginning results in concurrent growth and differentiation. In addition, the constant presence of protective agents such as ascorbic acid helps to enhance cell survival, leading to improved cell expansion and hepatocyte functions. Based on these findings, a modified culture medium was developed to achieve both optimal growth and differentiation. Cell expansion in this medium was about 2 fold of that under other tested conditions, whereas the specific albumin secretion rate was 2 - 3 times of the maximal values obtained with other conditions. Subsequently, characterization of fetal liver cells cultured on a variety of three-dimensional (3D) scaffolds, including decellularized liver matrices, collagen scaffolds, and poly(lactic-co-glycolic acid) (PLGA) scaffolds, showed that the cellular responses to soluble signals are modulated by culture substrates. Experiments using scaffolds prepared from blends of PLGA(50:50) and polycaprolactone (PCL) further suggested that cell expansion requires rigid and porous scaffolds, whereas differentiation is enhanced on more pliable substrates. Together, these results demonstrated that the in vitro behavior of fetal liver cells is regulated by both the soluble and physical cues present in their microenvironment. Furthermore, cell growth and differentiation are influenced not only by the regulatory factors that are present, but also by the timing of their addition. These findings would help to develop a culture system that employs dynamic integration of biochemical and substrate-related signals to control the growth and differentiation kinetics of fetal liver cells. They may also provide a foundation for developing technologies for applications of other liver stem cells and progenitors.

url: http://hdl.handle.net/1813/2869
date: 2006-04-24
creator: Fish, Kathleen A.
viewed: 2936
title: Canine diffuse neuromuscular disease : a case of acute polyradiculoneuritis
abstract: Senior seminar (D.V.M.)--Cornell University, 2004. Includes bibliographical references (leaf 13). Acute, severe, diffuse neuromuscular disease is characterized by distinct neurologic signs and the primary differential diagnoses include Coonhound paralysis/acute polyradiculoneuritis, organophosphate toxicity, fulminant myasthenia gravis, botulism, tick paralysis, and polymyositis. In the case presented in this paper, history and diagnostics were used to identify acute polyradiculoneuritis as the most likely cause of clinical signs. Coonhound paralysis is an acute polyradiculoneuritis that is believed to be caused by an immune-mediated reaction to an antigen present in the saliva of a raccoon. Acute idiopathic polyradiculoneuritis is an identical syndrome except that there is no history of exposure to a raccoon. In the latter case, it is

presumed that another foreign antigen is responsible for the immune response. In either case, the foreign antigen resembles the individual's own gangliosides such that antibodies formed against the foreign antigen attack both that antigen and the patient's neural tissue. The result is an acute inflammation of the ventral nerve roots and subsequent demyelination with or without axonal degeneration. This results in the clinical signs of diffuse neuromuscular disease. Treatment is supportive, including adequate cushioning, frequent turning, and feeding in an upright position. The majority of dogs will recover in weeks to several months. Dr. Alexander deLahunta, Dr. Robert Hart

url: http://hdl.handle.net/1813/2870
date: 2006-04-24
creator: Flaherty, Colleen
viewed: 865
title: Replacement of a proptosed eye
abstract: Senior seminar (D.V.M.)--Cornell University, 2004. Includes bibliographical references (leaves 7-8). Proptosis is most common in brachycephalic breeds. The condition can occur in dolichocephalic breeds, most often as a result of blunt trauma to the head. Prognosis for vision in a proptosed eye is poor. Only 20-30% of patients regain visual function. Treatment options for proptosis are replacement or enucleation. Treatment is dependent on physical and ophthalmologic exam findings. Dr. Katie Cutter

url: http://hdl.handle.net/1813/2871
date: 2006-04-24
creator: Fronhofer, Lisa J.
viewed: 1173
title: Feline upper respiratory infection control in northeastern animal shelters
abstract: Senior seminar (D.V.M.)--Cornell University, 2004. Includes bibliographical references (leaf 12). Feline upper respiratory infections are one of the leading causes of euthanasias of cats in animal shelters. This research involved designing and distributing a survey to animal shelters throughout New York and New England in order to acquire baseline data concerning shelter demographics and various aspects of upper respiratory infection control. The survey was divided into categories: housing, cleaning and disinfection, diets of shelter cats, stress reducing measures, staff / veterinary services, isolation facilities, treatment of URI cats, vaccination, foster care, euthanasias, and shelter demographics. This research will be used to design controlled studies to evaluatethe effectiveness of various preventive measures in reducing feline URI in shelters in the future. The goal is to make recommendations to improve control of upper respiratory infections in shelter cats. Dr. Jan Scarlett

url: http://hdl.handle.net/1813/2872
date: 2006-04-24
creator: Gold, Sarah
viewed: 1487
title: Urolithiasis and chronic renal failure in an Arabian gelding
abstract: Senior seminar (D.V.M.)--Cornell University, 2004. Includes bibliographical references (leaf 13). A 14-year-old Arabian gelding presented to the Cornell University Equine and Farm Animal Hospital Large Animal Medicine Service in August 2003 with a chief complaint of weight loss, polydipsia, polyuria, and dysuria. Upon rectal palpation, a large cystic calculus and bilaterally enlarged ureters were noted. The chemistry panel was consistent with renal failure and urinalysis showed isosthenuria. Further diagnostics included ultrasound of the kidneys, and endoscopy of the urinary bladder. During rectal examinations, the urolith was noted to rest at the trigone region, thereby possibly obstructing the ureters. The horse was stabilized on fluid therapy and a cystotomy was performed to remove the urolith. Post-operatively, renal

function was markedly improved, but the horse was ultimately euthanized due to Salmonellosis. Postmortem findings included severe hydronephrosis, hydroureter, and chronic severe cystitis. This case report illustrates the unusual relationship between chronic renal failure and cystic calculi in this horse. Jerome VanBiervliet

url: http://hdl.handle.net/1813/2873
date: 2006-04-24
creator: Gordon, Andra
viewed: 2634
title: A case of spraying and house soiling in a domestic shorthair cat
abstract: Senior seminar (D.V.M.)--Cornell University, 2004. Includes bibliographical references (leaves 10-11). A domestic shorthaired cat was evaluated for a severe case of spraying and urinary house soiling. The owner was instructed to modify the cat's environment by offering a variety of litter boxes and litters, cleaning urine-marked areas with bacterial-enzymatic cleaner, placing infusers of synthetic feline facial pheromone in the home, and refraining from punishing the cat for urinating outside the litter boxes. In addition, the patient was placed on daily fluoxetine, a selective serotonin reuptake inhibitor. Within a month, the cat's spraying and house soiling behaviors had been eliminated completely. Dr. Katherine A. Houpt, Dr. Emily Levine

url: http://hdl.handle.net/1813/2874
date: 2006-04-24
creator: Gorgi, Alireza A.
viewed: 1984
title: White muscle disease in foals
abstract: Senior seminar (D.V.M.)--Cornell University, 2004. Includes bibliographical references (leaf (13)). White muscle disease, also known as nutritional muscular dystrophy, is a degenerative disease that affects the skeletal and cardiac muscle of foals ranging in age from birth to 11 months. White muscle disease is prevalent in regions with seleniumdeficient soils. Selenium is a component of the enzyme glutathione peroxidase, which protects cell membranes against oxidation. Muscle cell membranes depend on normal body levels of selenium and vitamin E to avoid damage caused by oxygen reactive metabolites that are produced during normal cellular metabolism. (1, 2). A one-day-old colt presented to Cornell University Hospital for Animals with a chief complaint of being recumbent and unable to stand, poor suckling reflex, and discolored urine. Although the mare was 11 days past her expected due date, she had little udder development and milk production. In addition, the mare had retained placenta for 6-10 hours, and the placenta contained diffusely distributed abnormal red areas. On presentation, the foal was extremely depressed, unresponsive, and unable to stand. On physical examination, the foal appeared dehydrated, and a left sided systolic murmur was detected. The muscles were markedly firm to palpation, in special the gluteal muscles. Complete blood cell count (CBC), blood chemistry, acid-base status (ISAT), and urinalysis were performed and the following major problems were noted: neutrophilia with a left shift, mildly elevated packed cell volume, severe hyperkalemia, hyponatremia, hypochloremia, respiratory acidosis, azotemia, hyperglycemia, severely elevated muscle enzymes (CK and AST), and myoglobinuria. Thoracic and abdominal ultrasound examinations were unremarkable. Laboratorial tests for serum selenium and vitamin E levels, and whole blood glutathione-peroxidase (GSH-Px) activity were measured and indicated selenium deficiency. The primary problem list included white muscle disease, septicemia, and neonatal maladjustment syndrome. The foal was treated with fluid therapy, diuretics, broad-spectrum antibiotic therapy, selenium, vitamin E, nasogastric administration of milk, and gastric protectants. Dr. Flaminio. Dr. Gardner, Dr. Figueiredo

url: http://hdl.handle.net/1813/2875
date: 2006-04-25
creator: Han, Janet

viewed: 4148
title: A case of a ventricular septal defect with bi-directional shunting in a Thoroughbred colt abstract: Senior seminar (D.V.M.)--Cornell University, 2004. Includes bibliographical references (leaf 11). "Cassette Player '03" Bilinski, a 7-month-old Thoroughbred colt, presented to the Cornell University Large Animal Medicine Service on August 25, 2003 with the chief complaint of a heart murmur. Three murmurs were heard upon cardiac auscultation: a grade III/VI systolic murmur over the aortic and mitral valve area, a grade III/VI systolic murmur over the pulmonic valve area, and a grade III/VI systolic murmur over the tricuspid valve area. Findings of a cardiology consult included a membranous ventricular septal defect with bi-directional shunting, mitral valve dysplasia, tricuspid valve dysplasia, and significant pulmonary hypertension. Due to the poor prognosis for athletic performance, the foal was euthanized and a necropsy was performed. This paper will discuss ventricular septal defects in the horse along with their clinical manifestations and varying prognoses. Factors which play a role in causing pulmonary hypertension and shunt reversal will also be discussed, particularly as they apply to this case. Dr. Jerome Van Biervliet

url: http://hdl.handle.net/1813/2876
date: 2006-04-25
creator: Hatfield, Dana
viewed: 3480
title: Perirenal pseudocysts in a Himalayan cat with polycystic kidney disease
abstract: Senior seminar (D.V.M.)--Cornell University, 2004. Includes bibliographical references (leaf 12). This is a case study of a geriatric, male castrate, Himalayan cat, that presented for acute blindness and progressive abdominal distension, of 3 weeks duration. Baseline diagnostics, and imaging studies were performed. The cat was diagnosed with bilateral perirenal pseudocysts, autosomal dominant polycystic kidney disease, hypertension secondary to chronic renal disease, hypertensive retinopathy and otitis externa due to Malasezia. Percutaneous drainage of the pseudocysts was initially utilized to manage abdominal distension, and more definitive treatment was pursued through surgical resection of the renal capsule. Dr. Jason Pintar, Dr. John Randolph

url: http://hdl.handle.net/1813/2877
date: 2006-04-25
creator: Thomas, Sarah
viewed: 2650
title: The Catalog as Portal to the Internet
abstract: This paper examines the potential of the catalog to serve as a portal to the Internet. It commences with a brief overview of the development of the catalog, details the attributes and limitations of library catalogs, and defines the concept of the portal. Finally, it offers proposals to respond to the dilemma of librarians about providing access to the expanding universe of information and knowledge.

url: http://hdl.handle.net/1813/2878
date: 2006-04-25
creator: Thomas, Sarah
viewed: 1831
title: Abundance, Attention, and Access: Of Portals and Catalogs
abstract: The world's information resources are abundant, but time is a scarce commodity. The ideal discovery tool, therefore, is one which consults omnivorously, but which returns a selection of relevant results in rapid sequence. Searchers find what they need promptly without having to wade through a vast assortment of tangentially related, inaccurate, or otherwise deficient data. It costs little to build and operate, and it yields a high degree of user satisfaction because it delivers reliable information in a timely manner with relative

ease. Such a tool is still imaginary, although it could become a reality in the near future if librarians organize themselves appropriately and commit the resources to design it.

url: http://hdl.handle.net/1813/2879
date: 2006-04-25
creator: Thomas, Sarah
viewed: 2404
title: Using the Portal for the Discovery of Discipline-Based Electronic Resources
abstract: Contemporary society is at once omnivorous and highly selective. People today are coming to expect to have all manner of products and services at their fingertips, and simultaneously, they want them customized for a particular individual. You can order Levi's jeans programmed to your personal body specifications and conceivably, you could choose from any textile in the world to make a totally unique pair of pants. Nick Donatiello, president of Odyssey, a marketing research firm, speaking at the JSTOR American Library Association June 2001 meeting, noted the struggle of the big TV networks to retain market share in a world in which the consumer increasingly prefers to view content he has profiled to watch at his convenience. Since we can now access hundreds of channels through cable and satellite, the consumer wants a tool to filter the diverse content available. New devices such as TiVo enable viewers to create "My channel" through a definition of preferences. The software interprets the viewer's preferences from this profile and independently identifies categories of programs which are consistent with the consumer's taste and previous selections. In the world of books, we are familiar with this feature from Amazon's "Customers who bought this book also bought.."

url: http://hdl.handle.net/1813/2880
date: 2006-04-25
creator: Lambert, William
viewed: 2855
title: A Thermal Model to Optimize Performance in Green Roofs
abstract: There is currently a lack of a comprehensive energy model for extensive green roof systems. To rectify this, a lumped parameter, one dimensional, time dependent thermal model and subsequent computer program were created to calculate temperature profiles and heat fluxes in extensive green roofs. It was found that varying the plant and soil characteristics did not have a significant effect on the temperature profile of the system. Additionally it was found through a flux analysis that utilizing a green roof produces significant energy savings. The created model allows the user to easily vary all the parameters and model any location.

url: http://hdl.handle.net/1813/2881
date: 2006-04-26
creator: Davis, Philip M
viewed: 3367
title: Do Open-Access articles really have a greater research impact?
abstract: The study of citation behavior is complex and involves multiple confounding, and interacting variables. Methodologically, it is very difficult to distinguish whether Open Access is an explanatory cause of increased access, or whether it is merely an artifact of other causal explanations such as article duplication or self-promotion. Do Open-Access articles really have a greater research impact, as many suggest? Yes, but Open Access may not be the cause.

url: http://hdl.handle.net/1813/2882
date: 2006-04-26

creator: Adam, Shaffique
viewed: 3071
title: Magnetic Properties Of Nanoscale Conductors
abstract: A Dissertation Presented to the Faculty of the Graduate School of Cornell University in Partial Fulfillment of the Requirements for the Degree of Doctor of PhilosophyThis doctoral dissertation examines some magnetic properties of nanoscale conductors. It comprises two classes of problems, namely, the response of closed nanoscopic systems to an external magnetic field, and the magnetization dependent transport of nanomagnets. In the first class of closed nanoscopic structures like quantum dots or metal grains, the system has discrete energy levels which can be modeled by Random Matrix Theory. The addition of a magnetic field is analyzed using a crossover random matrix model. In Chapter 2, we show that in the crossover there exist correlations between elements of the same eigenvector and between different eigenvectors. We show that these correlations between different eigenvectors lead to enhanced fluctuations of the electron-electron interaction matrix elements which are absent in the pure ensembles. In Chapter 3, we generalize these results to analyze the magnetic field response of energy levels in ultrasmall metal grains. We present a theory of mesoscopic fluctuations of g-tensors and avoided crossing energies in a small metal grain that contains both orbital and spin contributions to the g-tensor.
In the second class of problems we study two effects in small ferromagnets where the charge transport is coupled to the magnetization. In Chapter 4, we show that a sufficiently large unpolarized current can cause a spin-wave instability in a nanomagnet with asymmetric contacts. The dynamics beyond the instability is calculated analytically in the perturbative regime of small spinwave amplitudes, and numerically for larger currents. In Chapter 5, we study "anisotropic magnetoresistance fluctuations" which is the ferromagnetic analog of the well-known Universal Conductance Fluctuations in metals. The conductance of a ferromagnetic particle depends on the relative orientation of the magnetization with respect to the direction of current flow. This phenomenon is known as "anisotropic magnetoresistance" and has no counterpart in normal-metal conductors. We show that quantum interference leads to an additional, random yet (statistically) universal dependence of the conductance of a ferromagnet on the magnetization direction. The mechanism for these anisotropic magnetoresistance fluctuations is the interplay of spin-orbit scattering, random impurity scattering, and the ferromagnet's exchange field.

url: http://hdl.handle.net/1813/2883
date: 2006-04-27
creator: Isenberg, Israel
viewed: 2164
title: To cut or not to cut : analysis of caesarean sections in a New York state dairy herd
abstract: Senior seminar (D.V.M.)--Cornell University, 2004. Includes bibliographical references (leaf 12). Pregnancy and parturition are necessary events in the initiation of milk production in mammalian species. Unfortunately, cows are at the highest risk of breaking during this transition period from late pregnancy to early lactation. The transition cow is subject to a variety of pathologic conditions, including dystocia, retained placenta, metritis, milk fever, ketosis, mastitis, and displacement of the abomasum. The interrelated nature of these diseases cannot be overemphasized; indeed, a strong positive correlation exists between many of them. Aside from the obvious losses due to death, veterinary intervention, and medications, the above conditions decrease revenue by means of lost milk production and/or decreased reproductive performance, the full impact of which may not be realized until much later in the lactation. Dystocia, or difficulty calving, is among the more common periparturient disorders. Causes can be fetal or maternal. When repositioning or traction cannot resolve dystocia, a fetotomy or cesarean section may be considered. Compared with cows that have vaginal delivery, those that undergo cesarean section have been shown to have a higher incidence of calf mortality, a longer calving interval following surgery, lower milk production during the first 100 DIM, and a higher likelihood of being culled. This presentation will examine preliminary data for

cows presented to the Teaching Hospital at the New York State College of Veterinary Medicine with chief complaint of dystocia and subsequently undergoing a cesarean section. By means of DC305 records, cows from a large herd were followed post-surgery to evaluate production and reproductive parameters.Charles L. Guard, Amir Rosenbaum

url: http://hdl.handle.net/1813/2884
date: 2006-04-27
creator: Janeczko, Stephanie D.
viewed: 1769
title: Probable electrocution in a quarter horse stallion
abstract: Senior seminar (D.V.M.)--Cornell University, 2004. Includes bibliographical references (leaf 11). Although electrocution is widely reported in the human literature, there are no welldocumented cases reported in horses. A probable diagnosis of electric shock injury was made in the case of an 18 year old Quarter Horse breeding stallion that presented to the Cornell University Hospital for Animals with a chief complaint of seizure-like activity following loss of electrical power at the farm. Pertinent physical exam findings included hyperhidrosis, diffuse muscle fasciculations and contractions, and severe ataxia involving all four limbs. A complete blood count revealed a marked leukocytosis, characterized by a neutrophilia and eosinophilia. The neurologic signs resolved within 18 hours of presentation with minimal therapeutic intervention. Ventricular tachycardia without associated clinical signs developed 20 hours following presentation, and resolved without treatment. The rapid and complete recovery made an infectious process or structural lesion highly unlikely, leading to a presumptive diagnosis of electrocution. Dr. Monica Figueiredo, Dr. Julia Flaminio

url: http://hdl.handle.net/1813/2885
date: 2006-04-27
creator: Klene, Erin
viewed: 3680
title: A case of temporohyoid osteoarthropathy in a 17 year-old Thoroughbred gelding
abstract: Senior seminar (D.V.M.)--Cornell University, 2004. Includes bibliographical references (leaf 11). A 17 year-old thoroughbred gelding was referred for evaluation of an acute onset of vestibular disease, characterized by right-sided head tilt and ataxia. The signs progressed to include right ear droop, ptosis, and muzzle pull to the left (right facial nerve paralysis). A tentative diagnosis of right-sided temporohyoid osteoarthropathy was made and was confirmed by endoscopy and radiographs. Euthanasia was elected based on poor prognosis for complete recovery and a post-mortem CT scan and tympanocentesis were performed. Dr. Rachel Gardner

url: http://hdl.handle.net/1813/2886
date: 2006-04-27
creator: Lafferty, Caroline
viewed: 1977
title: Oral squamous cell carcinoma in a Pembroke Welsh corgi
abstract: Senior seminar (D.V.M.)--Cornell University, 2004. Includes bibliographical references (leaves 10-11). Kipper, a five-year-old Pembroke Welsh Corgi, presented to his referring veterinarian for an oral mass, which a biopsy identified to be squamous cell carcinoma. The dog was referred to Cornell for staging and treatment. Kipper was systemically healthy and had no evidence of metastatic disease. A partial rostral mandibulectomy was performed to remove the tumor with wide margins. This paper discusses the biologic behavior of oral squamous cell carcinoma and compares it to other oral neoplasms in the dog. Treatment options and prognostic factors for dogs with oral tumors are also presented. Dr. Dennis Bailey

url: http://hdl.handle.net/1813/2887
date: 2006-04-27
creator: Leach, Amy
viewed: 2613
title: Hemotropic mycoplasmosis in a cat
abstract: Senior seminar (D.V.M.)--Cornell University, 2004. Includes bibliographical references (leaf 13). This is a case study of Feline Hemotropic Mycoplasmosis (previously known as Feline Haemobartonellosis) in a young adult male feline with the sudden onset of signs associated with hemolytic anemia. Feline Hemotropic Mycoplasmosis (or FHM) is a "parasitic" infection of the red blood cells that results in both intravascular and extravascular hemolysis. There are two etiologic agents that infect feline red blood cells: Mycoplasma haemofelis (large form) and Mycoplasma haemominutum (small form). Mycoplasma haemofelis was previously known as the Rickettsial agent Haemobartonella felis. It was recently reclassified due to new information from PCR, Western Blot, and DNA Sequencing tests. Presenting complaint is commonly the sudden onset of behavior changes, lethargy, weakness, and/or pale, icteric mucous membranes. Diagnosis is based on blood smear evaluation. PCR assays are also available. Treatment involves a 3 week course of oral tetracyclines; doxycycline is the drug of choice at 5mg/kg once daily. Glucocorticoids may be administered to reduce extravascular hemolysis. Prognosis of uncomplicated FHM with treatment is excellent although affected cats remain carriers of the organism for life. Concurrent immunosuppression can result in death during the acute phase of the disease or recrudescence of the disease from the carrier state. Dr. Jennifer McCabe

url: http://hdl.handle.net/1813/2888
date: 2006-04-27
creator: LeVine, Dana
viewed: 1755
title: Platelet function and dysfunction : hereditary canine thrombopathias
abstract: Senior seminar (D.V.M.)--Cornell University, 2004. Includes bibliographical references (leaf 19). Platelets are essential in maintaining the delicate balance between the fluidity of blood and the retention of blood within damaged vessels. Not only do platelets form hemostatic plugs that prevent bleeding from vascular defects, but they also set the stage for the coagulation cascade. Hereditary disorders of platelet function are traditionally classified as resulting from abnormalities in platelet adhesion, aggregation or secretion. In reviewing the known canine thrombopathias, we emphasize the importance of each normal platelet function in hemostasis. Special attention is given to a new platelet defect in German Shepherd dogs that is being investigated in the author's laboratory. This defect highlights the importance of a fourth, often overlooked, platelet function called platelet procoagulant activity (PCA). It is this PCA that allows platelets to bridge primary and secondary hemostasis. We also outline a strategy to diagnose a bleeding patient with a primary hemostatic defect and review the treatment options for that patient. Dr. Marjory Brooks

url: http://hdl.handle.net/1813/2889
date: 2006-04-27
creator: Lin, Rebecca C.
viewed: 2433
title: Fractures of the radius and ulna secondary to possible vitamin D deficiency in captive polar bears (ursus maritimus)
abstract: Senior seminar (D.V.M.)--Cornell University, 2004. Includes bibliographical references (leaves 13-14). Fractures in captive polar bears are not uncommon. The purpose of this study was to identify any common etiologic factors in cases of antebrachial fractures in captive polar bears and to evaluate the success of fracture repair in these animals. Furthermore, there has been no case report published on fracture repair in any bear species. It was hypothesized that a certain percentage of fractures in polar bears could be due to

decreased mineral density in the affected bones secondary to vitamin or mineral deficits, specifically deficits of Vitamin D, calcium or phosphorus. Decreased Vitamin D intake or availability combined with lack of exercise (captivity) could lead to decreased bone density and strength and thus, predispose bones to fracture. Serum 25-OH-Vitamin D values in several polar bears were low. Results of this study suggest that internal fixation of antebrachial fractures is feasible, reasonably tolerated by the animal, and has been successful. Additional research is necessary to explore the role of nutrition in polar bear fracture disease. Emmanuel Engeli, Med. Vet., DACVS; Laurie R. Goodrich DVM, MS, DACVS; Allan W. Prowton DVM

url: http://hdl.handle.net/1813/2890
date: 2006-04-27
creator: Lucena, Hamlin, Jr.
viewed: 1372
title: A case of multicentric enzootic lymphoma in a Holstein cow
abstract: Senior seminar (D.V.M.)--Cornell University, 2004. Includes bibliographical references (leaf 10). A 5 year old Holstein cow presented to Cornell's Large Animal Medicine Service with a chief complaint of anorexia, depression, and decreased milk production. Abnormalities detected during physical examination and initial diagnostic evaluation included an abomasal mass, enlarged lymph nodes, and a lymphocytosis. A presumptive diagnosis of enzootic lymphoma was made, which was confirmed by the presence of lymphoblasts within a sample of peritoneal fluid obtained via abdominocentesis. The cow was euthanized, and both gross and histologic findings were consistent with the clinical diagnosis of lymphoma. Bovine enzootic lymphoma will be discussed with an emphasis placed on the bovine leukosis virus. Dr. Rachel Gardner

url: http://hdl.handle.net/1813/2891
date: 2006-04-27
creator: Mackey, Patricia
viewed: 2188
title: Canine sialoceles
abstract: Senior seminar (D.V.M.)--Cornell University, 2004. Includes bibliographical references (leaves 9-10). An eight-month-old female spayed Beagle presented with a non-painful sublingual mass. A sublingual sialocele (ranula) was diagnosed based on prior aspiration, physical exam findings and history. Left mandibular and sublingual sialoadenectomy was performed and she recovered well from surgery. Her prognosis is excellent. Dr. Robert Hart

url: http://hdl.handle.net/1813/2892
date: 2006-04-27
creator: MacKillop, Edward
viewed: 1662
title: "Seizures" in a cocker spaniel dog
abstract: Senior seminar (D.V.M.)--Cornell University, 2004. Includes bibliographical references (leaves 12-15). A five-year-old female Cocker Spaniel dog was presented for a sudden onset of severe vestibular dysequilibrum. Long tract signs indicated central vestibular disease and the lesion was localized to the caudal fossa. Computed tomography demonstrated a large (20 mm x 20 mm x 12 mm), homogenous, hypoattentuating mass ventral to the cerebellum showing slight peripheral ring enhancement with intravenous contrast medium. Severe syringohydromyelia was detected in the C1 and C2 spinal cord segments. Postmortem examination found a mass filled with viscid fluid dorsal to medulla oblongata with severe compression of the overlying cerebellum. On histopathology, the mass was diagnosed as epidermoid cyst. Extensive syringohydromyelia and obstructive hydrocephalus were also identified secondary to the caudal fossa cyst. Dr. Alexander de Lahunta, Dr. Scott Schatzberg

url: http://hdl.handle.net/1813/2893
date: 2006-04-27
creator: McNair, LaShonn Lynette
viewed: 2481
title: Canine and feline heartworm disease : the dangers and the differences
abstract: Senior seminar (D.V.M.)--Cornell University, 2004. Includes bibliographical references (leaf 16). Canine and feline heartworm diseases vary in a number of aspects, including biological processes and pathophysiology. This case report follows the diagnosis and treatment of one canine patient, while attempting to look at some of the similarities and differences of both diseases. Dr. Dwight Bowman, Dr. Stephen Barr

url: http://hdl.handle.net/1813/2894
date: 2006-04-27
creator: Moger, Ann
viewed: 1840
title: Canine meningioma
abstract: Senior seminar (D.V.M.)--Cornell University, 2004. Includes bibliographical references (leaves 12-13). "Lucky", a nine year old, male, castrated Terrier mix presented to the Cornell University Hospital for Animals on April 22nd, 2003 with the chief complaint of a seizure disorder of four weeks duration. Lucky had no significant previous medical history. General physical examination was unremarkable, however neurological examination yielded a problem list of dull mentation, no menace response OD, circling to the left, and postural reaction deficits in both right limbs. A CT scan of the brain revealed an extramedullary mass overlying the left cerebrum. Surgical removal of the mass was performed and histopathology confirmed the diagnosis of a meningioma. The primary objectives of this case study were to discuss differential diagnoses that should be considered for dogs that present with a history of seizure activity, and to briefly review characteristics of canine meningiomas. Dr. Pintar

url: http://hdl.handle.net/1813/2895
date: 2006-04-27
creator: Nobrega, Stephanie
viewed: 2383
title: Management of feline diabetes mellitus
abstract: Senior seminar (D.V.M.)--Cornell University, 2004. Includes bibliographical references (leaf 11). Sarah, a 14 year old female spayed domestic shorthair cat, presented to the Cornell University Hospital for Animals with a chief complaint of polyuria, polydipsia, polyphagia and weight loss of several weeks duration with a recent onset of weakness, lethargy and anorexia. Clinical findings on physical examination and diagnostic evaluation included thin body condition, dehydration, hyperglycemia, glucosuria, ketonuria, and electrolyte and acid-base abnormalities. A diagnosis of diabetes mellitus with ketoacidosis was made and insulin and fluid therapy were instituted. Sarah was initially sent home on Humulin-N NPH insulin twice daily. A recheck 3 weeks later revealed persistent hyperglycemia and elevated fructosamine level. In addition, she remained symptomatic for her diabetes mellitus. Over the next several months, serial blood glucose curves and fructosamine levels were performed to help evaluate her glycemic control. A discussion of the dietary and medical management strategies of diabetes mellitus, as applied in Sarah's case will be reviewed. Dr. John Randolph

url: http://hdl.handle.net/1813/2896
date: 2006-04-27
creator: Olenick, Vanessa P.

viewed: 2884
title: Immune-mediated hemolytic anemia in a cocker spaniel
abstract: Senior seminar (D.V.M.)--Cornell University, 2004. Includes bibliographical references (leaf 14). Callie Hevner, a five year old female spayed cocker spaniel, presented to the Cornell University Hospital for Animals (CUHA) on March 18, 2003 for evaluation of signs suggestive of liver disease. Subsequent to extensive workup and evaluation over a one-month period, she represented to CUHA on April 17 with signs of mucosal pallor, lethargy and exercise intolerance, anorexia, and generalized malaise. Physical examination and workup were consistent with immune-mediated hemolytic anemia ("IMHA") and that disease subsequently became the focus of her treatment and care. The purpose of this seminar is to explore the pathogenesis of IMHA, its typical presenting scenario, treatment, and prognosis. Using Callie as a model we shall discuss the nature of this disease, and delve into the variants of presentation and treatment. Dr. Sharon Center, Dr. Jason Pintar

url: http://hdl.handle.net/1813/2897
date: 2006-04-27
creator: Ollivett, Terri
viewed: 2162
title: Drug induced immune mediated hemolytic anemia in a quarter horse
abstract: Senior seminar (D.V.M.)--Cornell University, 2004. Includes bibliographical references (leaf (8)). A 9 year old dun Quarter Horse gelding presented to the Large Animal Hospital at Cornell University on August 13, 2003 for fever, lethargy, and anorexia. One week prior, this horse had received a wound to his right carpus. He was treated concomitantly with procaine penicillin, trimethoprim-sulfa, and non-steroidal anti-inflammatories. Five days after therapy was initiated, the horse began to show signs of systemic illness, including fever and lethargy. His clinical signs deteriorated as he became more lethargic and anorexic and was noted to urinate dark brown urine. He was then referred to Cornell for further evaluation. Clinical signs at presentation suggested hemolytic anemia. This paper will further discuss the differentials for equine hemolytic anemia and will specifically focus on drug induced IMHA. Dr. Rachel Gardner, Dr. Jerome Vanbiervliet, Dr. Emily Meseck

url: http://hdl.handle.net/1813/2898
date: 2006-04-27
creator: Plant, Jessica E. E.
viewed: 2419
title: Canine degenerative corneal endothelial disease and the management of the disease in the private practice
abstract: Senior seminar (D.V.M.)--Cornell University, 2004. Includes bibliographical references (leaves 13-15). Alex Poe is a 15-year old mixed breed canine with a year and a half history of bilateral refractory corneal erosion and opacity. Diseases leading to refractory canine corneal erosion are frustrating to handle in a clinical situation unless an appropriate pathologic diagnosis is made. Primary causes of corneal erosion include persistent mechanical irritation, primary corneal epithelial disease, or primary corneal endothelial disease. Conventional therapies for corneal epithelial and corneal endothelial diseases have differed only in the administration of hyperosmotic agents in cases of primary endothelial disease. However, historically primary endothelial disease patients have remained refractory to therapy due to the inability to control corneal edema leading to bullous keratopathy and persistent ulceration. The use of a cautery probe to perform thermokeratoplasty on the cornea has been used in human patients in the past and has shown promise in treating canine corneal endothelial disease. Dr. Katherine Cutter, Dr. Katherine Cutter, Dr. Audrey Yu-Speight

url: http://hdl.handle.net/1813/2899

date: 2006-04-27
creator: Re, Meredith
viewed: 2415
title: An unusual case of pancreatic carcinoma in a cat
abstract: Senior seminar (D.V.M.)--Cornell University, 2004. Includes bibliographical references (leaf 8). Exocrine carcinomas are the most common tumor of the feline exocrine pancreas, and they may arise from either the ductal or acinar cells of the exocrine pancreas. They are typically found in older cats, which present for abdominal pain, weight loss, anorexia and vomiting. Pancreatic exocrine carcinomas are typically aggressive and metastasize most commonly to the liver, regional lymph nodes or peritoneum. Treatment options typically are limited to surgery and palliative care. Prognosis for survival is grave, but individual exceptions exist. Dr. Bailey and Dr. Simpson

url: http://hdl.handle.net/1813/2900
date: 2006-04-27
creator: Reed, Leigh Anne
viewed: 2725
title: Peripheral vascular lesion in a Weimaraner : arteriovenous fistula vs hemangiosarcoma
abstract: Senior seminar (D.V.M.)--Cornell University, 2004. Includes bibliographical references (leaves 13-14). Arteriovenous fistulas and hemangiosarcoma can share a similar presentation in a canine patient. Arteriovenous fistulas are abnormal communications between an artery and a vein, and they are most commonly found on the extremities. Hemangiosarcoma is a highly malignant vascular neoplasm. This case report details the work-up and surgical treatment of a presumptive arteriovenous fistula on the hind limb of a young adult Weimaraner. The lesion was removed and histopathology revealed cellular characteristics consistent with hemangiosarcoma. At an eight month follow-up with the owner, the patient was doing well, with no signs of recurrence or metastatic disease. Dr. James Flanders

url: http://hdl.handle.net/1813/2901
date: 2006-04-27
creator: Rosa, Brielle V.
viewed: 2550
title: Clostridial myonecrosis in a 2-year old paint colt
abstract: Senior seminar (D.V.M.)--Cornell University, 2004. Includes bibliographical references (leaves 9-10). The successful management of a horse with clostridial myonecrosis caused by Clostridium perfringens is described. A discussion of the etiology, diagnosis and treatment of clostridial myonecrosis is presented. Dr. Monica Figueiredo, Dr. Rachel Gardner

url: http://hdl.handle.net/1813/2902
date: 2006-04-27
creator: Ruth, Mary
viewed: 4495
title: Phacoemulsification and implantation of intraocular lenses in a diabetic dog
abstract: Senior seminar (D.V.M.)--Cornell University, 2004. Includes bibliographical references (leaf 13). Cataracts are a leading cause of blindness in dogs. Diabetes mellitus is the most common cause of metabolic cataracts in dogs. Once the diagnosis of cataracts has been made 50-70% of dogs will develop cataracts within six to twelve months. Currently, phacoemulsification is the preferred technique for removal of cataracts. Following surgical removal of a cataractous lens, vision is dramatically improved. However, an eye without a lens is far-sighted since the lens is not present to focus incoming light onto the retina. With implantation of an intraocular lens, incoming light rays are focused such that the focal point is at the retinal plane, improving

vision. Dr. Thomas Kern

url: http://hdl.handle.net/1813/2903
date: 2006-04-27
creator: Schnabel, Lauren V.
viewed: 1587
title: Primary alimentary lymphoma in a 23-year-old palomino mare
abstract: Senior seminar (D.V.M.)--Cornell University, 2004. Includes bibliographical references (leaves 9-10). Alimentary neoplasia is rare in the horse, with the exception of lipoma. This paper describes a case of a large colon lymphoma in a mare in which metastasis to the liver caused encephalopathy and severe neurologic signs. Differential diagnoses for encephalopathy in the adult horse including causes of advanced liver disease and gastrointestinal disturbances are discussed. In addition, the pathophysiology of liver disease leading to encephalopathy is reviewed. Dr. Njaa, Dr. Cheong, Dr. Gold

url: http://hdl.handle.net/1813/2904
date: 2006-04-27
creator: Scott, Suzanne E.
viewed: 2083
title: A case of canine diabetic cataracts
abstract: Senior seminar (D.V.M.)--Cornell University, 2004. Includes bibliographical references (leaf (14)). Zeus, a 7-year-old, male-castrated, mixed-breed canine, presented to the Cornell University Companion Animal Hospital Ophthalmology Service on August 19, 2003 for cataract phacoemulsification and intraocular lens implantation. His diabetes had been diagnosed one year previously when he had acute onset of cataract formation. According to the owners, his visual acuity had gotten progressively worse since initial cataract diagnosis. His diabetes mellitus was well-controlled (blood glucose curve consistently around 250 mg/dL) with 50 units of N-insulin twice a day. The owners had been administering neomycin-polymyxin-dexamethasone (NPD) ointment as needed for red eye, caused by lens-induced uveitis. Zeus had no other significant medical history, and was otherwise in good health.Dr. Eric Ledbetter

url: http://hdl.handle.net/1813/2905
date: 2006-04-27
creator: Sheth, Ami
viewed: 958
title: Patent ductus arteriosus in a juvenile alpaca
abstract: Senior seminar (D.V.M.)--Cornell University, 2004. Includes bibliographical references (leaves 10-11). On March 3, 2003, "Samson", a 5 month old male alpaca presented to the Large Animal Hospital at Cornell University for evaluation of a left sided heart murmur, lethargy and poor growth. His owners stated that he had gained very little weight since birth and was half the size of the other crias his age. Dr. Flanders, Dr. Perkins

url: http://hdl.handle.net/1813/2906
date: 2006-04-27
creator: Snyder, Amy B.
viewed: 2942
title: The management of severe, chronic laminitis in a horse
abstract: Senior seminar (D.V.M.)--Cornell University, 2004. Includes bibliographical references (leaf 14). "Hopper", a 10-year-old Morgan gelding, was evaluated for non-weight-bearing right thoracic limb lameness in June 2003. In April 2003, Hopper had been evaluated for left thoracic limb lameness. A diagnosis of white

line disease affecting all four hooves was made, but laminitis was suspected to have been an initiating factor. Upon presentation in June, radiographs revealed severe, bilateral laminitis with hoof abscesses in the right hoof. Treatments included bilateral forelimb dorsal hoof wall resections, bilateral regional antibiotic perfusion, and administration of intravenous and oral antibiotics, analgesics and vasodilators. Serial radiography was performed to monitor the course of the disease and identify possible hoof abscesses. Contrast studies of the digital vasculature were performed. Hopper was discharged in August 2003 with a grave prognosis. Michael Schramme

url: http://hdl.handle.net/1813/2907
date: 2006-04-27
creator: Soffler, Carl
viewed: 1791
title: Renal failure secondary to ascending urinary tract infection and pyelonephritis in a horse
abstract: Senior seminar (D.V.M.)--Cornell University, 2004. Includes bibliographical references (leaves 11-12). Pyelonephritis is an uncommon cause of renal failure in the horse. The horses with the highest risk for urinary tract infections and pyelonephritis are multiparous mares with a history of dystocia, bladder paralysis, urinary incontinence, or urolithiasis. Bacteria cultured from urinary tract infections and pyelonephritis are typically coliforms or normal skin flora. Successful management of renal failure is largely dependent on early diagnosis. The case presented is of a nine year old, Quarter Horse brood mare with a typical history for a subacute pyelonephritis that was complicated by a chronic hydronephrosis in the contralateral kidney. Dorothy Ainsworth, DVM, PhD, Rachel Gardner, DVM

url: http://hdl.handle.net/1813/2908
date: 2006-04-27
creator: Spielzinger, Allison
viewed: 2339
title: Severe septic arthritis and cellulitis in a mare
abstract: Senior seminar (D.V.M.)--Cornell University, 2004. Includes bibliographical references (leaves 10-11). "Theology" presented to the Equine and Farm Animal Hospital at Cornell University for evaluation and treatment of infected right hock joints. Arthrocentesis, bloodwork, and radiographs were used to diagnose infectious or septic arthritis. Despite aggressive surgical and medical management, osteoarthrosis and osteomyelitis developed in the affected limb, and supporting-limb laminitis developed in the contralateral limb. Due to a poor prognosis for survival, Theology was euthanized. Necropsy was performed and confirmed the diagnosis of septic arthritis. Dr. Lisa Fortier

url: http://hdl.handle.net/1813/2909
date: 2006-04-27
creator: Taylor, Anita
viewed: 2080
title: Nasal aspergillosis in a dog
abstract: Senior seminar (D.V.M.)--Cornell University, 2004. Includes bibliographical references (leaf 9). A 10 year old, male castrated mixed breed dog was referred to the Medicine Service at Cornell University for chronic unilateral mucopurulent nasal discharge, elevated liver enzymes, and gastrointestinal signs. The dog was being treated by the referring veterinarian with itraconazole for presumptive nasal aspergillosis. The itraconazole was discontinued after liver enzymes were found to be elevated and when the patient started showing decreased appetite, vomiting, and diarrhea. At Cornell University, a computed tomography (CT) scan performed previously by the referring veterinarian was reviewed and rhinoscopy was performed which revealed moderate to severe turbinate loss in the right nasal cavity and many plaques in the right frontal

sinus. Culture and histopathology of samples taken during rhinoscopy were diagnostic for nasal aspergillosis. Noninvasive intranasal infusion of clotrimazole was performed which resulted in the resolution of clinical signs. Dr. Richard Goldstein, Dr. Alejandro Aguirre

url: http://hdl.handle.net/1813/2910
date: 2006-04-27
creator: Warriner, Karen E.
viewed: 2087
title: Pseudothrombocytopenia in a 4 month old Thoroughbred filly
abstract: Senior seminar (D.V.M.)--Cornell University, 2004. Includes bibliographical references (leaf (13)). This is the case report of a 4 month old Thoroughbred filly, with an unknown medical history, that was diagnosed with pseudothrombocytopenia. The foal was physically healthy with no evidence of bleeding. Initial bloodwork, from EDTA-anticoagulated blood, revealed a platelet count of 24 thou/uL. Differential diagnoses included alloimmune thrombocytopenia, immune mediated thrombocytopenia, EDTA dependent pseudothrombocytopenia and pseudothrombocytopenia from other causes. Subsequent bloodwork demonstrated increasing platelet counts. However, blood submitted to separate laboratories produced variable results. A correlation with of platelet count with the amount of time from collection to processing was observed. The foal's apparent thrombocytopenia resolved without treatment, diagnosis of an underlying disease, or development of clinical signs. Dr. Gillian Perkins, Dr. Amy Leibeck

url: http://hdl.handle.net/1813/2911
date: 2006-04-27
creator: Watts, K.
viewed: 3239
title: Eccrine adenocarcinoma in a cat's paw
abstract: Senior seminar (D.V.M.)--Cornell University, 2004. Includes bibliographical references (leaf 12). A geriatric, male castrate, American Domestic Shorthair cat was presented to Cornell University Hospital for Animals (CUHA) for evaluation of an eccrine adenocarcinoma involving the right metacarpal pad. Bleeding associated with the right front paw was first noticed by the owners in August of 2003. The cat presented to the referring veterinarian on August 26th 2003, at which time an ulcerated mass was noted on the right metacarpal pad. An incisional biopsy was obtained, and histopathologic assessment was consistent with an eccrine adenocarcinoma. Two-view thoracic radiographs were unremarkable. A complete blood count, chemistry panel, and urinalysis were performed. The chemistry panel revealed renal parameters at the upper end of normal [creatinine = 2.0 mg/dL (0.7-2.1mg/dL), BUN = 33.1mg/dL (17-35mg/dL), phosphate = 13.3mg/dL (3.0-6.6mg/dL)]. Urine specific gravity was >1.045, and occasional cocci were seen in urinary sediment. The cat was treated with enrofloxacin for the urinary tract infection. On presentation to the Oncology Service at the CUHA, the cat was quiet but alert and responsive. Physical examination confirmed an ulcerated mass associated with the right metacarpal pad that measured 1.0 x 1.0 x 0.5cm. The mass was not painful on palpation, and the cat showed no signs of lameness. Thoracic auscultation was unremarkable. Abdominal palpation revealed no abnormalities. All peripheral lymph nodes palpated normal in size and consistency. The remainder of the physical exam was unremarkable. A complete blood count, chemistry panel, and urinalysis were performed. Results showed no significant abnormalities. The two lateral thoracic referral radiographs were reviewed, a third dorsoventral view was obtained, and an abdominal ultrasound was performed. No evidence of metastatic diseases was identified in either imaging modality. Slides from the initial metacarpal biopsy were reviewed by the CUHA Surgical Biopsy Service, and confirmed a sweat gland carcinoma. The described diagnostic evaluation generated a problem list that consisted of a mildly overconditioned, mildly stressed, geriatric, male castrated feline, with an ulcerated right metacarpal sweat gland carcinoma. Forelimb amputation was recommended by the CUHA Oncology Service as the primary

treatment to provide local control and the best long-term prognosis. Locally aggressive resection combined with radiation therapy was suggested as an alternative treatment, but was declined by the owners due to uncertain efficacy. Dr. Michael Rozmanec, Dr. Amanda McNabb, Dr. Dennis Bailey

url: http://hdl.handle.net/1813/2912
date: 2006-04-27
creator: Osier, Lisa B.
viewed: 2790
title: Diagnosis, Pathophysiology and Treatment of Glomerulopathy in a Dog
abstract: Senior seminar (D.V.M.)--Cornell University, 2004. Includes bibliographical references (leaves 15-16). A nine-year-old, female spayed Norwegian Elkhound presented to Cornell University Hospital for Animals on 9/18/03 with a chief complaint of renal disease and anemia. Significant findings on physical examination and diagnostic workup included thin body condition, grade 2/6 systolic murmur, non-regenerative anemia, proteinuria, azotemia, hypoalbuminemia, hyperphosphatemia, hypertension as well as multiple splenic and a single hepatic nodule. These findings were consistent with a glomerulopathy, but without biopsy glomerulonephritis could not be distinguished from amyloidosis. Pathogenesis of glomerular disease in Inga's case may include Lyme nephritis, immune complex glomerulonephritis secondary to neoplasia, amyloidosis or another unidentified cause. Inga was treated with multiple supportive therapies such as enalapril, amlodipine, famotidine, subcutaneous fluids and Epogen. Despite initial improvement in quality of life, Inga deteriorated in mid-October 2003 and was euthanized by her referring veterinarian. Dr. Jennifer McCabe, DVM

url: http://hdl.handle.net/1813/2913
date: 2006-04-27
creator: Tillou, Brett
viewed: 915
title: The economics of a boarding kennel in a veterinary hospital
abstract: Senior seminar (D.V.M.)--Cornell University, 2004. Includes bibliographical references (leaf 6). There are over 280 million people in the United States, and over 140 million cats and dogs. This paper investigates the economics of operating a boarding facility as an ancillary business to a small animal veterinary practice. The case study concentrates on a one doctor, small animal veterinary hospital, and reveals that the clinic's profit from the boarding facility is minimal, and steadily diminishing. The financial information is extrapolated into the hypothetical construction of a new veterinary facility to determine if including a boarding facility as part of a new hospital design is a wise economical decision in today's economic environment. Dean Bonita Voiland

url: http://hdl.handle.net/1813/2914
date: 2006-04-27
creator: Blake, Christine
viewed: 2390
title: HOW ADULTS CONSTRUCT FOOD CHOICE: CATEGORIES, CONTEXTS, AND SCRIPTS
abstract: Carole A. Bisogni; Jeffery Sobal; Edward A. Frongillo Jr.; Gretel H. Pelto; Martha H. Stipanuk People are more likely to accept, integrate, and act on nutrition information that corresponds with their food cognitions. The purpose of this project was to explore and describe how adults construct food choices using schema theory as a way to understand food cognitions. Forty-two purposively recruited, employed US adults completed repeated card-sort tasks and in-depth, qualitative interviews related to different eating contexts. They sorted 59 food cards across multiple contexts. These data were analyzed for the types of categories that participants used to organize the cards using grounded theory approaches. Personal-experience-based ways of classifying were specific to the individual. Context-based ways of classifying were related to different

characteristics of eating episodes. Food-based ways of classifying were related to properties of food. Cluster analysis was used to identify clusters of participants according to salience of their ways of classifying the food cards. Seven clusters were identified. To gain understanding of how participants constructed food choice in a specific eating episode, the researcher analyzed passages from the interview transcripts related to the evening meal. Analysis identified participants' scripts for this meal in terms of interconnected dominant values, general expectations, and plans that included strategies and procedures. Scripts varied in scope and flexibility. The following eight kinds of scripts were identified and labeled using participants words: "providing dinner for my family," "head of the table cooks," "head of the table does not cook," "trying unsuccessfully to have a family meal," "share the work," "anything goes," and "live alone entertaining." The application of schema theory provided important insights into the mental processes involved in food choice. Individuals' unique food schemas consist of rich and complex categories that are differentially accessed depending on the food context. Food choice scripts demonstrate how individuals' mental processes are linked to behavior. These findings provide insights useful to nutrition professionals interested in promoting adoption of healthy eating habits.Support was provided by the Cornell University Agricultural Experimental Station, USDA-CREES, Hatch Project #NYC3994223 and the National Institutes of Health Training Grant #2 T32 DK07158-27.

url: http://hdl.handle.net/1813/2915
date: 2006-04-27
creator: Wilcox, Elizabeth L.
viewed: 2519
title: Hyperviscosity syndrome in a dog with IgM secreting lymphoma
abstract: Senior seminar (D.V.M.)--Cornell University, 2004. Includes bibliographical references (leaf 8). On June 13, 2003 a 6 year old intact female beagle, "Molly", presented with the major complaint of buphthalmia and red eye. She was previously diagnosed and treated by her veterinarian for glaucoma. She was referred to Cornell for further examination. After an ophthalmic examination, Molly was diagnosed with hyperviscosity syndrome. Hyperviscosity syndrome is a rare condition associated with an increase in the concentration of macroglobulins in the blood. There are various manifestations of hyperviscosity syndrome with paraproteinaemicus retinopathy (tortuous, distended retinal veins) being pathognomonic. Other manifestations of hyperviscosity syndrome are hemorrhaging, especially retinal and gastrointestinal, visual defects, and neurologic deficits. Causes of hyperviscosity syndrome include multiple myeloma, chronic lymphocytic leukemia, primary (Waldenstrom's) macroglobulinemia, and lymphosarcoma with monoclonal elaboration of IgM, IgA, and IgG immunoglobulin and light chain protein classes. After an extensive diagnostic work up it was determined that Molly had a IgM secreting lymphoma of possible B-cell origin. Hyperviscosity is treated by reducing serum viscosity. This is best accomplished by treating the primary disease. Appropriate chemotherapy for Molly's lymphoma consists of the CHOP protocol which consists of L-asparaginase, prednisone, doxorubicin, cyclophosphamide, and vincristine. This would have been the most optimal treatment for this dog. However, the owner elected to forgo expensive chemotherapy and treat Molly with a pallative course of prednisone. Dr. Kathrene Cutter

url: http://hdl.handle.net/1813/2916
date: 2006-04-27
creator: Andreou, Andreas
viewed: 2522
title: An extreme case of masticatory myositis
abstract: Senior seminar (D.V.M.)--Cornell University, 2005. Includes bibliographical references (leaf [13]). Lucy, an 8-year-old female spayed Labrador retriever mix, presented to the Triage Service at Cornell University Hospital for Animals due to signs of respiratory distress. Lucy's owner indicated a history of inappetance, intermittent cough, and difficulty walking for the past two weeks. Initially, Lucy presented to the referring

veterinarian (rDVM) who recorded a right hindlimb lameness, fever of 104.3 degrees Fahrenheit, and tachypnea. Cephalexin was prescribed to treat a possible bronchitis seen on chest radiographs. The following day she re-presented to the rDVM. Serum chemistry revealed a mildly increased alkaline phosphatase (ALP). Tachypnea was still evident yet her lungs ausculted normally, so a week-long course of Deramaxx for possible blunt trauma to the chest was initiated. Ptyalism, progressive intermittent inappetance, and white mucoid sputum were observed for several days. She was rechecked by the rDVM one week later, at which time a complete blood count (CBC) documented a leukocytosis. Heartworm test was negative at this time. She was treated with more cephalexin, aminophylline as a bronchodilator, and instructions for nebulization and coupage at home. Within five days, Lucy stopped drinking abruptly, and would only eat via syringe force-feeding. Her owner mentioned that she did not tolerate pilled medications; Lucy had become increasingly stubborn over the last several days and would clench her mouth shut when her owner attempted to medicate her. After approximately two weeks since her original symptoms, Lucy presented to Cornell.

url: http://hdl.handle.net/1813/2917
date: 2006-04-27
creator: Fan, Elaine C.
viewed: 2512
title: Case report of an orbital inflammatory myofibroblastic tumor in a dog
abstract: Senior seminar (D.V.M.)--Cornell University, 2005. Includes bibliographical references (leaf 8). The inflammatory myofibroblastic tumor (IMT) has been only fairly recently identified and studied in human medicine. It is commonly found as a primary lung tumor, and most often affects children and young adults. It is usually benign, with a low rate of recurrence and low metatstatic potential. However, diagnosis of this neoplasm is often confusing and controversial, making the potential for misdiagnosis high. The IMT is virtually unheard of in veterinary medicine. Thus, it is with great excitement that we present a case report of an orbital inflammatory myofibroblastic tumor in a dog with the hope of bringing the IMT into the consciousness of mainstream veterinary medicine. Dr. Ronald Riis, Dr. Eric Ledbetter

url: http://hdl.handle.net/1813/2918
date: 2006-04-27
creator: Beltran, William
viewed: 2322
title: Cellular and molecular studies of ciliary neurotrophic factor receptor alpha expression and ciliary neurotrophic factor mediated neuroprotection in the canine retina
abstract: Over the past decades, extensive new knowledge on the cellular and molecular mechanisms of vision has been acquired. During the genomic era, numerous genes involved in retinal function have been identified, some of which have been causally associated with various forms of retinal disorders. Despite this rapid progress in the understanding of retinal biology, retinal degeneration, the most common cause of blindness in the developed world remains an untreatable condition. A therapeutic strategy that has been tested in several animal models of retinal degeneration has been to deliver intraocularly a survival factor, ciliary neurotrophic factor (CNTF), in an attempt to rescue photoreceptor cells prior to cell death.

To begin addressing the question about the mechanism of CNTF-mediated neuroprotection, the retinal expression of the specific receptor for CNTF (CNTFRalpha) was characterized. Using different molecular approaches, we found that photoreceptor cells from non-rodent mammalian species (including dog and human) express CNTFRalpha. This led to the conclusion that in these species, a CNTF- mediated photoreceptor rescue effect would most likely result from the direct activation of a pro-survival response in rods and cones.

The underlying expectation in testing CNTF as a potential treatment for retinitis pigmentosa (RP) and allied disorders is that it may provide a means of protecting photoreceptor cells regardless of the genetic and/or environmental causes of the disease. This hypothesis is based on the evidence that CNTF rescues

photoreceptors in several non-allelic animal models of RP. One such model has been rcd1, a canine form of early-onset and rapidly progressing retinal degeneration caused by a mutation in the PDE6B gene. In this work, we evaluated whether CNTF could also rescue photoreceptors in XLPRA2, another early-onset canine model of RP caused by a mutation in a different gene (RPGR exon ORF15). The characterization of the histological stages of the disease, and the examination of the kinetics of cell death provided time-points to optimally test CNTF's neuroprotective effect in this model. Intravitreal injections of CNTF in XLPRA2 at these determined ages failed to show any significant rescue from cell death, and caused some abnormal peripheral retina remodeling that was disease- and age-specific.

url: http://hdl.handle.net/1813/2919
date: 2006-04-27
creator: Stern, Karen A.
viewed: 1869
title: Retrospective study of canine and feline immune-mediated pancytopenia
abstract: Senior seminar (D.V.M.)--Cornell University, 2005. Includes bibliographical references (leaf 11). A retrospective study of canine and feline pancytopenia presumably due to immunemediated destruction of blood cell precursors in bone marrow was conducted to characterize the clinical signs, laboratory test results, treatment and outcome of this condition. CUHA case records between 1994-2004 were reviewed and animals were included in the study if they fulfilled the following criteria: several days history of pancytopenia, hyperplasia of one or more cell lines in the bone marrow, absence of morphologic abnormalities in bone marrow precursors, no evidence of peripheral destruction, and no known underlying disease or drug therapy that could have caused the pancytopenia. Seven canine and 4 feline cases were included. Animals were generally young and female, and exhibited vague clinical signs such as lethargy and anorexia. Bone marrow aspirates were hypercellular with erythroid hypoplasia in dogs and erythroid hyperplasia in cats. Both responded well to immunosuppressive therapy over days to weeks. Therefore, an immune-mediated pathogenesis should be considered for dogs and cats presenting with pancytopenia due to ineffective hematopoiesis. Dr. Tracy Stokol

url: http://hdl.handle.net/1813/2920
date: 2006-04-27
creator: Mumford, Jessica
viewed: 1806
title: A case of west Nile virus encephalomyelitis in a six month old Standardbred colt
abstract: West Nile virus is a significant emerging disease that is rapidly spreading across the United States. It has a great health and economic impact on the population. This paper will discuss the background, differential diagnoses, testing, treatment, and a case presentation of West Nile virus.

url: http://hdl.handle.net/1813/2921
date: 2006-04-27
creator: Calhoun, Karen
viewed: 1556
title: Report for the Library of Congress: Preliminaries
abstract: Briefly introduces the author's report for the Library of Congress on the future of the catalog and its integration with other discovery systems. Prepared for the Endeavor EndUser annual meeting and presented April 22, 2006 in Chicago, Illinois. Includes speaker notes.

url: http://hdl.handle.net/1813/2922
date: 2006-04-28

creator:
viewed: 2723
title: Chemistry Faculty Files
abstract:

url: http://hdl.handle.net/1813/2923
date: 2006-04-28
creator: Thomas, Sarah
viewed: 1495
title: Library Environments and Organization: Opportunities or Constraints?
abstract: This paper addresses libraries as facilities, how library facilities are changing as a result of changes in the environment in which they find themselves, how those changes sometimes affect library organization, and how changes in library organizations affect library design.

url: http://hdl.handle.net/1813/2924
date: 2006-04-28
creator: Thomas, Sarah
viewed: 2609
title: Collaborating for Fun and Profit: Confessions of an Ex-Cataloger
abstract: none.

url: http://hdl.handle.net/1813/2925
date: 2006-04-28
creator: Thomas, Sarah
viewed: 2063
title: On the Centennial of Peking University: Will Electronic Records Created Today Survive to the Bicentennial?
abstract: Electronic records are becoming an increasingly important source of documentation of university administrative, legal, political, and historical activity. University libraries, as the home of archives, must take a leadership role in understanding the characteristics of electronic records, facilitating their transfer, description, and securing their long-term access.

url: http://hdl.handle.net/1813/2926
date: 2006-04-28
creator: Thomas, Sarah
viewed: 3070
title: Building Today for a Better Tomorrow
abstract: Presented to the President's Council of Cornell Women by
Sarah E. Thomas, Carl A. Kroch University Librarian
March 31, 2006none.

url: http://hdl.handle.net/1813/2927
date: 2006-04-28
creator: Lee, Damon
viewed: 3086
title: BREATHE AND BENDING LIGHT:TWO CHAMBER ORCHESTRA WORKS
abstract:

url: http://hdl.handle.net/1813/2928
date: 2006-04-28
creator: Lee, Damon
viewed: 1695
title: THE FILM MUSIC OF TORU TAKEMITSU
abstract: Selections from Takemitsu's film-music output are used as examples in this analysis on music placement in film. Music gives information to the viewer, but the opinions and theories about what this information is and what its function is, have not been entirely sorted out. It is clear that film-music represents, but what does it represent, and how does it represent? Using Takemitsu as the subject of this study presents the opportunity to consider this unique figure's diverse and prolific film- music output in the larger context of Japanese cinema at a highpoint. The collaborating filmmakers allowed an unusual level of compositional freedom, resulting in films with exceptional and unusual film-scores.Asian Cultural Council

url: http://hdl.handle.net/1813/2929
date: 2006-04-28
creator: de Acosta, Diego
viewed: 2101
title: <HAVE + PERFECT PARTICIPLE> IN ROMANCE AND ENGLISH: SYNCHRONY AND DIACHRONY
abstract: At first glance, the development of the Romance and Germanic have-perfects would seem to be well understood. The surface form of the source syntagma is uncontroversial and there is an abundant, inveterate literature that analyzes the emergence of have as an auxiliary. The "endpoints" of the development may be superficially described as follows (for English): (1) OE Ic hine ofslaegenne haebbe > Eng I have slain him The traditional view is that the source syntagma, <have + noun.ACC + perfect participle>, is structured [have [noun participle]], and that this syntagma undergoes change as have loses its possessive meaning. In this dissertation, I demonstrate that the traditional view is untenable and readdress two fundamental questions about the development of have-perfects: (i) how is the early ability of have to predicate possession connected with its later role in the perfect?; (ii) what are the syntactic structures and meanings of <have + noun.ACC + perfect participle> before the emergence of the have-perfect? With corpus evidence, I show that that the surface string <have + noun.ACC + perfect participle> corresponds to three different structures in Old English and Latin; all of these survive into modern English and the Romance languages. I propose that the likeliest source of the have-perfect is the structure exemplified in: (2) Now he has his opponent cornered.
Sentences like (2), amply attested in Latin and Old English, contain an aspectual periphrasis that potentially describes two stages of a complex situation: the subject?s achievement of a result and a persisting resultant state. I hypothesize that the structure exemplified in (2) only became available after have had undergone semantic widening and entered into a systematic association with other expressions of possession and pertaining.
I also devote considerable attention to the differing values <have + perfect participle>. Though English and the Romance languages all have a formally equivalent verbal construction, the time reference of this "same" construction varies significantly across languages. I argue that the value of <have + perfect participle> in a given language is best understood, synchronically and diachronically, in terms of the values of the verb forms that it complements.

url: http://hdl.handle.net/1813/2930
date: 2006-04-28
creator: Weinberger, Michael
viewed: 1547
title: A MEASUREMENT OF THE INCLUSIVE BRANCHING RATIO OF CHARGED AND NEUTRAL D MESON DECAYS CONTAINING A NEUTRINO

abstract: Jim Alexander, Rich Galik, Tung-Mow YanThis thesis reports the measurement of branching ratios for the inclusive decay of a D meson to a neutrino, measured at the CLEO-c detector. It is fully inclusive as to lepton flavor and into which semileptonic mode the D decays. This analysis is the first direct measurement of the inclusive neutrino branching ratio. It utilizes 187 pb^{-1} of data taken at the $\psiprime$ resonance. The measured values are $BR(D^{\pm} \rightarrow X\nu) = 29.43\% \pm 0.83 \pm 1.75$, and $BR(D^0 \rightarrow X\nu) = 13.52\% \pm 0.28 \pm 0.68$.

url: http://hdl.handle.net/1813/2931
date: 2006-05-01
creator: Guo, Xiaoli
viewed: 2187
title: GENDER INEQUALITY ACROSS SECTORS IN URBAN CHINA
abstract: In the debate about the stratification order during social transitions in former socialist countries, little research is done about changes in gender inequality in these countries. In this paper, I examine the differences in gender inequality between the public and private economic sectors in China, and the distinct mechanisms of change for the gender stratification order in the workplace. Data analysis shows that there is a dramatic difference. There is a very small or zero gender inequality in the public sector in coastal Chinese cities, where the market economy has developed faster than in other regions of China. However, gender inequality is significant in the private sector in all the cities in the data set with or without controlling for human capital, family status, and political capital. Close examination of the institutions before the social transition shows that there is a powerful institutional system that tries to minimize gender differences in employment. During the market transition, this system continues to exist in the public sector; while in the newly emerging private sector, these institutions do not appear. Gender stratification has different mechanisms of change during social transitions than the stratifications based on social capital, political capital, and human capital. Women do not have the resources bonded with gender in the newly emerging market economy that would allow them to maintain their positions in the gender stratification order. Without the support of institutions, the gender stratification order exhibits a discontinuity in the private sector.Cornell University Sage Fellowship

url: http://hdl.handle.net/1813/2933
date: 2006-05-02
creator: Ji, Mi
viewed: 2308
title: Neoliberal Developmentalism:State-led Economic Liberalization in China
abstract: On the question of state-market relations, the neoclassical economic view regards a minimal state as essential for economic growth. The statist view in political economy studies, on the other hand, stresses the active role of the state in promoting economic development. Both views tend to treat "state" and "market" as opposing forces: A developmental state is associated with industrial planning and active interventionist measures to "govern the market", whereas market-conforming liberalization is usually seen as a sign of the state's retreat in the face of globalized market forces. My study of economic reforms in China, however, indicates that a state may pursue market-conforming liberalization to advance its developmental goals.
This dissertation seeks to account for the logic behind the apparent anomaly of state-market relations in the course of China's economic reform through examining the reform processes of key economic sectors. The study pays special attention to the historical and institutional contexts where reforms took place and evolved and uses institutional change and the ensuing socioeconomic dynamics to explain the course and outcome of the reforms. It argues that administrative decentralization in China changed the Chinese state's internal structure and in turn adversely affected the central state's autonomy and policy enforcement capacity. To regain state authority and control, central policy makers resorted to market-conforming liberalization.

Rather than the state intervening in the market or the state giving way to market forces, this process entails the Chinese state's effort to re-create a developmental state through the creation of a liberal market.

url: http://hdl.handle.net/1813/2934
date: 2006-05-02
creator: Garvin, Christopher J.
viewed: 1246
title: AN EXPLORATORY STUDY OF THE TERRESTRIAL BIOGEOCHEMICAL SILICON CYCLE AT A FORESTED WATERSHED IN NORTHERN VERMONT
abstract: The importance of the global silicon cycle is becoming increasingly recognized because of its role in the consumption of atmospheric CO2. However, the terrestrial component of the silicon cycle is insufficiently understood, especially in temperate regions, since the majority of past research has ignored the effects of vegetation on the cycle. This study examines the terrestrial biogeochemical silicon cycle at a 40.5-ha sub-basin of the Sleepers River Research Watershed in Danville, VT. In particular, we examine the role of plants in the silicon cycle by analyzing silicon and germanium in plant leaves and cores, stream water, groundwater, soil water, bedrock, and soil obtained throughout 2005 from the watershed. Our results show that the amount of Si cycled by the vegetation is roughly the same as the amount weathered from bedrock and soil minerals. We also predict significant storage of Si in phytoliths in both the soil and the living biomass, slowing the rate of Si export from the watershed. Additionally, there appears to be a seasonal shift in the source of Si to the stream. We suggest this is because phytolith dissolution contributes more significantly in the early growing season than late in the season, when stream-flow is dominated by Si derived from mineral weathering.NSF, New York State Space Grant

url: http://hdl.handle.net/1813/2935
date: 2006-05-02
creator: Flinn, Kathryn McQuilkin
viewed: 2155
title: Influences of past agriculture and present environment on plant distributions: Population ecology of three fern species in central New York
abstract: The development of forests on abandoned agricultural lands provides an ideal context to examine the relative roles of disturbance history and environmental conditions in shaping plant communities. Herbaceous plants typical of uncleared forests may remain absent from forests regrowing after agriculture, either because dispersal limits their distributions, or because lasting environmental changes limit their ability to establish and persist. Here I investigate how these processes affect plant distributions across the post-agricultural landscape of central New York, focusing on three fern species.

First I review relevant literature on the recolonization of post-agricultural forests by herbaceous plants. Next, in 20 adjacent pairs of forests that were never cleared for agriculture and forests that established 85-100 years ago on plowed fields, I assess the influence of past agriculture on present environmental conditions, including tree community structure and composition, soil physical and chemical properties and light availability. Compared to soils of adjacent uncleared stands, post-agricultural forest soils were similar in physical properties and chemical properties associated with pH, but had less organic matter, carbon and phosphorus, and reduced spatial heterogeneity in pH and water content. I examine how individual species interact with post-agricultural habitats by comparing the demography of three fern species with contrasting distributions across forests of different history, Dryopteris carthusiana, Dryopteris intermedia, and Polystichum acrostichoides, using descriptive and experimental approaches to specify which life history stages limit colonization, and which traits explain the species? distributions. Among the three species and between forests types, I compare the size and fecundity of adult plants; the deposition and storage of spores;

the reproductive success and selfing ability of gametophytes; rates of germination and establishment in various microsites; and the distribution of juvenile plants across these microsites. As adult plants of all three species had similar or greater performance in post-agricultural forests, and spore availability far exceeded recruitment rates, the availability of suitable sites for establishment appeared to limit population growth and spread. In both field and laboratory experiments, the species? reproductive success and selfing ability matched their distributions, suggesting that selfing may facilitate colonization in these species, and their reproductive biology may determine their distributions.The New York State Biodiversity Research Institute, the Andrew W. Mellon Foundation, the McIntire-Stennis program, a Sigma Xi Grant-in-Aid of Research and a National Science Foundation Graduate Research Fellowship.

url: http://hdl.handle.net/1813/2944
date: 2006-05-03
creator: Mattison, Peter Moir
viewed: 995
title: QUANTIFYING DISTURBANCE FACTORS AND EFFECTS IN COMMON TERNS (STERNA HIRUNDO) USING VISUAL, AUDIO, AND REPRODUCTIVE DATA
abstract: The common tern is designated as a species of special concern in Upstate New York. The largest inland tern colony in New York is located on Oneida Lake, which is habitat to many other colonial waterbird species and an area of high human use during the tern breeding season. In addition to disturbances caused by recreational use, Oneida Lake's common terns are exposed to potential disturbances from tern research and cormorant management. Researchers intensively monitor tern nests during the breeding season, and USDA-APHIS participates in a lake-wide hazing program to control double-crested cormorants (Phalacrocorax auritus). The goal of this study was to discern and describe disturbances which might affect the projected sustainability of the common tern colony on Oneida Lake.

To evaluate the status of common terns on Oneida Lake, reproductive and population data were gathered. In order to classify, quantify, and evaluate the extent of human disturbance to the tern colony, I observed the colony during the summer of 2003 and collected visual and audio data of potentially disturbing events and the terns' reactions. Analyses of these data were performed using conventional statistics and Raven spectrogram analysis software. 22 Common tern population and reproductive parameters from 2003 were examined for deviation from patterns established by 1979-2002 data. Additionally, I examined differences in reproductive data among the different islands where terns nested in 2003. An estimated 449 pairs of terns established 621 nests in 2003. A total of 952 chicks hatched from 1587 eggs in 362 nests over the season, and 389 chicks fledged. These numbers are comparable or higher than those of past years and indicate that the Oneida Lake colony seems to be maintaining its population. Nests on Little Island were more likely to hatch than those on other islands. Further study is needed to determine why significant (at alpha=0.05) differences in nest fates among breeding islands occur I classified disturbances to the tern colony on Oneida Lake as relating to tern researchers, the USDA-APHIS cormorant hazing program, recreational watercraft, aircraft, and natural phenomena. The terns' behavioral and audio responses were quantified. Significant differences among disturbance categories were demonstrated through ANOVAS ($F=14.82$, $df=5$, $p < 0.001$; $F=22.77$, $df=5$, $p<0.001$). Tukey's test of multiple comparisons yielded significant differences in disturbance-related window counts including differences between controls and both researcher and natural disturbance categories (27.9 vs. 105 terns/minute, $d=7.47$, $p<0.001$, 27.9 vs. 72.9 terns/minute, $d=5.50$, $p<0.001$) and the researcher disturbance category and watercraft, hazing, and aircraft disturbance categories (105 vs. 43.5 terns/minute, $d=5.68$, $p< 0.001$, 105 vs. 39.2 terns/minute, $d=6.00$, $p< 0.001$, 105 vs. 39.0 terns/minute, $d=3.81$, $p=0.0027$). Audio analysis demonstrated significant differences in alarm calls given between controls and researcher disturbance (53.1 kip/min vs. 140 kip/min, $p<0.001$) and watercraft disturbance categories (53.1 kip/min vs. 106 kip/min, $p<0.001$).

Tern research activities appeared to cause the most disturbance. Further research is needed to quantify

potential impacts of cormorant hazing programs on common terns The tern colony seems self-sustaining, but studies to determine the effects of less intense nest monitoring on common tern reproductive output are needed. Innovative and less intrusive techniques for measuring nesting efforts could benefit both the study species and those attempting to manage it.USDA-APHIS

url: http://hdl.handle.net/1813/2945
date: 2006-05-04
creator: Brosseau, Tamra
viewed: 1592
title: Historic Interior Documentation: A Case Study
abstract: This is a study of the documentation process of historical interiors, which examines the need for a procedure that records, evaluates, and documents interior architecture. An interior space can be recreated, restored, conserved or interpreted. I seek to demonstrate that a systematic approach to the documentation process is necessary to promote and further enhance the exchange of information regarding historical interiors within the preservation field. Consideration was given to the impact of such a system on the growing interest in historic interiors. Interdisciplinary approaches, including the fields of architecture, interior design, museum science, and historic preservation, were extensively researched. This involved evaluating the efficiency, accuracy, and effectiveness of the different approaches.
The findings highlight some of the issues that have broader implications within the field of historic preservation, including the need for the further development of interior research and documentation. The aim of this study is to highlight the call for this form of investigation. In the first chapter, an examination was performed of previous critical and historical works in the field, including both academic writing and professional reports.
This chapter focuses on the lack of available information on the topic and the reasons for the development of such. Chapter two explores the historical background of the Miller Heller House of Ithaca, New York. I examined the importance of the Music Room as it relates to William Henry Miller, owner and architect, and Candace Wheeler, leading 19th century American textile artist and interior designer. Chapter three focuses on the actual documentation process. The Music Room of the Miller Heller House form a case study for the documentation process to be illustrated.

url: http://hdl.handle.net/1813/2946
date: 2006-05-04
creator: Volz, Erik McCullough
viewed: 1449
title: Topology and Dynamics of Complex Social Networks
abstract: The problem of modeling complex social networks is considered from three perspectives: The problem of describing network topology; the problem of modeling dynamic processes on networks; and the problem of network sampling. These perspectives are highly complementary, each providing results with applications to one other. With respect to network topology, two main results are presented: An algorithm is presented capable of combining two measures of network structure, the degree distribution and the clustering coefficient. It is found that just two mechanisms are required to achieve any desired combination of these metrics-- network growth, combined with preferential attachment. Secondly, a mathematical model of one class of complex network, semi-random networks, is presented which is capable of elucidating the structure of semi-random networks in greater detail then had been achieved with previous models. Among other results, this theory allows one to calculate the expected number of neighbors at a given distance from a randomly chosen node, and to compute the mean path length inside the giant component. Network dynamics are investigated with a simple epidemic model, the SIR (Susceptible Infected Removed) model. A mathematical theory is presented for predicting epidemic incidence for SIR dynamics in semi-random networks. Finally,

the problem of network sampling is considered. A probability based estimation theory is presented for Respondent Driven Sampling (RDS). The theory enhances RDS by offering greater analytical tractability, analytical variance estimation, and the estimation of means of continuous variables.

url: http://hdl.handle.net/1813/2950
date: 2006-05-04
creator: Nicholson, Benjamin Ferrers
viewed: 1437
title: The Interface Response Function and Melting Point of the Prism Interface of Hexagonal Ice using a Fluctuating Charge Model (TIP4P-FQ)
abstract: Molecular Dynamics simulations have been used to follow the rate of growth and recession of the prismatic surface of a hexagonal ice-water interface. The fluctuating charge, four-site transferable intermolecular potential model, TIP4P-FQ, was used at temperatures between 265 K and 310 K in a series of isobaric isothermal (NPT) Molecular Dynamics simulations. Using appropriate order parameters, an interface response function that captures the speed of the moving interface as a function of temperature was constructed that covers the melting and growth of hexagonal ice. From the interface response function (Tv=0), the melting temperature was found to be within 8 K of 303 K and the maximum crystallization velocity was estimated to be ~1 m/s at 260 K (14% undercooling; in line with the kinetics of other systems such as Si). Changing the Lennard-Jones sigma parameter from 3.159 angstroms to 3.173 angstroms, in line with a previous parameterization by Rick, confirms results from Gibbs-Duhem integration that predicted a reduction in the melting temperature to 276 K. While this value corresponds well with experiments, given the relative simplicity of the model, it comes at the expense of accurately predicting the properties of liquid water. Crystallization from the prism interface involves at least two layers, as determined by density and dipole analysis and is in line with results found from previous TIP6P results.

url: http://hdl.handle.net/1813/2951
date: 2006-05-04
creator: Goblet, Nancy
viewed: 1902
title: Moving Historic Buildings: One Means of Preservation
abstract: One means by which to preserve a historic building is to relocate it to a new site. There are costs and risks (both financial and material) inherent in such an undertaking. It is likely to be an expensive project. There is a chance that the fabric of the building will be damaged, and the context in which the structure existed historically will change. Careful planning will be necessary in order facilitate transport, and appropriate preparations will be required at both the old and new locations. Clearly, the decision to move a building is one which should not be made haphazardly. Despite the fact that preservationists generally eschew the practice, however, moving a building may in fact be an effective way to preserve a threatened structure. Relocation may enhance or even spare a valuable historic resource, thus extending its utilitarian, economic, aesthetic and historic benefits.
The practice of moving buildings is not new. Numerous examples are presented, thus illustrating what types of structures have been relocated, and chronicling changes in the technology associated with structural moving. Early examples point to primarily practical and financial motives for moving. The growth of the historic preservation movement increased public awareness of the aesthetic and cultural values associated with those aging, dwindling assets. Perspectives on the relocation of historic buildings were influenced by the passage of the National Historic Preservation Act. The resulting guidelines for inclusion of moved buildings in the National Register of Historic Places and limited federal requirements for protection of historic resources are summarized for the reader.
To assist readers who are contemplating the relocation of a building, the various components of such a

project are introduced. Before deciding to move a building, it is advisable to assess its present condition and historic significance, to investigate potential sites, to gain an understanding of the moving process itself, and to estimate the associated costs. Careful planning is essential for successful execution of the project. Numerous professionals can contribute expertise in the process, including architects and engineers, contractors, professional building movers, financial officers, and government officials.

One venue in which moved buildings are often displayed is the outdoor museum. Such facilities offer educational and recreational opportunities, allowing visitors to experience aspects of life in some previous time. Background information is provided for three prominent examples: Greenfield Village in Michigan, the Farmers' Museum in New York, and Hopewell Furnace in Pennsylvania. Consideration is given to the use of preserved (and perhaps moved) buildings, and to the National Register status of each museum.

url: http://hdl.handle.net/1813/2952
date: 2006-05-04
creator: Morrison, Tina Marie
viewed: 1748
title: THREE PROBLEMS IN NONLINEAR DYNAMICS WITH 2:1 PARAMETRIC EXCITATION
abstract: Parametric excitation is epitomized by the Mathieu equation, x''+(d + e cos t)x = 0, which involves the characteristic feature of 2:1 resonance. This thesis investigates three generalizations of the Mathieu equation: 1) the effect of combining 2:1 and 1:1 parametric drivers: x''+(d + e cos t + e cos wt)x = 0
2) the effect of combining parametric excitation near a Hopf bifurcation:
x''+ (d + e cos t) x + e Ax' + e(b_1 x^3 + b_2 x'^2 x + b_3 x x'^2 + b_4 x^3) = 0
3) the effect of combining delay with cubic nonlinearity:
x''+(d + e cos t)x + eg x^3 = e b x(t-T)
Chapter 3 examines the first of these systems in the neighborhood of 2:1:1 resonance. The method of multiple time scales is used including terms of O(e^2) with three time scales. By comparing our results with those of a previous work on 2:2:1 resonance, we are able to approximate scaling factors which determine the size of the instability regions as we move from one resonance to another in the d-w plane. @Chapter 4 treats the second system which involves the parametric excitation of a Hopf bifurcation. The slow flow obtained from a perturbation method is investigated analytically and numerically. A wide variety of bifurcations are observed, including pitchforks, saddle-nodes, Hopfs, limit cycle folds, symmetry-breaking, homoclinic and heteroclinic bifurcations. Approximate analytic expressions for bifurcation curves are obtained using a variety of methods, including normal forms. We show that for large positive damping, the origin is stable, whereas for large negative damping, a quasiperiodic behavior occurs. These two steady states are connected by a complicated series of bifurcations which occur as the damping is varied.
Chapter 5 examines the third system listed. Three different types of phenomenon are combined in this system: 2:1 parametric excitation, cubic nonlinearity, and delay. The method of averaging is used to obtain a slow flow which is analyzed for stability and bifurcations. We show that certain combinations of the delay parameters b and T cause the 2:1 instability region in the d-e plane to become significantly smaller, and in some cases to disappear. We also show that the delay term behaves like effective damping, adding dissipation to a conservative system.

url: http://hdl.handle.net/1813/2953
date: 2006-05-04
creator: Barger, Kathryn Jo-Anne
viewed: 3264
title: Mixtures of Exponential Distributions to Describe the Distribution of Poisson Means in Estimating the Number of Unobserved Classes
abstract: In many fields of study scientists are interested in estimating the number of unobserved classes.

A biologist may want to find the number of rare species of an animal population in order to conserve, manage, and monitor biodiversity; a library manager may want to know how many non-circulating items are present in a library system; or a clinical investigator may want to determine the number of unseen disease occurrences. A traditional way of estimating an unknown number of classes is by using a negative binomial model (Fisher, Corbet, and Williams 1943). The negative binomial model is based on assuming that the numbers of individuals from each class are independent Poisson samples, and that the means of these Poisson random variables follow a Gamma distribution. This thesis proposes a parametric model where the law of the mean frequency of classes is a finite mixture of exponential distributions. The proposed model has the following advantages: model simplicity, efficient computation using the EM algorithm, and a straightforward interpretation of the fitted model. Also, model assessment by way of a chi-squared goodness of fit procedure can be used, a benefit this parametric model has over other commonly used non-parametric methods.

A main accomplishment of this thesis is providing an efficient computation of maximum likelihood (ML) estimates for the proposed model. Without use of the EM algorithm, finding ML estimates for this model can be difficult and time consuming. The likelihood function is complicated due to high dimensionality and non-identifiability of certain parameters. Within the M step of our algorithm we embed another EM, which can effortlessly maximize the parameters in the finite mixture. We refer to the algorithm as a nested EM. Aitken's acceleration is used to increase speed of the algorithm.

Microbial samples from the coast of Massachusetts Bay near Nahant, Massachusetts are used to demonstrate data analysis using three different numbers of components in the finite mixture of the model described. It is shown that the model produces reasonable estimates and fits the data satisfactorily. This model has recently been premiered in species richness estimation (Hong et al. 2006), and its many advantages show promise for continued use in estimating the number of unobserved classes.

url: http://hdl.handle.net/1813/2954
date: 2006-05-04
creator: Sasikumar, Karthika
viewed: 1231
title: Regimes At Work: The Nonproliferation Order And Indian Nuclear Policy
abstract: Peter J. Katzenstein (chair); Mary F. Katzenstein; Dietram Scheufele; Christopher R. WayThis thesis claims that by constituting a certain range of possible identities for countries, the nuclear nonproliferation regime facilitated India's forging of non-weaponized nuclear deterrence and its decision to go 'formally nuclear' in 1998. The regime's definition of the nuclear problem and its categorization of states into Nuclear Weapon States (NWS) and Non-Nuclear Weapon States (NNWS) structured the threat environment facing India. India responded with a deterrence posture that both violated and employed the regime's norms. Its 1974 'Peaceful Nuclear Explosion' for instance, played on the regime's identification of a nuclear test with the possession of weapons, while challenging its attempt to restrict nuclear knowledge. The regime also served as a resource for actors within India who were advocates for the nuclear program. In 1974, domestic and international audiences were reminded of the developmental promise of nuclear power. By the end of the century, the strategic space that India had occupied between the categories of NWS and NNWS was rapidly shrinking. Perceiving a window of opportunity, India resorted once again to nuclear testing in May 1998 in order to move closer to NWS status.

This work investigates the ways in which the nonproliferation regime impacted on India's nuclear policy, with France and South Africa as secondary cases. It situates itself at the intersection of the domestic and the international spheres, while challenging the separation between the two. It focuses on the processes through which international norms constitute national identity, thereby defining national interest and molding national policies. While the project stems from a dissatisfaction with theories of nuclear proliferation, the argument should extend to several issue-areas. By the end of the twentieth century, terrorism had emerged as a threat to rival nuclear peril. The evolution of an international counter-terrorism regime was accelerated. This work

tries to draw out lessons from the career of the nonproliferation regime for the counter-terrorism regime.
American Institute of Indian Studies

url: http://hdl.handle.net/1813/2955
date: 2006-05-04
creator: Recktenwald, Geoffrey
viewed: 2073
title: The Stability of Parametrically Excited Systems: Coexistence and Trigonometrification
abstract: This dissertation addresses questions regarding the stability of two degree of freedom oscillating systems. The systems being discussed fall into three classes.
The first class we discuss has the property that one of the non-linear normal modes (NNM) has a harmonic solution, x(t)=A cos t. For this class, the equation governing the stability of the system will be a second order differential equation with parametric excitation. Mathieu's equation (1), or more generally Ince's equation (2), are standard examples of such systems.
x'' + (d + e*cos t)x = 0 (1)
(1+a*cos t)x''+(b*sin t)x'+(d+c*cos t)x=0 (2)
For Ince's equation we know that the stability portraits have tongues of instability defined by two transition curves. When these two transition curves overlap, the unstable region disappears and we say that the hidden tongue is coexistent. In this thesis we obtain sufficient conditions for coexistence to occur in stability equations of the form
(1+a1*cos t+a2*cos 2t+...+an*cos nt)x''+(b1*sin t+b2*sin 2t+...+bn*sin nt)x'+(d+c1*cos t+c2*cos 2t+...+cn*cos nt)x=0 (3)
Ince's equation has no damping. For the second class of systems, we seek to understand how dissipation affects coexistence. Here the analysis focuses on the behavior of coexistence as damping (mu) is added. Our analysis indicates coexistence is not possible in a damped Ince equation (4).
(1+a*cos t)x''+(mu+b*sin t)x'+(d+c*cos t)x=0 (4)
The previous two classes address systems with a harmonic NNM. The third class of systems treated in this thesis involve two degree of freedom systems that have a periodic NNM, not in general harmonic. To accomplish this we rescale time such that the periodic solution to the NNM is transformed into the form x(tau)=A0+A1 cos(tau). We call this procedure of rescaling time trigonometrification. The power of trigonometrification is that it is exact, requiring no approximations and produces a stability equation in new time (tau) of the form
(1+a1*cos tau+a2*cos 2*tau+...+an*cos n*tau)x''+(b1*sin tau+b2*sin 2*tau+...+bn*sin n*tau)x'+(d+c1*cos tau+c2*cos 2*tau+...+cn*cos n*tau)x=0 (5)
Trigonometrification can be used to study any system property that is invariant under a time transformation.
National Science Foundation under Grant No. 0243483

url: http://hdl.handle.net/1813/2956
date: 2006-05-04
creator: Narayanan, Venkatasubramanian
viewed: 2143
title: Macroscopic modeling of quantum effects in semiconductor devices
abstract: This dissertation explores the use of macroscopic quantum hydrodynamic (QHD) models as tools for investigating the transport of charge carriers in semiconductor devices in the regime where quantum effects are important.
Chapter 1 provides a panoramic view of the field of carrier transport modeling in semiconductors. The essential differences between classical and quantum transport is brought out and a brief outline is given of the derivation of successively less detailed models from the fundamental starting points of the Boltzmann

transport equation (BTE) for classical transport and the quantum distribution function (Wigner function, density matrix) based methods for quantum transport. A mention is made of the various quantum hydrodynamic models without going into the details of their derivation and applicability.

Chapter 2 brings into focus the area of quantum hydrodynamic modeling of carrier transport. A detailed derivation using the method of moments is presented for each of the popular quantum hydrodynamic models currently being explored in the literature, namely the density-gradient method and the smooth quantum potential model. A summary is made of their limitations and these limitations are then shown as arising out of particular assumptions made in their derivations that could hamper their applicable regimes.

Chapter 3 presents an analysis of the boundary layers near interfaces obtained in density-gradient theory. An integral equation for the density near such interfaces is obtained and this is used to analytically compare the DG solution with the solutions from one-electron quantum mechanics in non-degenerate conditions. Confinement in simple potential wells is then discussed using the macroscopic equations.

Chapter 4 discusses the derivation of macroscopic equations to describe quantum mechanical tunneling through large barrier potentials. Using the approximate solutions of the Schr?dinger equation it is analytically shown that the density profile inside the barrier satisfies a second order differential equation, very similar to the Schr?dinger equation for a carrier at a suitably chosen average energy. Use of this is made to derive a consistent macroscopic treatment of tunneling transport in the insulating barrier.

Chapter 5, the final chapter, summarizes the major contributions of this dissertation and concludes it with several suggestions for future research directions that can stem from this work.

url: http://hdl.handle.net/1813/2957
date: 2006-05-04
creator: Larsen, Peter
viewed: 2090
title: An Evaluation of the Sensitivity of U.S. Economic Sectors to Weather
abstract: This thesis is based upon a series of statistical programs written in SAS. The programs can be used to evaluate the economic impacts of future and historical climate/weather regimes for the contiguous United States. Individuals (or corporations) interested in the specifics of these programs should contact the author directly.This study quantifies the impact of weather on eleven two-digit SIC sectors of the U.S. economy ranging from agriculture and construction to retail trade and utilities. Although it is obvious that weather affects the output of most sectors in some way, the magnitudes of these effects are not well known. This research effort estimates the historical sensitivity of production to annual weather variability. In addition to defining what it means for a sector to be sensitive to weather relative to another sector, industry productivity from 1977-2000 was modeled against measures of temperature and precipitation along with more traditional inputs to production like capital, labor and energy consumption. Specifically, sector output is modeled using a transcendental logarithmic production function (TRANSLOG) with measures of regional weather included. In order to estimate the aggregate sensitivity of the U.S. economy to weather, Monte-Carlo simulation of the four measures of weather is employed for each region by randomly drawing from historically observed weather combinations (i.e. temperature and precipitation) to produce distributions of sector-region output variability holding the conventional economic inputs constant.

As expected, the results show that the impact of weather varies from region to region and sector to sector. It is also evident that traditional methods used to model economic production such as the Cobb-Douglas and TRANSLOG specifications are improved statistically with the inclusion of measures of weather as factors of production. Given the available data at the annual level, the econometric results show that in general and across regions, the manufacturing sector is more sensitive to weather (e.g. cooling degree-days) than previously thought. The results also indicate that economic sectors in the Western U.S. are more sensitive to weather than they are in the Midwest and East Coast. It is also reported that as the standard deviation of precipitation changes by 1%, average U.S. transportation and utilities sector output drops between .02% and

.09% (respectively). For context, actual year 2000 output for the utilities sector was over $200 billion and actual transportation output exceeded $300 billion at the national level. Similar data is reported for nine additional sectors and four measures of weather across eight regions of the country. Although small with respect to traditional factors of production, it is shown that U.S. GDP has expanded on average by $20.8 billion ($2004 U.S.) annually with measured, historical weather variability. In contrast to the subjective estimates made by Dutton (2003) indicating that ?one-third of private industry activities are sensitive to weather?, this research finds that only 16.2% of the aggregate U.S. economy is sensitive to weather on an annual basis. Nevertheless, the effects of weather variability on specific sectors, particularly in Western states, is substantial.National Center for Atmospheric Research (NCAR), NOAA, U.S. Weather Research Program (USWRP)

url: http://hdl.handle.net/1813/2958
date: 2006-05-05
creator: van Beek, Eelco;Loucks, Daniel P.
viewed: 2754
title: Appendix C - Figures and Tables
abstract: Figures and Tables from Appendix C of "Water Resources Systems Planning and Management: An Introduction to Methods, Models and Applications".

url: http://hdl.handle.net/1813/2959
date: 2006-05-05
creator: van Beek, Eelco;Loucks, Daniel P.
viewed: 2801
title: Appendix D - Figures and Tables
abstract: Figures and Tables from Appendix D of "Water Resources Systems Planning and Management: An Introduction to Methods, Models and Applications".

url: http://hdl.handle.net/1813/2960
date: 2006-05-05
creator: van Beek, Eelco;Loucks, Daniel P.
viewed: 2328
title: Appendix E - Figures and Tables
abstract: Figures and Tables from Appendix E of "Water Resources Systems Planning and Management: An Introduction to Methods, Models and Applications".

url: http://hdl.handle.net/1813/2961
date: 2006-05-05
creator: van Beek, Eelco;Loucks, Daniel P.
viewed: 1293
title: Appendix B - Figures and Tables
abstract: Figures and Tables from Appendix B of "Water Resources Systems Planning and Management: An Introduction to Methods, Models and Applications".

url: http://hdl.handle.net/1813/2962
date: 2006-05-05
creator: van Beek, Eelco;Loucks, Daniel P.
viewed: 8020
title: Chapter 2 - Figures and Tables
abstract: Figures and Tables from Chapter 2 of "Water Resources Systems Planning and Management: An

Introduction to Methods, Models and Applications".

url: http://hdl.handle.net/1813/2963
date: 2006-05-05
creator: van Beek, Eelco;Loucks, Daniel P.
viewed: 1950
title: Chapter 3 - Figures and Tables
abstract: Figures and Tables from Chapter 3 of "Water Resources Systems Planning and Management: An Introduction to Methods, Models and Applications".

url: http://hdl.handle.net/1813/2977
date: 2006-05-05
creator: MacDougall, Bonnie
viewed: 2896
title: Jantar Mantar: Architecture, Astronomy, and Solar Kingship in Princely India
abstract: The gigantic masonry astronomical instruments built by the Maharaja Jai Singh of Jaipur are among the most startling and visually compelling monuments in the entire Indian architectural record. The power of these astronomical insturments to arrest the viewer derives in part from their stylistic departure from the rest of the Indian architectural legacy, especially traditional Hindu forms.

url: http://hdl.handle.net/1813/2978
date: 2006-05-05
creator: Berg, Andrew
viewed: 2578
title: Forecasting Natural Gas Prices Using Time Series Models
abstract: The objective of this thesis is to estimate the natural gas component of the All Urban Consumer Price Index (CP-U) using time series forecasting models. Being able to accurately predict future CPI-U values is important because it allows portfolio managers and financial institutions to properly adjust their market positions for inflation prior to the CPIs print. Certain bonds, such as Treasury Inflation Protected Securities (TIPS), are indexed to CPI and accrete in value as the CPI increases. Accurately knowing the print of the CPI prior to its publication allows investors to properly anticipate movements in TIPS.
Data for this thesis were gathered from two sources: daily Henry Hub natural gas spot prices retrieved from Bloomberg and monthly Bureau of Labor Statistic (BLS) data on CPI-U values for natural gas. Each of these data series was tested for unit root processes, seasonality, and cointegration.
Once these two data sets were shown to be non season, cointegrated series, they were run through three models, which were evaluated in terms of fit and performance in and out of sample against one another. The model which proved to have the greatest predictive power was Model 3, in which a distributed lag polynomial was fit to the data and used to create a rolling out of sample regression.

url: http://hdl.handle.net/1813/2979
date: 2006-05-05
creator: Du, Phong
viewed: 2306
title: Block copolymer derived mesoporous thin films: processing, characterization, and applications
abstract: Prof. Ulrich Wiesner, Prof. Michael O. Thompson, Prof. Jack M. Blakely. The development of diblock copolymers as structure directing agents for phase selective additives to generate thin films is discussed. Different systems ranging from pure organic [(poly(alpha-methyl styrene-block-4-hydroxystyrene) and poly(alpha styrene-block-isoprene) with photoactive crosslinkers] to an organic-inorganic [poly(isoprene-

block-ethylene oxide) with 3-glycidyloxypropyltrimethoxysilane and aluminum-tri-sec-butoxide] to a non-oxide high temperature system [poly(isoprene-block-dimethylamino ethylmethacrylate) with a polyureamethylvinylsilazane additive] are explored. Characterizationis accomplished through a variety of techniques (atomic force microscopy, scanning electron microscopy, grazing incidence small angle x-ray scattering, nuclear magnetic resonance, and Rutherford backscattering) and supplemented by quantitative analysis (radial and bond orientation distribution functions, Voronoi diagrams, and GISAXS simulations). Hybrid organic-inorganic mesoporous monolayer thin films are used as templates to structure silicon at the 30 nm length scale through a transient laser induced melt and capillarity driven pore filling process.

url: http://hdl.handle.net/1813/2980
date: 2006-05-05
creator: Yoon, Kook-Young
viewed: 1147
title: SEGREGATION OF A BINARY MIXTURE OF GRANULAR PARTICLES
abstract: Kinetic theory for a binary mixture of slightly inelastic particles, based on Maxwellian velocity distribution with corrections due to high density, is used to predict segregation of a binary mixture with species differing in sizes and material densities. The relative mean species velocities indicates segregation for a mixture uniformly agitated under gravity. Molecular dynamics simulations of elastic hard spheres and physical experiments with inelastic spheres in a cylindrical container vibrated at high normalized acceleration support this prediction. An analysis for a non-uniformly agitated mixture under gravity provides a general criterion for segregation. We establish the validity of equipartition assumption in this problem.

Then, we introduce kinetic theory for mono-disperse disks with a friction model differentiating sticking and sliding collisions and derive a simple way of incorporating friction into theory with effective normal restitution coefficient.

We linearize Revised Enskog Theory for a binary mixture of dsks with small differences in sizes and masses. By solving a boundary value problem of the mixture sheared between two bumpy circular cells, we provide experimenters a concrete way of testing the theory.

We then compare dense Maxwellian theory, from the first problem, with Revised Enskog Theory to see differences and their consequences on the prediction of segregation. In the absence of temperature gradient, with gravity present, they yield similar predictions. However, in the presence of temperature gradient, with gravity absent, they only agree at high volume fractions.

Then, we describe a steady fully-developed flow on a bumpy incline, with a kinetic theory for mono-disperse spheres. We test the theory by attempting to reproduce three features of inclined flows from physical experiments and numerical simulations. On failing this, we describe modifications that may salvage the core of the theory with a few assumptions. A chain theory is introduced as a promising modification.

With the solutions of the chain theory, we predict segregation on an inclined plane using Revised Enskog Theory. Using density profiles for various sizes and material densities in the mixture, we compare its prediction with the prediction based on dense Maxwellian in the first problem and find that the agreement is good.
NASA Microgravity Grant NCC3-797

url: http://hdl.handle.net/1813/2981
date: 2006-05-05
creator: Rojo, Juan
viewed: 2205
title: REPRESENTING HISTORY: NEGATIVE HISTORICAL DISCOURSES IN MEXICAN NARRATIVE AFTER TLATELOLCO
abstract: On October 2,1968, preceding the Summer Olympic Games in Mexico City, a peaceful protest was held at the Plaza de las tres culturas in Tlatelolco which ended with the violent intervention of the Mexican

Army. Following the massacre, the state controlled media downplayed the magnitude of the events and instead focused on the upcoming Olympic Games. Thirty-five years after the fact, much of the information regarding the massacre remains classified and the government refuses to admit responsibility for the deaths.

This project examines the literary representations of that history with a particular focus on the creation and manipulation of negative narrative spaces after 1968. Given the absence of a historical representation of Tlatelolco in the PRI constructed national discourse and the dominance of that discourse, the literary works studied in this project aim to represent history in a narrative space inaccessible to it.

In the first chapter I examine Luis Gonzalez de Alba's testimonial Los Dias y los a?os (1971). This work acts as a meta-history of the current articulation of nation as it bears witness to the mechanisms which were responsible for the unarticulation of Tlatelolco we see today.

Chapter 2 looks at Armando Ramirez's Chin chin el teporocho (1972). The novel draws attention to a textual hole in the narrative which mirrors a historical void in the discourse of the nation. It takes a stance against that omission by unequivocally making a silent statement against it. It actively unspeaks an institution which has silenced the student movement. The third chapter examines Jose Emilio Pacheco's Las batallas en el desierto. This novel deconstructs the historical apparatus of the nation and introduces a series of alternative historical models.

The final chapter looks at the films Rojo Amanecer and El Bulto. Both films are a testament to the absence of the history of 1968. Rojo Amanecer is the first film to be released concerning Tlatelolco and it examines the processes by which the massacre occurred and why it has remained silenced for over twenty years. El Bulto raises the question of how to reincorporate that absent history should it become known.Mario Einaudi Center and the Latin American Studies Program at Cornell University

url: http://hdl.handle.net/1813/2982
date: 2006-05-05
creator: Saikkonen, Kelly
viewed: 2673
title: TECHNICAL AND ECONOMIC FEASIBILITY OF UPGRADING DAIRY MANURE-DERIVED BIOGAS FOR NATURAL GAS PIPELINE
abstract: The objective of this thesis was to evaluate the current technical and economical feasibility of processing dairy manure-derived biogas to natural gas quality for injection into the natural gas pipeline. Dairy farms across the county and around the world are utilizing anaerobic digestion to treat manure, improve nutrient recovery and generate biogas. Biogas, which consists mainly of methane and carbon dioxide, with smaller amounts of hydrogen sulfide, water vapor and other impurities, can be used in heating and power applications. Biogas can also be used directly as a high BTU value fuel, comparable to natural gas, if processed to remove carbon dioxide, hydrogen sulfide, water vapor and other impurities.

In order to determine the processing requirements necessary to transform dairy manure-derived biogas to natural gas quality, a compositional analysis of biogas was conducted. Using gas chromatography to analyze biogas samples taken from Dairy Development International, located near Homer, NY, it was determined that the methane and carbon dioxide content of the biogas does not vary significantly over a 24 hour period. The data suggests that DDI?s biogas composition is approximately 60% methane and about 40% carbon dioxide, with a hydrogen sulfide content ranging from approximately 1,500 to 3,000 ppm.

In order for biogas to be suitable for the natural gas pipeline, it must go through a two step process. The first step, known as "cleaning", removes hydrogen sulfide and other trace impurities. The second step, ?upgrading?, removes carbon dioxide, which lowers the energy value of the biogas. This thesis contains an overview of processes that can be used to clean and upgrade diary biogas.

In order to determine the economic feasibility of processing dairy biogas to natural gas quality, a present worth analysis was conducted, using the following variables: number of cows on the dairy farm, selling price of processed biogas, interest rate and proximity of biogas producer to the natural gas pipeline. The results of

the economic analysis show that for all farm sizes considered (500, 1,000, 3,000, 5,000 and 10,000 cows), profit is made, as long as the selling price of the processed biogas is high enough. For example, on a relatively small dairy (500 cows), a profit is made if the processed biogas is sold for $12/MBtu or more, given a low interest rate (3%) and no additional pipeline installation. On 1,000 and 3,000 cow dairies, a profit will not be made unless the processed biogas is sold for at least $6.00/MBtu and $4.00/MBtu, respectively, assuming a low interest rate and no pipeline installation. For a 10,000 cow dairy, a profit is made even if 1 mile of pipeline is installed, as long as the selling price of the processed gas is $4.00/MBtu or above and the interest rate is low. The economic analysis presented in this thesis demonstrates the importance of economy of scale in biogas processing projects, but also demonstrates that smaller biogas producers may be able to sell their processed biogas and make a profit if the selling price is high enough.

These initial results are encouraging and future work is warranted for examining the site specific technical and economical feasibility of processing dairy biogas to natural gas quality for the natural gas pipeline on individual farms.

url: http://hdl.handle.net/1813/2983
date: 2006-05-06
creator: Matthew, Rudolph
viewed: 1021
title: THE DIVERSITY OF CONVERGENCE: STATE AUTHORITY, ECONOMIC GOVERNANCE AND THE POLITICS OF SECURITIES FINANCE IN CHINA AND INDIA
abstract: This dissertation explains contrasting patterns of financial reform in China and India. It focuses on ?securitization? ? the structural shift from credit-based finance (banking) to securities-based finance (stocks and bonds) ? as a politically consequential phenomenon in comparative and international political economy.

The analysis revises common theories of the developmental state ? theories derived from Gerschenkron?s emphasis on directed-credit and the state?s role in capital formation ? in light of securitization?s growing global importance in the last twenty years. Contrasting responses to securitization are explained using international and domestic variables including the profile of a country?s exposure to the world economy, the distributional coalition supporting the state and the prevailing structure of property rights.

At a theoretical level, the dissertation highlights the political consequences of securitization for state authority in the economy, arguing that directed-credit; 1) enhanced state discretion in the management of distributional coalitions; 2) facilitated the perpetuity of poorly specified property rights; and 3) mitigated the consequences of the country?s position with respect to external trade and investment.

Empirically, the research presented here demonstrates that China and India responded differently to the process of securitization, contrary to the expectations of globalization theories that identify finance as a domain in which international forces favoring convergence should be strongest. The thesis also shows that, in contrast to the scholarly depiction of China's authoritarian system as superior to India?s democracy in the reform process, in the area of finance, Indian and Chinese reform patterns are mirror images: reform with substantive change in India, reform without substantive change in China.

Finally, most scholars viewed China's massive foreign exchange reserves and world-topping volumes of foreign direct investment as signs of economic strength. This thesis suggests the opposite: that these signs indicate Chinese vulnerability is derived from an ?affliction of abundance.? India, however, made a virtue of its weakness, exploiting the "advantages of adversity." With little foreign direct investment, few exports, and (until recently) scant hard currency reserves, India chose to develop world-class securities markets and a rich tapestry of securities governance institutions in order to better mobilize and direct corporate finance and attract hard currency through foreign portfolio investment.

url: http://hdl.handle.net/1813/2984

date: 2006-05-08
creator: van Beek, Eelco;Loucks, Daniel P.
viewed: 3299
title: Appendix A - Figures and Tables
abstract: Figures and Tables from Appendix A of "Water Resources Systems Planning and Management: An Introduction to Methods, Models and Applications".

url: http://hdl.handle.net/1813/2985
date: 2006-05-08
creator: College of Human Ecology
viewed: 2124
title: Human Ecology 33:3, December 2005, Ecology of Obesity
abstract: Ecology of Obesity

url: http://hdl.handle.net/1813/2986
date: 2006-05-08
creator: College of Human Ecology
viewed: 1981
title: Human Ecology 33:2, August 2005, Shaping Policy Development
abstract: Shaping Policy Development

url: http://hdl.handle.net/1813/2987
date: 2006-05-08
creator: College of Human Ecology
viewed: 2187
title: Human Ecology 33:1, April 2005, Impact of Human ecology Research
abstract: Impact of Human Ecology Research, and 2003-04 Annual Report of the College of Human Ecology

url: http://hdl.handle.net/1813/2988
date: 2006-05-08
creator: College of Human Ecology
viewed: 3748
title: Human Ecology 32:3, March 2005, Healthy People, Families, Communities
abstract: Healthy People, Families, Communities

url: http://hdl.handle.net/1813/2989
date: 2006-05-08
creator: College of Human Ecology
viewed: 2872
title: Human Ecology 32:2, October 2004, Youth Development
abstract: Youth Development

url: http://hdl.handle.net/1813/2990
date: 2006-05-08
creator: van Beek, Eelco;Loucks, Daniel P.
viewed: 2199
title: Chapter 4 - Figures and Tables

abstract: Figures and Tables from Chapter 4 of “Water Resources Systems Planning and Management: An Introduction to Methods, Models and Applications”.

url: http://hdl.handle.net/1813/2991
date: 2006-05-08
creator: van Beek, Eelco;Loucks, Daniel P.
viewed: 1025
title: Chapter 5 - Figures and Tables
abstract: Figures and Tables from Chapter 5 of “Water Resources Systems Planning and Management: An Introduction to Methods, Models and Applications”.

url: http://hdl.handle.net/1813/2992
date: 2006-05-08
creator: van Beek, Eelco;Loucks, Daniel P.
viewed: 1104
title: Chapter 6 - Figures and Tables
abstract: Figures and Tables from Chapter 6 of “Water Resources Systems Planning and Management: An Introduction to Methods, Models and Applications”.

url: http://hdl.handle.net/1813/2993
date: 2006-05-08
creator: van Beek, Eelco;Loucks, Daniel P.
viewed: 2867
title: Chapter 7 - Figures and Tables
abstract: Figures and Tables from Chapter 7 of “Water Resources Systems Planning and Management: An Introduction to Methods, Models and Applications”.

url: http://hdl.handle.net/1813/2994
date: 2006-05-08
creator: van Beek, Eelco;Loucks, Daniel P.
viewed: 2592
title: Chapter 8 - Figures and Tables
abstract: Figures and Tables from Chapter 8 of “Water Resources Systems Planning and Management: An Introduction to Methods, Models and Applications”.

url: http://hdl.handle.net/1813/2995
date: 2006-05-08
creator: van Beek, Eelco;Loucks, Daniel P.
viewed: 2800
title: Chapter 9 - Figures and Tables
abstract: Figures and Tables from Chapter 9 of “Water Resources Systems Planning and Management: An Introduction to Methods, Models and Applications”.

url: http://hdl.handle.net/1813/2996
date: 2006-05-08
creator: van Beek, Eelco;Loucks, Daniel P.
viewed: 3589
title: Chapter 10 - Figures and Tables

abstract: Figures and Tables from Chapter 10 of "Water Resources Systems Planning and Management: An Introduction to Methods, Models and Applications".

url: http://hdl.handle.net/1813/2997
date: 2006-05-08
creator: van Beek, Eelco; Loucks, Daniel P.
viewed: 2380
title: Chapter 11 - Figures and Tables
abstract: Figures and Tables from Chapter 11 of "Water Resources Systems Planning and Management: An Introduction to Methods, Models and Applications".

url: http://hdl.handle.net/1813/2998
date: 2006-05-08
creator: van Beek, Eelco; Loucks, Daniel P.
viewed: 2871
title: Chapter 12 - Figures and Tables
abstract: Figures and Tables from Chapter 12 of "Water Resources Systems Planning and Management: An Introduction to Methods, Models and Applications".

url: http://hdl.handle.net/1813/2999
date: 2006-05-08
creator: van Beek, Eelco; Loucks, Daniel P.
viewed: 2478
title: Chapter 13 - Figures and Tables
abstract: Figures and Tables from Chapter 13 of "Water Resources Systems Planning and Management: An Introduction to Methods, Models and Applications".

url: http://hdl.handle.net/1813/3000
date: 2006-05-08
creator: van Beek, Eelco; Loucks, Daniel P.
viewed: 2605
title: Chapter 14 - Figures and Tables
abstract: Figures and Tables from Chapter 14 of "Water Resources Systems Planning and Management: An Introduction to Methods, Models and Applications".

url: http://hdl.handle.net/1813/3001
date: 2006-05-09
creator: Smith, Billye
viewed: 1578
title: Countering Hegemony Through Synthesis: A Lifetime of Commitment to the Black Community in the Works of Toni Cade Bambara
abstract: I argue that Toni Cade Bambara's entire corpus works to meld the spiritual, artistic, and political as well as the activist and the community. This theme is contained in her essays, short stories, novels, and films, but is best demonstrated in her two novels The Salt Eaters (1980) and Those Bones are Not My Child 1999). The Salt Eaters agonizingly expresses tension between the spiritual, artistic, and political but in the novel this tension goes largely unresolved. Inability to resolve these tensions leads to the protagonist's suicide attempt and political factiousness within the Black community. Though the novel ends with the protagonist's healing, her future, as well as that of the community, is largely left open ended. Those Bones

are Not My Child however resolves many of the tensions presented in The Salt Eaters. Those Bones are Not My Child narrows the boundaries between author and reader, activist and community. The novel, through its focus on actual events also collapses the divide between fiction and nonfiction, calling for the readers to incorporate the issues in the fiction into action in life.
I use four meta-themes as tools to examine the trajectory of Bambara's fiction and nonfiction as it meets the goal of achieving wholeness. These meta-themes are: countering cultural hegemony, accountability, resistance to false binaries, and reconstructing cultural memory.
This thesis makes a contribution to the field of Africana Women's literary criticism because it concerns itself with the complete corpus of Bambara's work. It seeks to look at Bambara as a whole, as a writer with diverse interests, talents, and evolved with time. This thesis situates her work within a framework set out by Bambara herself, one that centers Black women's voice and experiences and thus continues in the tradition she sets forth as a writer activist.

url: http://hdl.handle.net/1813/3005
date: 2006-05-11
creator: Gorman, Thomas N.
viewed: 2223
title: Neonatal isoerythrolysis in a Standardbred foal
abstract: Senior seminar (D.V.M.)--Cornell University, 1957.
Includes bibliographical references (leaves 14-15).This filly was born on July 3, 1956. At birth she was a strong, robust foal that took to nursing promptly and gave every indication of perfect health. On July 7, 1956 the filly was noted to be weak, not nursing, and unable to keep up with the dam in the paddock.Dr. Carroll

url: http://hdl.handle.net/1813/3006
date: 2006-05-11
creator: Seitel, Kathleen
viewed: 1029
title: The equine neonatal maladjustment syndrome : review and case report
abstract: Senior seminar (D.V.M.)--Cornell University, 1983. Includes bibliographical references (leaves 17-19).From the moment of birth, the normal foal's activity is highly predictable. It will begin rhythmic breathing within 30 seconds and become sternal within 5 minutes. The sucking reflex will be present within 20 minutes, and in approximately one hour, the foal will stand. By 1 1/2 hours post-partum, the foal will have begun suckling from the mare. From this time onward, suckling will occur at regular 30-50 minute intervals. Meconium excretion and micturition are seen within 15 hours post-partum. Given such a defined and familiar routine, the knowledgeable horse owner easily recognized a breakdown in this behavioral pattern during the neonatal period, which is defined here as the first four days of the foal's life. Changes in behavior are seen as nonspecific signs in neonatal disease. It is the practitioner's roler to interpret the clinical signs, provide a diagnosis, formulate a treatment regimen, and offer a prognosis for the foal.

url: http://hdl.handle.net/1813/3009
date: 2006-05-11
creator: Ackermann, Susan Roche
viewed: 4150
title: Neonatal foal septicemia
abstract: Senior seminar (D.V.M.)--Cornell University, 1986.
Includes bibliographical references (leaf (18))."Neonatal foal septicemia" is a term used in current literature to embrace a wide variety of diseases, their infective routes, causative agents and associated presentations. William Rebhun

url: http://hdl.handle.net/1813/3010
date: 2006-05-11
creator: Thomas, Sarah
viewed: 2512
title: Grand and Granular Challenges for Research Libraries: Cornell's Priorities, Library Goals, and the Big, Bright Future
abstract: Sound quality improves after the first 20 seconds.Recording of a talk given by Sarah Thomas, Cornell University Librarian, at the May 4, 2006, Cornell University Library Academic Assembly about the priorities and goals of CUL and the future of research libraries in general.

url: http://hdl.handle.net/1813/3010
date: 2006-05-11
creator: Thomas, Sarah
viewed: 2512
title: Grand and Granular Challenges for Research Libraries: Cornell's Priorities, Library Goals, and the Big, Bright Future
abstract: Sound quality improves after the first 20 seconds.Recording of a talk given by Sarah Thomas, Cornell University Librarian, at the May 4, 2006, Cornell University Library Academic Assembly about the priorities and goals of CUL and the future of research libraries in general.

url: http://hdl.handle.net/1813/3010
date: 2006-05-11
creator: Thomas, Sarah
viewed: 2512
title: Grand and Granular Challenges for Research Libraries: Cornell's Priorities, Library Goals, and the Big, Bright Future
abstract: Sound quality improves after the first 20 seconds.Recording of a talk given by Sarah Thomas, Cornell University Librarian, at the May 4, 2006, Cornell University Library Academic Assembly about the priorities and goals of CUL and the future of research libraries in general.

url: http://hdl.handle.net/1813/3011
date: 2006-05-11
creator: Miller, Rebecca A.
viewed: 1784
title: Neonatal isoerythrolysis in a Standardbred foal
abstract: Senior seminar (D.V.M.)--Cornell University, 1991. Includes bibliographical references (leaves 14-15).A two-day-old Standardbred filly was examined for progressive lethargy and weakness of eight hours duration. Signs of recumbency, depression, pale mucous membranes, icterus and tachycardia suggested a diagnosis of neonatal isoerythrolysis. Laboratory findings supported this diagnosis, and medical therapy, including blood transfusions, fluids, antibiotics and oxygen therapy resulted in marked clinical improvement. This condition, which is relatively uncommon in horses, can have fatal consequences if not treated early enough. Early recognition and treatment, as in this case, can prevent mortality. Predictive testing and post-partum management can also prevent deaths due to isoerythrolysis. These will be discussed in this report. Dr. Dorothy Ainsworth

url: http://hdl.handle.net/1813/3012
date: 2006-05-11

creator: Gardner, Jennifer
viewed: 1944
title: How to improve chances that your first job will be a positive experience
abstract: Senior seminar (D.V.M.)--Cornell University, 1994. Includes bibliographical references (leaf [12]). In recent years, there has been an increasing concern highlighting the difficulties and strains of becoming a doctor and practicing veterinary medicine. Tuition and other costs increasing astronomically, lingering educational debts, long working hours, modest compensation, and often insensitive employers have all been cited as factors making veterinary medicine a less attractive career than in the past. A survery conducted by John Lofflin in 1991 of Associate Veterinarians, the author of the article, "Unhappy Associates," in the June 1993 issue cited that 66.7% of 216 respondents are no longer with the hospital they initially joined and 72.4% left within two years. Inspired by Dr. Lofflin, I decided to do a study of my own, using the 1992 veterinary medicine graduates of Cornell University as subjects. The goal of this study was to identify factors associated with the apparently increasing level of associate unhappiness.Dr. Saidla

url: http://hdl.handle.net/1813/3013
date: 2006-05-11
creator: Sponseller, Brett A.
viewed: 2178
title: A pedigree analysis of cerebellar cortical abiotrophy in the Arabian horse
abstract: Senior seminar (D.V.M.)--Cornell University, 1994. Includes bibliographical references (leaf [20]). Cerebellar abiotrophy in Arabian horses clinically manifests itself early in the life of affected individuals as ataxia, an intention head tremor, and lack of a menace blink response. Histopathologically, there is a marked loss of Purkinje neurons. The etiology of this disease has remained undetermined; viral isolation studies in affected individuals have been unrewarding. A hereditary basis for this disease has been proposed. This report reviews the pertinent neuroanatomy, clinical signs, histopathology, and includes the preliminary results of a pedigree analysis of fifty affected individuals.Dr. Yrjo Grohn

url: http://hdl.handle.net/1813/3016
date: 2006-05-11
creator: Trachtenberg, David
viewed: 3531
title: Thermography as an aid in the diagnosis of equine lameness
abstract: Senior seminar (D.V.M.)--Cornell University, 1992. Includes bibliographical references (leaf [9]). Thermography as an aid in the diagnosis of equine lamenessDr. Susan Fubini

url: http://hdl.handle.net/1813/3018
date: 2006-05-11
creator: Thornton, Cynthia
viewed: 1583
title: Feline infectious respiratory disease complex : herpesvirus, calicivirus, Chlamydia psittaci var. felis
abstract: Senior seminar (D.V.M.)--Cornell University, 2000. Includes bibliographical references (leaf [9]). Upper respiratory infections are commonly seen in young kittens and debilitated cats, often when the cats reside in colonies (strays, barn cats, etc.) or multicat households. Vaccinations are effective but not entirely foolproof. 90% of upper respiratory infections with ocular / nasal discharge in young kittens can be attributed to FRV (Feline Rhinotracheitis virus) or FCV (Feline Calici virus). FCV is more commonly seen due to a greater antigenic diversity compared to the single serotype for FRV. About 5-10% of mild URI's with ocular discharge can be attributed to Chlamydia psittaci var. felis.Dr. William Hornbuckle

url: http://hdl.handle.net/1813/3019
date: 2006-05-11
creator: Miller, Matthew P.; Bernier, Joel V.
viewed: 1566
title: A direct method for the determination of the mean orientation-dependent elastic
abstract: A salient manifestation of anisotropy in the mechanical response of polycrystal-line materials is the inhomogeneous partitioning of elastic strains over the aggregate. For bulk samples, the distributions of these intergranular strains are expected to have a strong functional dependence on grain orientations. It is then useful to formulate a mean lattice strain distribution function (LSDF) over the orientation space, which serves to characterize the micromechanical state of the aggregate. Orientation-dependent intergranular stresses may be recovered from the LSDF via a constitutive assumption, such as anisotropic linear elasticity. While the LSDF may be determined directly from simulation data, its experimental determination relies on solving an inverse problem that is similar in character to the fundamental problem of texture analysis. In this paper, a versatile and robust direct method for determining an LSDF from strain pole figures is presented. The effectiveness of this method is demonstrated using synthetic strain pole figures from a model LSDF obtained from the simulated uniaxial deformation of a 1000-crystal aggregate.

url: http://hdl.handle.net/1813/3020
date: 2006-05-11
creator: Lee, Travis
viewed: 2141
title: A Microfluidic Approach to Enzyme Linked Immunosorbent Assays
abstract: The Enzyme-Linked Immunosorbent Assay (ELISA) is a biochemical technique that is useful for diagnosing disease and infection by detecting antigens/antibodies in a sample. Studying assay design is important in designing an optimal and cost-effective assay which comprises short processing times, small reagent consumption, and portability. The primary objective of this study was to design and test a microfluidic chip to produce a rapid ELISA platform.
A microfluidic device integrating six straight channels and six nitrocellulose strips was used as a platform to produce a rapid and semi-qualitative dot ELISA. Typical dot ELISA processing times are on the order of hours, but has been reduced here to 35 minutes. The same six channel microfluidic device with polystyrene strips in place of nitrocellulose strips was explored for its ability to produce a quantitative sandwich ELISA. The device produced indistinguishable results due to high noise levels which are thought to be a result of non-specific binding.

url: http://hdl.handle.net/1813/3022
date: 2006-05-16
creator: Hillmann, Diane I.
viewed: 2203
title: RDA: The Skeptic's View
abstract: Presented at the joint forum of the Metadata Working Group and the Working Group on Cataloging, May 16, 2006.

url: http://hdl.handle.net/1813/3023
date: 2006-05-16
creator: Bowen, Jennifer
viewed: 2682
title: RDA: Resource Description and Access: A New Cataloging Standard for a Digital Future
abstract: Presented at the joint forum of the Metadata Working Group and the Working Group on Cataloging,

May 16, 2006.

url: http://hdl.handle.net/1813/3024
date: 2006-05-17
creator: Lowrance, Bryan
viewed: 3506
title: Sidney's Strangers: Language, Materiality, and Authenticity in Astrophil and Stella
abstract: An Honors Thesis Submitted to the Department of English. April 2006 Winner of the Abrams Prize for the Best Senior Honors Thesis in English.This thesis examines the exegetical, intellectual-historical, and theoretical implications of a particular feature of Philip Sidney?s late sixteenth-century sonnet sequence Astrophil and Stella: its continual anxiety over authenticity ? a term I use to signal the ability of its fictional speaker (Astrophil) to find a language capable of conveying his internal cognitive and affective states. Throughout Sidney?s sequence, Astrophil attempts to define an authentic lyrical language by both criticizing other poets and asserting a formal agenda for his own texts. His texts, however, continually contradict in practice what is demanded of them in theory so that the sequence shows an underlying pessimism summed up in Sonnet 35?s question: ?What may words say, or what may words not say, / Where Truth itself must speake like Flatterie?? (my emphasis).

This paradox and the pessimism it produces, I argue, can be understood by situating Sidney?s sequence in a rift between two conceptual frameworks for understanding relations between subjectivity, language, and the material world. In one framework (dominant in western medieval Christendom), cognition, language, and material things were seen as ontologically homogenous ? part of the same sublunary, postlapsarian material stratum. But in another framework ? emerging in the sixteenth century and that would become dominant in western European modernity ? human subjects and their languages were seen as detached from the material world. Sidney?s sequence, I suggest, is stuck between these two ideological polarities. It wants to enact an authenticity that would become possible under the conceptual regime of modernity, where language is imbricated in the immaterial cognitive circuitry of sovereign, Cartesian subjects, and where it thus becomes capable of conveying the authenticity attributed to in modern ideologies of the aesthetic. However, Sidney is caught in the conceptual space of an older model of language: one that sees it as something thingly, ontologically homogenous with the material world.

My first chapter introduces "somewhat lengthily" the problem of authenticity in Astrophil and Stella. It develops some of the intellectual-historical horizons I want to situate the sequence in and introduces the main textual feature I want to follow: Sidney?s tendency, in attempting to establish the authenticity of his own poetry, to criticize other poets for their lack of authenticity vis-?-vis a resemblance between their poetic practices and commercial and economic practices. My second chapter both turns to the contemporary critical landscape of early modern studies and provides further elaboration of my positioning of Sidney in the ambiguities of early modern concepts of subjectivity, language, and materiality. After this lengthy prefatory, I move on, in my third chapter, to read Astrophil and Stella, focusing particularly on Sidney's use of the word "strange" a term that particularly points to the rift I want to chart in the sequence. My fourth chapter concludes with a methodological question: how do the points I have made about the difference between modern and early modern ontologies of language, materiality, and subjectivity effect the contemporary critical landscape of early modern literary studies. Particularly, I pursue the question of whether or not a return to formalism and aestheticism (increasingly called for in protest to the dominance of cultural studies in literary interpretation) has a trans-historical exegetical validity. In conclusion, I suggest that the assumptions on which such a return to the literary would stand become deeply problematic outside of the modern era.

url: http://hdl.handle.net/1813/3025
date: 2006-05-18
creator: MacDougall, Bonnie G.;MacDougall, Robert D.

viewed: 1277
title: Sinhalese Domestic Life In Space and Time
abstract: vii, 181 p., [3] fold. leaves of plates (1 in pocket) : ill., plans ; 28 cm. Bibliography: p. 180-181.This is a report on the content, organization and use of Sinhalese domestic space. It is based on research carried out in 1965 and 1968 in a contemporary but traditional community (hereafter called Rangama, a pseudonym) which is located in a remote area of the Kandyan highlands in Central Sri Lanka (formerly Ceylon).Cornell South Asia Program and Center for International Studies

url: http://hdl.handle.net/1813/3026
date: 2006-05-18
creator: Dietert, Janice M.;Dietert, Rodney R.
viewed: 5445
title: Compendium of Scottish Silver Volume 1
abstract: A print on demand of these books and articles can be obtained from Cornell Business Services (CBS) Digital Services by sending e-mail to digital@cornell.edu or calling 607.255.2524. In the body of the message include the identifier.uri for the book or article, and ask to be contacted regarding payment.The Compendium of Scottish Silver is a comparatively comprehensive catalog of antique as well as some modern Scottish silver and gold made between 1320ca and 2004 that has appeared in public and private collections, auction sales and antique shops during the past 50-100 years. It represents an attempt to provide a representative view of Scottish silver production over the centuries as reflected in extant examples. Additionally, the catalog is useful in evaluating the relative rarity of various forms (e.g. Scottish cake baskets or dish crosses) as well as the primary craftsmen producing specific forms (e.g. egg-shaped teapots, dolphin-handled creamboats). The catalog contains over 5,100 listings arranged alphabetically by item (e.g. bowls, candlesticks, flatware, etc.) and presented among items, chronologically. Volume 1 contains the alphabetical listings from Baskets-Ink Pots as well as a Guide, a Listing of First Appearances and a Glossary of the terms use in describing the silver as well as its production and decoration. Photographic examples for most categories are also included before each set of listings. Note that Volume 2 is a continuation of the alphabetical categories beginning with “M”. The book should be a helpful resource for collectors, museums, antique dealers, auction houses, as well as historians, genealogists and other researchers.

url: http://hdl.handle.net/1813/3027
date: 2006-05-18
creator: Dietert, Janice M.;Dietert, Rodney R.
viewed: 4123
title: Compendium of Scottish Silver Volume 2
abstract: A print on demand of these books and articles can be obtained from Cornell Business Services (CBS) Digital Services by sending e-mail to digital@cornell.edu or calling 607.255.2524. In the body of the message include the identifier.uri for the book or article, and ask to be contacted regarding payment.The Compendium of Scottish Silver is a comparatively comprehensive catalog of antique, as well as some modern, Scottish silver and gold made between 1320ca and 2004 that has appeared in public and private collections, auction sales and antique shops during the past 50-100 years. It represents an attempt to provide a representative view of Scottish silver production over the centuries as reflected in extant examples. Additionally, the catalog is useful in evaluating the relative rarity of various forms (e.g. Scottish cake baskets or dish crosses) as well as the primary craftsmen producing specific forms (e.g. egg-shaped teapots, dolphin-handled creamboats). The catalog contains over 5,100 listings arranged alphabetically by item (e.g. bowls, candlesticks, flatware, etc.) and presented among items, chronologically. Volume 2 is a continuation from Volume 1. This volume contains the second half of the alphabetical listings from Miscellaneous-Wine as well as a Guide, a Listing of First Appearances and a Glossary of the terms use in describing the silver as well as its production and

decoration. Photographic examples for most categories are also included before each set of listings. The book should be a helpful resource for collectors, museums, antique dealers, auction houses, as well as historians, genealogists and other researchers.

url: http://hdl.handle.net/1813/3028
date: 2006-05-19
creator: Kurth, Marty;Chandler, Adam
viewed: 2363
title: Using XML and XSLT to Transform Access to Networked Electronic Resources
abstract: Presentation on interface development, usability testing, and reference-linking troubleshooting for a federated search service at Cornell University Library. Given at LITA National Forum 2003, Norfolk, Virginia.

url: http://hdl.handle.net/1813/3029
date: 2006-05-19
creator: Kurth, Marty;Hyland, Nan;Calhoun, Karen
viewed: 2258
title: ENCompass and the e-Reference Collection: A New-Fashioned Notion
abstract: Presentation on the implementation of the Cornell University Library e-Reference Collection in the ENCompass digital library management system. Given at the Mid-Atlantic Voyager Users Group Meeting, October 29, 2002, Ithaca, New York.

url: http://hdl.handle.net/1813/3030
date: 2006-05-19
creator: (Young) Chandler, Sarah;Kurth, Marty
viewed: 2768
title: Addressing Mixed Granularity in Cross-Collection Searching
abstract: Presentation on searching across digital library collections of mixed granularity. Given at the Digital Library Federation Fall Forum, Pittsburgh, Pennsylvania, November 17, 2001.

url: http://hdl.handle.net/1813/3031
date: 2006-05-19
creator: Kirby, Steven Daniel
viewed: 864
title: Epitaxial Multiferroic Thin Film Heterostructure of (SrTiO3/NiO)n/MgO For Use as a Future Negative Index Material
abstract: Multiferroic materials are those that exhibit both magnetic polarization and electrical polarization in the same phase. A multiferroic thin film heterostructure consisting of antiferromagnetic NiO and dielectric SrTiO3 is interesting due to the possibility of achieving a negative index of refraction in the far infrared. If the ionic resonance frequency of SrTiO3 (~100cm-1) and the antiferromagnetic resonance of NiO (~36 cm-1) can be shifted to match at some frequency, the composite material should exhibit a negative index of refraction at that frequency. It should be possible to shift the SrTiO3 resonance to lower frequency by lowering the temperature or by doping with Ba and therefore raising the ferroelectric Curie temperature. The NiO antiferromagnetic resonance should shift to higher temperature by applying an external magnetic field or by doping with ions with higher anisotropy, such as Fe or Co. Pressed powder bulk composite samples of NiO/SrTiO3 have been fabricated and used to verify that NiO and SrTiO3 are compatible and non-reacting up to a temperature of 1550?C. FTIR measurements on these bulk samples verify the existence of the ionic and antiferromagnetic resonances of interest. An epitaxial multiferroic composite of (SrTiO3/NiO)n/MgO

has also been fabricated using reactive off-axis rf sputtering with n = 1 or 2. Crystal quality has been verified using x-ray diffraction and ion channeling with Rutherford backscattering. The full width at half max for the SrTiO3 (100) diffraction rocking curve is only 1.3? for the composite with n = 2. Off-axis sputtering is a useful technique because it can be used to achieve a concentration gradient between constituents. This allows for a method of quickly determining the effects of Ba doping in SrTiO3 or Co, Fe doping in NiO. It should be possible to measure the frequency response of these films in the future with FTIR techniques with polarized radiation and/or a synchrotron high intensity source.

url: http://hdl.handle.net/1813/3032
date: 2006-05-19
creator: Wan, Bin
viewed: 1893
title: A DESIGN AND ANALYSIS OF HIGH PERFORMANCE VOLTAGE CONTROLLED OSCILLATORS
abstract: The voltage controlled oscillator (VCO) is one of the most important building blocks in modern communication applications such as microprocessor clock generation, wired and wireless communications, system synchronization, and frequency synthesis. The design of high performance VCOs has been increasingly more important and still is an active research area. Research on VCOs for the past decade has been concentrated in the areas of higher frequency, lower phase noise, low power, low operating voltage, and increased tuning range. However many of these objectives can be only achieved at the expense of some other objectives. This thesis analyzes the design of high performance of inductor-capacitor (LC) tank and ring VCOs. First the basics of both LC and ring VCOs are reviewed. Then through the basics, new LC VCO topologies and circuit tricks are derived and analyzed. The design, simulation, and layout guidelines are also provided. Finally, the circuit techniques used in both regular and quadrature VCOs and simulation results of regular inductor and symmetric inductor designs are compared. Next, the several single-ended and differential ring VCO topologies are reviewed and pros and cons for each type are provided. From the basic topologies, a new ring VCO cell topology is then introduced, along with the bias circuit, output buffers, and divider. A three stage VCO based on the new topology is designed and simulated in both thick-oxide and thin-oxide devices in 65nm CMOS SOI process. The results of thick and thin oxide devices are compared and confirmed the usability of the new ring VCO cell topology. Finally, a conclusion of the design of high performance LC and ring VCOs is drawn and new directions of research are predicted.

url: http://hdl.handle.net/1813/3033
date: 2006-05-19
creator: Turner, Tom
viewed: 2847
title: ENCompass at Cornell:History and Next Steps
abstract: Presentation on the Cornell University Library's use of the ENCompass digital library management system. Given at the Voyager Users Group Meeting, Chicago, Illinois, April 2001.

url: http://hdl.handle.net/1813/3034
date: 2006-05-19
creator: Kurth, Marty
viewed: 1977
title: Getting Started with Metadata in ENCompass
abstract: Presentation on the configuration and use of metadata in the ENCompass digital library management system. Given at the at the Mid-Atlantic Voyager Users Group Meeting, Ithaca, New York, October 28, 2002.

url: http://hdl.handle.net/1813/3035
date: 2006-05-20
creator: Chandler, Sarah Young;Ruddy, David;Muratori, Fred;Kurth, Marty;Kozak, George;Brodsky, Meryl;Turner, Tom;Calhoun, Karen
viewed: 2727
title: Mixing and Mapping Metadata to Provide Integrated Access to Digital Library Collections: An Activity Report
abstract: Reports work in progress to implement integrated access to multiple digital collections described with a variety of metadata formats. Using the emerging resource discovery and digital library management system, ENCompass, a team at Cornell University Library experimented with a new discovery system model. The model uses simple, "pidgin" metadata at the collection management level, but combines this simple layer with other metadata for describing specific resources, to enable users to both discover relevant collections and also conduct deep searches. A metadata format tailored for simplicity (Dublin Core) is used alongside other, more complex metadata formats.Paper accepted for presentation at DC-2001, October 24-24, 2001, NII, Tokyo, Japan. Presented by Karen Calhoun and Tom Turner, Cornell University, in Paper Session 4, October 25, 2001.

url: http://hdl.handle.net/1813/3036
date: 2006-05-20
creator: Calhoun, Karen
viewed: 886
title: ENCompass: A Portal Infrastructure for the Cornell University Library
abstract: Reports work completed on metasearch, reference linking, and portal development by the ENCompass Working Group at Cornell University Library in a development partnership with Endeavor Information Systems, Inc. Working group members were Eli Brown, Karen Calhoun, Adam Chandler, Sarah Young Chandler, John Cline, Nan Hyland, George Kozak, Marty Kurth, Paul McMillin, David Ruddy, and Ed Zieba.Invited presentation at the program "Scholar's Portal: An International Perspective," at the 69th IFLA General Conference and Council, August 1-9, 2003, Berlin, Germany.

url: http://hdl.handle.net/1813/3037
date: 2006-05-20
creator: Zieba, Ed;Ruddy, David;McMillin, Paul;Kurth, Marty;Kozak, George;Hyland, Nan;Cline, John;Chandler, Sarah Young;Chandler, Adam;Brown, Eli;Calhoun, Karen
viewed: 3067
title: ENCompass E-Reference System
abstract: Presented by the ENCompass Working Group May 8, 2003, to Cornell University Library staff just prior to moving into production with a new e-resource discovery system featuring metasearch and reference linking. Describes and demonstrates with screen shots the then-new services "Find Articles" and "Find Databases" that replaced the former "E-Reference System." The ENCompass-based system, in production since 2003, began to be phased out in 2006.

url: http://hdl.handle.net/1813/3038
date: 2006-05-22
creator: Inglis, Scott
viewed: 1579
title: Settling Characteristics of Sands Contained in Anaerobically Digested Dairy Manures
abstract: Today's dairy producers desire to maximize cow comfort and manage the nutrients in manure in

an environmentally sound manner. Many dairy farmers would like to use sand for bedding in their freestall barns because of the increased comfort it provides for cows. A negative aspect is that sand bedding inherently mixes with manure to form sand-laden dairy (SLD) manure, which has historically been difficult to deal with effectively. Dairy farmers are increasingly using biological digester systems as a means to control odor and to reduce the potential for environmental pollution (Wright et al., 1999; Parsons, 1984). Anaerobic digesters biologically convert or digest wastes and agricultural byproducts in the absence of oxygen into biogas, a combination of methane and carbon dioxide gases over a period of fifteen to twenty days (Parsons, 1984). These systems can experience failure due to the bedding sand collecting as settled material within the digester, with no easy means for removal. Design solutions are needed to address this problem.
The settling rate of sand in manure that was undergoing anaerobic digestion was investigated. A Hindered Settling Equation, based on boundary layer theory, was selected to model the rate that sand settles in dairy manure while being anaerobically digested for 21 days. The change in viscosity and the total volumetric solids content over time were required as inputs to the Hindered Settling Equation. Laboratory scale digesters were used to anaerobically digest SLD manure and to concurrently monitor sand settling characteristics and changes to manure total solids, total volatile solids and viscosity.
A power law was used to mathematically model manure viscosity. Regression equations were developed from the data collected from the laboratory scale experiment to model total solids, total volatile solids, k, n and shear stress over time during the digestion process. These equations had R2 values that ranged from 0.40 ? 0.96. The Hindered Settling Equation using the modeled manure viscosity term was used to then predict two data sets, one from the laboratory scale experiments and the other from a commercial field scale digester that had been in operation for several years. There was no significant difference between model predictions of sand settling times and the two data sets at an alpha level of 0.05.
A program was developed in Microsoft EXCEL, based on the results from this project, to be utilized as a tool for dairy producers and consultants for the design, construction, and management of anaerobic digesters that receive SLD manures.

url: http://hdl.handle.net/1813/3039
date: 2006-05-22
creator: Calhoun, Karen
viewed: 1808
title: ENCompass at Cornell
abstract: Presented at the session "Portal Implementations in Research Libraries" sponsored by the Association of Research Libraries at the American Library Association Annual Meeting, June 14, 2002, in Atlanta, Georgia. Association of Research Libraries

url: http://hdl.handle.net/1813/3040
date: 2006-05-22
creator: Hyland, Nancy;Chandler, Sarah
viewed: 2032
title: Federated searching and academic libraries: One size fits all?
abstract:

url: http://hdl.handle.net/1813/3042
date: 2006-05-22
creator: Gebremedhin, Kifle;Minchoff, CJ
viewed: 2073
title: Economic Feasibility Study for a Centralized Digestion System
abstract: An economic feasibility model for centralization of anaerobic digestion of dairy manure mixed

with food waste is developed. The model was converted into a user-friendly, web-based computer program and allows users to input different variables and computes profits or costs of a defined centralized digestion system. Default values are given in the program and can be modified by the user. The model accounts for various costs including: equipment, transportation, manure, labor, insurance and maintenance, and accounts for revenues from tipping fees, sales of electricity, sales of effluent solids and liquid manure, and sales of excess heat. Tipping fees and sales of liquid manure were the major contributors to the overall revenue with 2,000 or more cows in the system. The largest cost was the price of manure followed by labor costs. Sensitivity analyses were performed to determine the total number of cows required for the enterprise to remain profitable and the percent change in profit, when changes in parameter values were made, one-at-a-time. An example model was run for a cluster of farms and three correctional facilities in Malone, NY, and the operation was found to be economically feasible.

url: http://hdl.handle.net/1813/3043
date: 2006-05-22
creator: Westbrooks, Elaine
viewed: 3024
title: Language Data and Rights
abstract:

url: http://hdl.handle.net/1813/3044
date: 2006-05-22
creator: Hirtle, Peter
viewed: 989
title: Rights Metadata for Digital Collections
abstract: Presented at the Metadata Working Group forum, March 31, 2006.

url: http://hdl.handle.net/1813/3045
date: 2006-05-22
creator: Hirtle, Peter
viewed: 4525
title: Section 108 Study Group Update : Questions from the March Roundtables
abstract: Presented at the Metadata Working Group forum, March 31, 2006.

url: http://hdl.handle.net/1813/3046
date: 2006-05-23
creator: Allen, Mathew
viewed: 2050
title: STRATEGIC HUMAN RESOURCE MANAGEMENT AND FIRM PERFORMANCE: WHAT CAN WE LEARN FROM SMALL BUSINESSES?
abstract: This study develops a theory of how human resource management systems contribute to the performance of small businesses. Based on theories from the field of strategic human resource management and small business performance, I argue that high involvement human resource management systems will be positively related to the performance of small businesses above and beyond known drivers of small business performance. A set of moderating variables for this relationship is also presented. I conclude by outlining a set of hypothesis and methods for testing the relationship between human resource management and performance in small businesses.

url: http://hdl.handle.net/1813/3047

date: 2006-05-24
creator: Chen, Guan-Yu
viewed: 2353
title: The cutoff phenomenon for finite Markov Chains
abstract: A card player may ask the following question: how many shuffles are needed to mix up a deck of cards? Mathematically, this question falls in the realm of the quantitative study of the convergence of finite Markov chains. Similar convergence rate questions for finite Markov chains are important in many fields including statistical physics, computer science, biology and more. In this dissertation, we discuss a behavior ---the cutoff phenomenon--- that is known to appear in many models. For these models, after a waiting period, the chain abruptly converges to its stationary distribution.

Our aim is to develop a theory of this phenomenon and to illustrate this theory with interesting examples. We focus on the case when the convergence is measured at the ℓ^p-distance for $1\le p\le\infty$. For $p=1$, one recovers the classical total variation distance.

One of the main result of the thesis is that for families of reversible Markov chains and $1<p\le\infty$, the existence of an ℓ^p-cutoff can be characterized using two parameters: the spectral gap and the mixing time. This fails when $p=1$.

The notion of cutoff for a family of Markov chains indexed by n involves a cutoff time sequence $(t_n)_1^\infty$ and window size sequence $(b_n)_1^\infty$. Ideally, when a cutoff exists, we would like to determine precisely t_n and b_n. When $p=2$, spectral theory allows for a deeper analysis of the cutoff phenomenon producing in some cases the asymptotic behavior of the sequences $(t_n)_1^\infty$ and $(b_n)_1^\infty$.

Throughout the thesis, examples are provided to illustrate the theoretical results. In particular, the last chapter is devoted to the study of the cutoff for the randomized riffle shuffle.

url: http://hdl.handle.net/1813/3049
date: 2006-05-24
creator: Weitsman, Andrew;Weaver, Matt;Kim, Jennifer;Ippolito, Andrea;Deyle, Alex;Billington, Alicia
viewed: 2154
title: AutoSyringe Injection: Mass transfer driven by plunger to force medication through a needle
abstract: The AutoSyringe is an automatic device that allows patients with limited dexterity to administer medication to themselves as painlessly as possible. The device allows patients to inject themselves subcutaneously, where the needle goes into the fat layer between the outer skin and the muscle. In this study, given a constant pressure applied at the plunger, the flow of medication through the barrel and needle of a syringe was modeled in terms of velocity and pressure. Furthermore, through this model it was found that the flow rate at the tip of the needle decreases with increased viscosity of the medication. It was also determined that the flow rate increases with increased applied pressure at the plunger. These analyses were performed using the software package FIDAP, PreSTO, with imported geometry from GAMBIT.

url: http://hdl.handle.net/1813/3050
date: 2006-05-24
creator: Owens, Gwen;Melhem, Molly;Clark, Nisse;Chen, Bonnie
viewed: 2551
title: Drug-Eluting Stents: Design for Prevention of Angioplastic Restenosis
abstract: Balloon angioplasty and coronary stent deployment are powerful techniques in the treatment of individuals with advanced coronary artery disease. Recent advancements have led to the development of drug-eluting stents designed to release a drug polymer that inhibits restenosis, a bodily defense mechanism characterized by tissue ingrowth and reblockage of the artery. The stent is coated with an anti-cancer or immunosuppressive drug that diffuses through the surrounding tissues over a critical period of time. In this study, diffusion of the drug Rapamycin was modeled using computer-aided design software. Analysis

was performed in order to determine the concentration profile of the drug at various time intervals. The stent geometry was reduced to six concentric rings of 1.5 mm width spaced 1.5 mm apart, resulting in a total stent length of 16.5 mm. Diffusion was modeled from only one of these rings and conclusions were drawn considering the global diffusion from multiple rings of this type. A graded mesh was generated in GAMBIT, and simulations were executed in FIDAP to assess the drug concentration as a function of several input parameters. It was concluded that the drug reaches 48 ?g/m3, within a defined therapeutic concentration range of 40-60 ?g/m3, after about nine months at a penetration depth of 0.015 mm. This indicates that after nine months the first tissue layer surrounding the coronary lumen, also known as the intima, is saturated with drug at concentrations necessary for the prevention of restenosis. Sensitivity analysis was performed to test the stability of our solution and to assess factors which may affect the diffusion process. It was found that the concentration of Rapamycin was most sensitive to a change in diffusivity of Rapamycin in the intimal tissue layer, whereas the drug concentration was less sensitive to changes in the stent diffusivity and variance in initial concentration of drug immobilized in the stent.

url: http://hdl.handle.net/1813/3051
date: 2006-05-24
creator: Wong, Kevin;Lee, Brian;Ahyow, Patrick
viewed: 2663
title: Laser Interstitial Thermo-Therapy in Hepatic Tissue
abstract: Laser Interstitial ThermoTherapy (LITT) is a well establish surgical method used in the treatment of tumors. This study analyzes the extent of tissue damage when using LITT in a liver. GAMBIT and FIDAP was used to model a spherical tumor with a diameter of 4cm in a 12cm spherical liver. The mesh that was used contained 14326 nodes which were shown to converge using our mesh convergence analysis. From our sensitivity analysis, the optimal time the laser would be on was determined to be 40 seconds, because this was the time where most of the cancerous tissue was destroyed while keeping healthy tissue damage at a minimum. The optimal laser power was determined to be 30W, which provided the correct amount of heating needed to induce necrosis in the most of the tumor, and maintain a safe temperature below 40oC for healthy liver tissue. However, there a small amount of healthy liver was destroyed, but this could not be avoided due to the cylindrical geometry of the laser applicator. In our sensitivity analysis, we determined that varying the thermal conductivity caused very little change in the average tumor temperature. This indicates that thermal conductivity parameter is relatively insensitive to changes and using our values for thermal conductivity would accurately model the process.

url: http://hdl.handle.net/1813/3052
date: 2006-05-24
creator: Yee, Jackie;Morgan, Lee;Lee, Jessica
viewed: 1715
title: Angina Patch: Drug Delivery for Chest Pain
abstract: Angina pectoris is defined as chest pain due to lack of blood and oxygen to the heart. Nitroglycerin is an organic nitrate which treats angina by vasodilating both arteries and veins to increase blood flow to the heart. It is easy to develop nitroglycerin drug tolerance, and therefore drug application must occur at intervals of about 12 hours.
While commercial products such as Deponit are suitable for treating mild cases of angina, a larger, daily dose of 40 mg of nitroglycerin is needed to treat the most acute cases. The purpose of this study is to model the diffusion of nitroglycerin from a transdermal patch into the blood stream using the Deponit drug delivery system. We determined that Deponit was indeed unable to deliver the necessary 40 mg of drug. We therefore suggested a new patch which could treat acute angina, by modifying both patch geometry and the initial amount of drug in the reservoir. We also simulated drug delivery for a 36 hour period of wearing the patch

for 12 hours, not wearing the patch for 12 hours, and then reapplying a new patch for another 12 hours. We found that drug continued to be delivered even in absence of patch and after 36 hours, only ~125 mg of drug was delivered. The modified Thicker Patch with a 10x thicker drug reservoir than Deponit can physically hold 142 mg of drug and deliver 40 mg within 12 hours. The modified patch is safe, non-toxic, cost effective, and capable of treating recalcitrant angina. To determine whether our assumptions were appropriate for our parameters, we performed two specific sensitivity analyses: varying the diffusivity of the skin and varying the diffusivity of the patch and the skin. From the sensitivity analysis we found that the amount of drug delivered to body is very sensitive to the diffusivity of the skin but insensitive to the diffusivity of the patch

url: http://hdl.handle.net/1813/3053
date: 2006-05-24
creator: Graunke, Steve;Pokwal, Sonam;Chen, Brenda;Allen, Lisa
viewed: 3012
title: The Advantage of Under Armour for Winter Sports Performance
abstract: Under Armour produces apparel designed for winter sports athletes. This apparel aims to keep athletes comfortable by retaining body heat and removing moisture due to perspiration. Special wicking properties are claimed to enable the material to remove moisture quickly and provide insulation. This study will propose a mechanism by which the Under Armour clothing material achieves these effects. We will model moisture transfer and heat transfer through the cloth, considering skin surface temperature and moisture content as measures of comfort. Additionally, we will compare the effects of Under Armour to cotton clothing which has different material properties, considering diffusivity, conductivity, partition coefficient, and porosity. The goal of this study is to use our proposed model to show the advantages of Under Armour for winter sports performance.

url: http://hdl.handle.net/1813/3054
date: 2006-05-24
creator: Faghri, Ali;Aridgides, Dan;Gregg, Peter;Brink, Rob;Hagens, John;Bridgen, Devin
viewed: 2737
title: Ex Vivo Maintenance of Heart Viability: Comparison of Two Methods
abstract: Currently established methods of tissue preservation for heart transplantation involve placing the harvested donor heart in a cold, nutrient-rich cardioplegic solution. Clinically, methods like these have only been shown to preserve heart tissue for a matter of hours. A new solution for tissue preservation developed by Transmedics Inc involves placing the heart in a chamber that mimics the physiological conditions of the human chest cavity. This solution maintains the heart in a beating state and pumps blood and nutrients through the myocardial circulation. This preservation technique has been clinically shown to improve the length of time that a heart can be preserved ex-vivo and when properly implemented, could theoretically preserve a donor heart indefinitely.
A computer simulation using Finite-Element analysis was performed with the intention of comparing how well these two methods work to perfuse heart tissue with oxygen over a long period of time. As expected, it was shown that the Transmedics cart could keep the concentration of oxygen in the heart tissue at optimal levels indefinitely while the immersion technique could only keep the concentrations of oxygen in the tissue above healthy levels for around 5.5 hours. Investigations into the effect of temperature on each preservation technique found that the Transmedics preservation is most effective at 37 degrees Celsius, body temperature; while the immersion technique is most effective at 4 degrees Celsius. Though the Transmedics device was shown to be far superior in many areas, other considerations, like the cost and the ease of implementation of each technique have lead us to conclude that there are still certain situations in which tissue preservation by cooling is the best option for heart transplantation.

url: http://hdl.handle.net/1813/3057
date: 2006-05-24
creator: Torre, Rosa;Lee, Sean;Jeffrey, Natalie;Girnary, Hussein;Attygalle, Suneth
viewed: 1936
title: Heat Loss in the Carotid Artery During Selective Brain Cooling in Humans
abstract: Heat flow in the neck was simulated in FLUENT to study countercurrent effects of cooling blood in the carotid artery during selective brain cooling. The simulation was performed in order to verify Zhu?s theory (used as a basis for our methodology) and to determine the contribution of countercurrent exchange by comparing results to a heat flow model without exchange. The surface temperature of the neck and flow rates within the vessels were varied to determine the specific effects of countercurrent exchange. With ambient skin temperature (25?C) and normal blood flow rate (120 ml/min); our model demonstrates that the average temperature of the arterial blood reaching the brain drops by 1.18?C while traveling through the neck. The effect of the countercurrent exchange alone contributes 0.88?C to this temperature decay. Placing an ice pack on the neck surface can further decrease the arterial blood temperature by as much as 1.0?C. This indicates that placing an ice pack on the neck does aid in selective brain cooling and that countercurrent exchange has a significant impact in cooling as well. The overall temperature drop of blood between the inlet to the carotid artery and the outlet was found to decrease with increasing blood flow rates and surface temperatures, verifying the trends modeled in Zhu?s analysis. Zhu?s theoretical study, however showed a temperature drop of 0.35?C at a blood flow rate of 240 ml/min with vein inlet blood temperature at 29?C and neck temperature at 19?C whereas ours showed a temperature drop above 0.85?C. Sensitivity analysis was performed to test the stability of our solution and to discover factors that might affect arterial outlet temperature. The factors that had the most influence on penetration depth were the specific heat of the blood and varying the thermal conductivity of the tissue. This project could be expanded upon by considering more variations in geometry, such as center-to center spacing, vessel eccentricity and modeling multiple vessels. This would allow for a better model of the true behavior of heat flow in the neck.

url: http://hdl.handle.net/1813/3058
date: 2006-05-24
creator: Wong, Angela; Kwan, Elaine; Kramer, Scott; Fisher, Elana; Fields, Rachel
viewed: 1914
title: An Analysis of the Ortho Evra Birth Control Patch
abstract: The Ortho Evra Birth Control Patch is an effective alternative method of birth control. It releases two drugs, norelgestromin and ethinyl estradiol, and these two drugs diffuse through a person?s skin and into their bloodstream. In order to analyze this process, we developed a 2-D, axisymmetric model of the diffusion of norelgestromin from the patch and through the skin. Through the use of a sensitivity analysis to determine the correct patch diffusivity, we were able to get an accurate representation of the physical process. We then modeled what would happen if the patch were removed for various periods of time, and we were able to determine that if the patch were removed for 24 hours or less, no significant disruption to the delivery of the drugs would occur. Finally, we also ran a simulation of wearing two different patches over the course of two weeks, and we determined that the concentration would normally encounter periodic rises and falls over the two-week period.

url: http://hdl.handle.net/1813/3059
date: 2006-05-24
creator: Youn, Paul; Huland, David; Hu, Alex; Chiang, Ian; Chen, Jack
viewed: 1970
title: Cold Therapy of Sporting Injury in Upper Thigh Region: A Comprehensive Study on the Time Required to Achieve Optimal Cooling and the Effects of Swelling

abstract: One of the most common injuries amongst athletes is soft tissue injury due to impact, and the traditional treatment for this is cold therapy using an ice pack. While this treatment is effective, inexpensive, and easily accessible, there is very little quantitative data available on the actual effects of ice on the muscle. The most common advice found in medical textbooks and literature is a 20 minute on, 20 minute off icing cycle. In this study we model the temperature distribution in the upper leg region after one and a half cycles of ice therapy. Our axisymmetric model consists of three layers: skin, fat, and muscle, and we include an initial swelling of the muscle layer that decreases as a function of the muscle temperature. After an initial 20 minutes of cooling, the desired temperature change of 10?C penetrated to only 4 mm into the muscle layer, but after a 60 minute cycle, the desired cooling increased to 1 cm. Our sensitivity analysis revealed that slight changes in properties such as density, specific heat and conductivity did not alter the results significantly. Also, using a fixed muscle thickness independent of temperature yielded a lower temperature drop in the muscle layer. It was concluded that ice therapy, though slow, is effective in cooling some of the muscle to the desired temperature, and its main advantages stem from its inexpensiveness and ease of application.

url: http://hdl.handle.net/1813/3060
date: 2006-05-24
creator: Palesch, Seth; Briddell, Jenna; Borey, Adam; Poon, Tiffany; Antisell, Joanna
viewed: 2236
title: Hormone Delivery System: The Contraceptive Ring
abstract: Many women use contraceptive methods that involve the hormones estrogen and progestin, which prevent the ovaries from developing and releasing mature eggs. This, therefore, prevents conception. Currently there are two well established types of birth control on the market. These possibilities are the pill form where the user ingests a large dose once a day for 21 days or the birth control patch is placed on the skin every week for three weeks out of the month. Women can also receive hormone shots or implants that last for four months. However, these methods only allow a menstrual cycle every four months, so they are difficult to compare to the other methods. All of these other methods can cause side effects such as headaches, blood clots, nausea, and breakthrough bleeding. However, there is a new form of birth control that comes in a flexible thin ring that is inserted into the vagina below the cervix. This ring is designed to releases a continuous low dose of hormone that is absorbed by the vagina and distributed into the blood stream. The ring actually releases two derivatives of estrogen and progestin known as etonogestrel and ethinyl estradiol (Organon USA Inc. 2005). See Figure 1 for the chemical structures of both of these compounds. Because the ring is only changed once a month, it ceases the fluctuation of hormone levels that is normal in the other birth control methods.

url: http://hdl.handle.net/1813/3061
date: 2006-05-24
creator: Tang, Zhouwen; Salvat, Regina; Perkins, Luke; Gates, Megan
viewed: 3959
title: The Effect of a Cooler on the Rate of Heat Loss from a Horse Post-Exercise
abstract: Coolers are large wool blankets put on horses after exercising or bathing during cold weather. They are intended to allow moisture to travel away from the body of the horse while providing an insulating layer to help stabilize their body temperature and to prevent them from getting a chill. We tested the effectiveness of these wool coolers by comparing the rate of heat loss from a horse's skin with and without the added wool layer. Using the modeling software of FIDAP we were able to simulate the coupled processes of heat transfer from the horse?s skin and sweat evaporation.

The model was run in FIDAP after determining an optimized mesh size and time step, which allowed accurate finite element modeling but maintained a reasonable run time. The model shows that the wool helps maintain a constant body temperature post exercise by providing an insulating layer.

Since accurate diffusivity and conductivity values for wool and hair were hard to find, a sensitivity analysis was performed to determine the effect of an error on the temperature and mass profiles. After varying the diffusivities by one order of magnitude and the conductivities by 10%, the model determined that errors in these variables have little to no effect on horse body temperature approximations after one half hour.

url: http://hdl.handle.net/1813/3062
date: 2006-05-24
creator: Mendelson, Avital;Mak, Hester;Lai, Kay;Holt, Brendan;Arquiza, Apollo
viewed: 2058
title: Heating of Nanoshells by Near-infrared Radiation: A Rapid and Minimally-invasive method for destroying tumors
abstract: The purpose of this project is to model a novel and promising cancer treatment that involves the destruction of tumor cells by the direct injection of biocompatible nanoparticles (gold-silicon nanoshells) and their subsequent heating with near-infrared radiation. The use of near infra-red radiation gives this procedure an advantage over other thermal ablation treatments for cancer since light at this range (700-900 nm) is not significantly absorbed by chromopores in human tissue and can therefore penetrate more deeply (Hirsch et al., 2003). The method is also quick and minimally invasive. Using the simulation software FIDAP, we analyzed the diffusion of the nanoshells into a spherical tumor after being injected into its center. The change in temperature of the tumor due to the exposure of the nanoshells to near-infrared light was also studied. We found out that when 50 microliters of nanoshell solution (concentration of 1.5 e10 nanoshells/ml) is introduced to a 1-cm diameter tumor, it takes 29 hours for the nanoshells to fill up the tumor. At this point, exposure of the tumor with a laser (800 nm, power = 5.6 W/m2) for 10 min raised the temperature of the entire tumor to at least 45?C, effectively destroying it. Further analysis on the effect of nanoshell distribution on the temperatures obtained showed that it has negligible effect. All distributions tested (0%, 25%, 50%, 75% and 100%) resulted in the entire tumor being heated above 45?C. The laser can therefore be immediately applied to the tumor right after injection. Nanoshell concentration vs. time and temperature vs. time profiles for the tumor for various treatment conditions were also obtained. The results of the mathematical modeling will help further studies of this treatment. Although the method still needs to be refined, it should provide an effective new treatment for the destruction of breast carcinomas and other localized tumors.

url: http://hdl.handle.net/1813/3066
date: 2006-05-25
creator: Carroll, Juliet E.
viewed: 2219
title: Fun with Fungi
abstract: Without fungi, mankind would likely suffocate under piles of dead and dying biological matter that would never decay. Medicines and other important contributions are made by these fungal organisms, not to mention the contribution they make to a pizza or steak sandwich! This classic Cooperative Extension publication gives young learners advice on identifying, collecting and displaying mushrooms. It touches on Mushroom Form and Function, Major Groups of Fungi, where and when to find Fungi and how to care for your collection.4-H, Department of Plant Pathology, Department of Entomology, College of Agriculture and Life Sciences, Cornell University.

url: http://hdl.handle.net/1813/3067
date: 2006-05-25
creator:
viewed: 2400
title: The Newsletter of the Department of Chemistry and Chemical Biology at Cornell University Number

1, March 1968Cornell University Department of Chemistry Newsletter Number 1, March 1968
abstract: This brief newsletter will have many purposes, the main one being to be informative and useful. One purpose it will not have is to be a fund-raising instrument. Many people have approached me and others in the Department about setting up some kind of an informal group or association of people who have been associated with the Cornell Chemistry Department. To start things off, I thought that we would put out a newsletter which would be published infrequently - maybe twice a year.

url: http://hdl.handle.net/1813/3068
date: 2006-05-25
creator:
viewed: 1539
title: The Newsletter of the Department of Chemistry and Chemical Biology at Cornell University Number 2, August 1968Cornell University Department of Chemistry Newsletter Number 2, August 1968
abstract: The response to the first issue of the Chemistry Department Newsletter was extremely gratifying and well worth the effort put into it. As promised, the Newsletter will come out twice a year, each issue about a month before the national American Chemical Society meetings.

url: http://hdl.handle.net/1813/3069
date: 2006-05-25
creator:
viewed: 2240
title: The Newsletter of the Department of Chemistry and Chemical Biology at Cornell University Number 3, March 1969Cornell University Department of Chemistry Newsletter Number 3, March 1969
abstract: This issue of the Newsletter brings forth another first - the inclusion of a photograph which you will see in Lauby's Cornell Recollections. We hope to insert other photographs of interest in future issues. The circulation of this Newsletter continues to go up; we are approaching 1,500.

url: http://hdl.handle.net/1813/3070
date: 2006-05-25
creator:
viewed: 1568
title: The Newsletter of the Department of Chemistry and Chemical Biology at Cornell University Number 4, August 1969Cornell University Department of Chemistry Newsletter Number 4, August 1969
abstract: As you know, much has occurred since the last issue of the Newsletter. I do not want to go into the happenings of April here since I don't think this is an appropriate place and also many of you have already received much information about the events at Cornell. The one interesting thing to me was the quality (and often lack of it) of the news reporting. Some beneficial results of the happenings are that, within this Department, there have been better communications and a better understanding of the concerns of members of the Department. Over the summer, we have been examining in depth the role of the chemist in the modern-day world. Discussions on such current problems as pollution, the race problem, chemical-biological warfare, research funding and the population problem have been held.

url: http://hdl.handle.net/1813/3071
date: 2006-05-25
creator:
viewed: 1563
title: The Newsletter of the Department of Chemistry and Chemical Biology at Cornell University Number 5, February 1970Cornell University Department of Chemistry Newsletter Number 5, February 1970

abstract: In planning this issue of the Newsletter, I looked back at last August's issue. I started off by saying that "much has occurred since the last issue of the Newsletter". These words again are very appropriate. I am sure you all know that Dale R. Corson was elected as the eighth president of Cornell by the Trustees soon after the Newsletter went out last August. President Corson had served as Provost of the University for a number of years before assuming the presidency. President Corson then called on Bob Plane, Chairman of the Chemistry Department, to serve as Provost. Bob decided to take the job as Acting Provost on a one-year basis. Because Bob would only be gone temporarily, it was decided to operate the Department with what I call a "troika". Instead of having a specific person as acting chairman, three people served in this capacity. These people were Don Cooke, Jerry Meinwald and Ben Widom. Just after Christmas, Bob Plane announced that he had decided to take the Provost's job on a permanent basis. This means that he will still be Professor of Chemistry and maintain a research group; but will be spending virtually full-time as Provost which, in effect, is second-in-command of the University. This is a considerable loss to the Department; but a gain for the University and we are very confident that Bob will do an excellent job. Upon assuming the permanent position of Provost, Bob Plane resigned as Chairman of the Chemistry Department. As you can tell from the Chairman's Column, the new Chairman of the Department is Gordon Hammes.

url: http://hdl.handle.net/1813/3072
date: 2006-05-25
creator:
viewed: 1907
title: The Newsletter of the Department of Chemistry and Chemical Biology at Cornell University Number 6, August 1970Cornell University Department of Chemistry Newsletter Number 6, August 1970
abstract: Greetings from renovated and now rededicated Baker Laboratory! You will recall that in the previous issue of the Newsletter we had just moved back into renovated Baker Laboratory. On June 8, in brief ceremonies, Baker Laboratory was rededicated.

url: http://hdl.handle.net/1813/3073
date: 2006-05-25
creator:
viewed: 1267
title: The Newsletter of the Department of Chemistry and Chemical Biology at Cornell University Number 7, March 1971Cornell University Department of Chemistry Newsletter Number 7, March 1971
abstract: One often hears and reads about the decreased interest in science among the young people of today. If that is true, we certainly are not seeing it in the Chemistry Department at Cornell. While the number of chemistry majors graduating each year has While the number of chemistry majors graduating each year has graduate enrollment in chemistry courses has increased dramatically this year. It is true that Cornell took in an additional 250 (approximately) students; however, even taking this into account the percentage of all students taking chemistry has increased. This past fall there were 270 more people taking freshman chemistry alone.

url: http://hdl.handle.net/1813/3074
date: 2006-05-25
creator: Oberly, G.H.
viewed: 2584
title: Top-Working and Bridge-Grafting Fruit Trees
abstract: The classic publication details methods orchard workers can use to cultivate desired qualities in fruit trees as well as pollinating orchards that lack sufficient pollination. Using clear diagrams and precise directions, this bulletin tells the reader how to select correct limbs, care for the grafted tree, the methods,

tools required and even gives the recipe for a grafting compound. The bulletin details top-working, bridge grafting, cleft-grafting, whip grafting and budding.Department of Plant Science, Cornell University, College of Agriculture and Life Sciences at Cornell University

url: http://hdl.handle.net/1813/3075
date: 2006-05-25
creator: Zehnder, Alan
viewed: 9387
title: Lecture Notes on Fracture Mechanics
abstract: This book is written for students who want to prepare to be able to read some of this vast literature and to apply it in engineering practice.
Here the emphasis is on mechanics models for crack tip fields and energy flows with discussion of how these results affect observed fracture behavior.
A brief discussion of computational fracture methods is given along with additional practical aspects such as fracture toughness testing and fracture criteria. A student who has worked through the notes should be able to read and understand research articles or monographs on advanced aspects of fracture and should be able to apply this knowledge to real-world problems.
As I intend to update the notes, I would be happy to take any suggestions or corrections and am open to collaboration to expand the coverage.

url: http://hdl.handle.net/1813/3076
date: 2006-05-26
creator: Brazeal, Gregory Peter
viewed: 2024
title: The Supreme Fiction: Fiction or Fact? Two Notes on Wallace Stevens and Philosophy
abstract: The thesis presents two reflections on what it might mean to read Wallace Stevens philosophically. The first section argues that we would be better off avoiding the search for a supreme fiction in Stevens' poetry. By the poet's own standards, he never succeeded in creating one. The second section attempts to justify the abandonment of the search for the supreme fiction by suggesting another, perhaps more productive way in which Stevens' poetry might be philosophically read. In particular, it will be argued that what Helen Vendler calls Stevens' "qualified assertions" can be seen as a potent technique for the avoidance of philosophical dogmatism.

url: http://hdl.handle.net/1813/3077
date: 2006-05-30
creator: St. Aubin, Adrienne Michelle
viewed: 2068
title: Reading Jacob's Room as a Transmission of Shocks
abstract: An Honors Thesis Submitted to the Department of English, Cornell University, April 2006. Winner of the Abrams Prize for the Best Senior Honors Thesis in English.This thesis examines Virginia Woolf?s 1923 novel Jacob?s Room as a transmission of what Woolf in her unfinished memoir refers to as ?shocks.? In A Sketch of the Past, Woolf describes the experience of these shocks and her immediate desire to explain them, presenting writing as a reparative activity that imparts meaning to the apparently senseless and alleviates pain by creating wholeness out of fragmentation. She illustrates this concept by providing three examples from her own childhood, each of which offers a very different model of experience. In this thesis I relate these shocks to the structure of Jacob?s Room and a number of strangely digressive and open-ended passages within it, proposing that the novel actually resists Woolf's own model of reparative writing and does not process shocks into wholes for the reader so much as transmit them to her.

url: http://hdl.handle.net/1813/3078
date: 2006-05-30
creator:
viewed: 1790
title: The Newsletter of the Department of Chemistry and Chemical Biology at Cornell University Number 9, August 1971Cornell University Department of Chemistry Newsletter Number 9, August 1971
abstract: Many of you may already know that I have accepted the position of Vice-President for Campus Affairs here at Cornell and will shortly be leaving as Executive Director of the Chemistry Department. While I am very sorry to be leaving the Department, I am leaving it in good hands and in good shape. I am very enthusiastic about my successor Dr. Harold C. Mattraw.

url: http://hdl.handle.net/1813/3079
date: 2006-05-30
creator:
viewed: 1093
title: The Newsletter of the Department of Chemistry and Chemical Biology at Cornell University Number 10, March 1972Cornell University Department of Chemistry Newsletter Number 10, March 1972
abstract: As you may have noticed in the Newsletter issued last August, Bill Gurowitz assumed the position of Vice President for Campus Affairs and I replaced him as Executive Director of the Department of Chemistry. Twenty five years ago I was a graduate student in this department, and I thought you might be interested is some random observations concerning the changes in People, Places and Things.

url: http://hdl.handle.net/1813/3080
date: 2006-05-30
creator:
viewed: 1932
title: The Newsletter of the Department of Chemistry and Chemical Biology at Cornell University Number 11, August 1972Cornell University Department of Chemistry Newsletter Number 11, August 1972
abstract: For those of you who have not been here for some time, here are some data that might be interesting. For example, 3400 students in the Fall of 1971 and 2800 students in the Spring of 1972 were registered for courses offered by the Department of Chemistry. The faculty, responsible for this staggering formal teaching load, managed to conduct research resulting in 184 publications this past year. This was in addition to dozens of invited seminars, etc. Recognition of distinguished achievements in original research came to Lynn Hoard and Roald Hoffman when they were elected to the National Academy of Sciences this Spring. This high honor, bringing honors to Cornell as well as the recipients, is now enjoyed by five members of the Department's faculty.

url: http://hdl.handle.net/1813/3081
date: 2006-05-30
creator:
viewed: 2101
title: The Newsletter of the Department of Chemistry and Chemical Biology at Cornell University Number 12, March 1973Cornell University Department of Chemistry Newsletter Number 12, March 1973
abstract: Roald Hoffman and Robert Woodward (Harvard) will share the first American Chemical Society Cope Award for outstanding contributions to organic chemistry. Woodward and Hoffmann's "Rules of Organic Symmetry", formulated in 1965, for which the award will be made, has been called the greatest theoretical advance in organic chemistry in 30 years.

url: http://hdl.handle.net/1813/3082
date: 2006-05-30
creator:
viewed: 2408
title: The Newsletter of the Department of Chemistry and Chemical Biology at Cornell University Number 13, August 1973Cornell University Department of Chemistry Newsletter Number 13, August 1973
abstract: Department News: Faculty and Staff: Chairman Gordon G. Hammes was elected to the National Academy of Sciences at their 110th meeting this Spring,, Gordon was selected on the basis of his achievements in original research. Jerry Meinwald, who spent the past year at the University of California, San Diego has now returned permanently to Cornell. Jack Freed has been promoted to Full Professor in the department... In addition to his normal duties as Vice President for Research Don Cooke has been appointed Acting Provost starting Sept. 1, 1973.

url: http://hdl.handle.net/1813/3083
date: 2006-05-30
creator:
viewed: 2743
title: The Newsletter of the Department of Chemistry and Chemical Biology at Cornell University Number 14, March 1974Cornell University Department of Chemistry Newsletter Number 14, March 1974
abstract: Facilities: One of the great benefactors of the Department of Chemistry is Spencer T. Olin who has provided the funds to enable us to undertake the renovation of the Undergraduate Laboratories in Baker Lab. This renovation started on December 10, 1973 and will result in excellent facilities in keeping with the department's continuing effort to provide modern chemical laboratory instruction to Cornell students... Alumni: We recently received word that Vartakes Migrdichian has donated a $ 1 million fund "to help Armenian students who were in a situation like my own years before".

url: http://hdl.handle.net/1813/3084
date: 2006-05-30
creator:
viewed: 2272
title: The Newsletter of the Department of Chemistry and Chemical Biology at Cornell University Number 15, August 1974Cornell University Department of Chemistry Newsletter Number 15, August 1974
abstract: One of the great things that has happened to the department this year is the renovation of the undergraduate teaching laboratories in Baker Lab... Now the basement has one area for the preparation of reagents and storage of chemicals used in each of the 5-6 laboratory courses taught in this East side of Baker. Also, in the basement is the Electronics Shop and storage of instruments such as balances, spectrometers, meters, etc. A service elevator has been installed connecting all five floors. The old, open lab areas on each of the remaining four floors has been partitioned into a service area and 5 laboratory modules per floor. Each of these modules will hold 20-22 students.

url: http://hdl.handle.net/1813/3085
date: 2006-05-30
creator:
viewed: 2233
title: The Newsletter of the Department of Chemistry and Chemical Biology at Cornell University Number 16, March 1975Cornell University Department of Chemistry Newsletter Number 16, March 1975
abstract: This issue of the Newsletter is devoted mainly to Chairmen, past, present and future. Lauby's

Recollections are devoted to Peter Debye while the Chairman's Column tells of the plans of Gordon Hammes and the announcement of a new chairman for the Department of Chemistry.

url: http://hdl.handle.net/1813/3086
date: 2006-05-30
creator:
viewed: 1565
title: The Newsletter of the Department of Chemistry and Chemical Biology at Cornell University Number 17, August 1975Cornell University Department of Chemistry Newsletter Number 17, August 1975
abstract: Starting on July 1, 1975 the department has a new Chairman, Michael Ellis Fisher... Other news of the faculty includes the selection of Gordon G. Hammes by the Board of Trustees as a Horace White Professor of Chemistry and Biochemistry. Gordon will be on sabbatical leave at the National Institutes of Health this coming year... I am sure his many friends will be happy to learn that Robert C. Fay has been promoted to Professor of Chemistry... Two new Assistant Professors have just joined the department. Dr. Barry K. Carpenter, an organic chemist was a Postdoctoral Associate at Yale and Dr. Paul L. Houston a physical chemist was a Postdoctoral Associate at the University of California, Berkeley.

url: http://hdl.handle.net/1813/3087
date: 2006-05-30
creator:
viewed: 2804
title: The Newsletter of the Department of Chemistry and Chemical Biology at Cornell University Number 18, March 1976Cornell University Department of Chemistry Newsletter Number 18, March 1976
abstract: Professor Earl L. Muetterties has received the Senior U.S. Scientist Award from the Humboldt Foundation (West Germany)... Professor George H. Morrison was awarded the 1975 Medal of the Society for Applied Spectroscopy, N. Y. Section for outstanding achievements in spectroscopy.

url: http://hdl.handle.net/1813/3088
date: 2006-05-30
creator:
viewed: 1168
title: The Newsletter of the Department of Chemistry and Chemical Biology at Cornell University Number 19, August 1976Cornell University Department of Chemistry Newsletter Number 19, August 1976
abstract: G. Marc Loudon, recently promoted to Associate Professor, was awarded the Clark Distinguished Teaching Award in the College of Arts and Sciences for 1975-76. Jerrold Meinwald has received a Guggenheim Fellowship for 1976-77 and expects to travel extensively.

url: http://hdl.handle.net/1813/3089
date: 2006-05-30
creator:
viewed: 2358
title: The Newsletter of the Department of Chemistry and Chemical Biology at Cornell University Number 20, March 1977Cornell University Department of Chemistry Newsletter Number 20, March 1977
abstract: Many readers of the NEWSLETTER are most familiar with people who were active in the department through 2-4 decades. I am sorry to write that three people whom were known by many of you have died recently. On November 30, 1976, Fred "Dusty" Rhodes died in Deland, Florida. "Dusty" spent 43 years in chemistry and chemical engineering and retired in 1957. On January 15, 1977, Alfred T. Blomquist died after a lengthy illness. Al was 70 years old and had taught at Cornell from 1941 to 1971. The third to die

recently was the widow of Peter Debye. Mathilde Debye lived to be 90 years old and died on February 11, 1977 here in Ithaca.

url: http://hdl.handle.net/1813/3090
date: 2006-05-30
creator:
viewed: 1744
title: The Newsletter of the Department of Chemistry and Chemical Biology at Cornell University Number 21, August 1977Cornell University Department of Chemistry Newsletter Number 21, August 1977
abstract: Faculty Honors & Awards - Michael E. Fisher, appointed Walker Ames Professor, University of Washington, May - June, 1977. Jack H. Freed, elected Fellow of the American Physical Society. Bruce Ganem received a Young Faculty Research Grant from Eli Lilly Company. Robert E. Hughes received a Commendation from the National Science Board and a Citation from the Oceanography of the Navy (U.S. Navy). Frank A. Long, elected Vice President, American Academy of Arts & Sciences. Earl L. Muetterties, Miller Distinguished Visiting Professor, January 1977 - June 1977, Berkeley. Other awards during 1976-77 were made to Jerry Meinwald, Ben Widom, John Wiesenfeld, Lynn Hoard and Harold Scheraga and were noted in the previous issue of the Newsletter.

url: http://hdl.handle.net/1813/3091
date: 2006-05-30
creator: LeFeber, Walter (Foreword);Kammen, Carol
viewed: 1915
title: Cornell: Glorious to View
abstract: Selections available for preview as PDFs. Hardcover available for purchase at the Cornell Store: http://www.booksite.com/texis/scripts/oop/click_ord/showdetail.html?sid=3635&isbn=093599503X&music=&buyable=0&assoc_id=&spring=The steep hills and dramatic gorges of Ithaca were the setting for a revolution in American education when, in the 1860s, a self-made man sought "to do the most good . . . to the poor and to posterity." Ezra Cornell's philanthropy, enhanced with funds from the Morrill Land Grant Act and enlarged by the vision of educator Andrew Dickson White, created what has been called the first American university - a modern, democratic, research-oriented institution open to young men and women of all creeds and races. Reflecting the ideas of its founders, Cornell University has combined the industrial science and technology of America with the humanism of Athens to serve both the individual and society.

In her concise, generously illustrated account of Cornell, Carol Kammen places that bold vision in its nineteenth-century context - a time when higher education was restricted to a privileged few. Now the university enters the twenty-first century as an institution of international stature and a leader in educational opportunity.

Kammen, a noted local historian and lecturer in history at Cornell, tells the story of this great university with verve. Highlighting the text are excerpts from important documents and images from archives in the Cornell Library's Division of Rare and Manuscript Collections, selected by Susette Newberry, a Cornell archivist specializing in photography and media studies. Together, words and images illustrate the growth of the university, the origins of its famous schools and colleges, and its enduring commitment to excellence in education.

About the Author Carol Kammen is Senior Lecturer in History at Cornell University. She is the author of several books, including Plain as a Pipestem: Essays about Local History and Lives Passed: Biographical Sketches from Central New York. She is also editor of The Pursuit of Local History and coeditor of The Encyclopedia of Local History. Walter LaFeber is Marie Underhill Noll Professor of American History at Cornell University, where he has taught since 1959. His many books include The New Empire: An Interpretation of American Expansion, 1860-1898 (also from Cornell), Michael Jordan and the New Global Capitalism, and

The Clash: U.S. Relations with Japan from the 1850s to the Present.

url: http://hdl.handle.net/1813/3094
date: 2006-05-30
creator: Trochim, William M.K.;Cabrera, Derek
viewed: 3574
title: A Theory of Systems Evaluation
abstract: National Science Foundation Systems Evaluation
Grant No. EREC-0535492

url: http://hdl.handle.net/1813/3096
date: 2006-05-30
creator: Trochim, William M.K.;Cabrera, Derek
viewed: 2901
title: A Protocol of Systems Evaluation
abstract: National Science Foundation Systems Evaluation
Grant No. EREC-0535492

url: http://hdl.handle.net/1813/3104
date: 2006-06-01
creator:
viewed: 1918
title: The Newsletter of the Department of Chemistry and Chemical Biology at Cornell University Number 22, March 1978Cornell University Department of Chemistry Newsletter Number 22, March 1978
abstract: We begin with this issue the eleventh year of publication of this Newsletter. This issue, as you can see from the masthead, is number 22. In case you wonder why this first issue of our eleventh year is not No, 21, the reason dates back to 1971 when we went from No. 7 in March to No. 9 in August. I know not why. We also begin with this issue with a new editor, if that be the appropriate word. Let me introduce myself. My name is Earl Peters and I am the new Executive Director of the Department. Twice a year I have the pleasant task of coordinating the preparation of this, your Newsletter.

url: http://hdl.handle.net/1813/3105
date: 2006-06-01
creator: Spanswick, Roger M.; Hay, Jordan O.
viewed: 1106
title: Rice Panicle Topology Toolbox for Matlab (R)
abstract: The Rice Panicle Topology Toolbox for Matlab(R) was developed to support the analysis of panicle topology and ripening. You can encode, represent and evaluate topologically variable grain traits in a panicle using arrays and graphs. The compressed (zipped) folder contains the toolbox of 14 functions and the demo EXAMPLE.m. Also included are 39 raw data text files and PAPER.m, which reproduce the results in Hay, J.O. and Spanswick, R.M. (2006) Computational analysis of rice (Oryza sativa L.) panicle topology and ripening. Seed Science Research 16:243-250. See the README.txt file for more information and for instructions on transferring the toolbox to a directory that can be accessed by Matlab (R).

url: http://hdl.handle.net/1813/3107
date: 2006-06-01
creator:
viewed: 1286

title: The Newsletter of the Department of Chemistry and Chemical Biology at Cornell University Number 23, August 1978Cornell University Department of Chemistry Newsletter Number 23, August 1978
abstract: Newsletter Number 23 begins with a list of Faculty Honors & Awards, and the Degrees Awarded: 42 Chemistry Majors received their B.A. degrees at the May 30th Commencement. 27 graduate students in Chemistry received their Ph.D. degrees during the academic year 1977-78 and 33 M.S. degrees were awarded.

url: http://hdl.handle.net/1813/3108
date: 2006-06-01
creator: Martinez, Ida
viewed: 1283
title: Teaching Library Research Strategies for Credit: Lessons for Librarians from LSP101
abstract: Presentation given at Professional Development Week on May 23, 2006.LSP101: Research Strategies in Latino Studies has been offered for three consecutive spring semesters. This presentation will offer a brief history of the course's development, feedback from students and professors, successes and challenges, and implications for future library credit-course offerings at the undergraduate level.

url: http://hdl.handle.net/1813/3108
date: 2006-06-01
creator: Martinez, Ida
viewed: 1283
title: Teaching Library Research Strategies for Credit: Lessons for Librarians from LSP101
abstract: Presentation given at Professional Development Week on May 23, 2006.LSP101: Research Strategies in Latino Studies has been offered for three consecutive spring semesters. This presentation will offer a brief history of the course's development, feedback from students and professors, successes and challenges, and implications for future library credit-course offerings at the undergraduate level.

url: http://hdl.handle.net/1813/3109
date: 2006-06-01
creator:
viewed: 916
title: The Newsletter of the Department of Chemistry and Chemical Biology at Cornell University Number 24, March 1979Cornell University Department of Chemistry Newsletter Number 24, March 1979
abstract: Newsletter Number 24 includes a piece on the life of Vincent "Dee" du Vigneaud, the Chairman's Column, and Lauby's Recollections.

url: http://hdl.handle.net/1813/3110
date: 2006-06-01
creator:
viewed: 2231
title: The Newsletter of the Department of Chemistry and Chemical Biology at Cornell University Number 25, August 1979Cornell University Department of Chemistry Newsletter Number 25, August 1979
abstract: Newsletter Number 25 includes a list of Faculty Honors & Awards, Visiting Lecturers and Professors, Degrees Awarded, Graduate Student Awards, the Chairman's Column, Lauby's Recollections, Responses from Alumni, and the Executive Director's Column

url: http://hdl.handle.net/1813/3111
date: 2006-06-01

creator:
viewed: 2009
title: The Newsletter of the Department of Chemistry and Chemical Biology at Cornell University Number 26, March 1980Cornell University Department of Chemistry Newsletter Number 26, March 1980
abstract: Newsletter Number 26 includes the Chairman's Column, announcments on the publication of two books, the Biophysical-Bioorganic NIH Lectures, and Visiting Professors, and Lauby's Recollections

url: http://hdl.handle.net/1813/3112
date: 2006-06-01
creator:
viewed: 1733
title: The Newsletter of the Department of Chemistry and Chemical Biology at Cornell University Number 27, August 1980Cornell University Department of Chemistry Newsletter Number 27, August 1980
abstract: Newsletter Number 27 includes the Chairman's Column, Lauby's Recollections, and news of Baker Lectures, Alumni and Friends, Degrees Awarded, Graduate Student Awards, and A Cornell Symposium on Laser Applications in Chemistry

url: http://hdl.handle.net/1813/3113
date: 2006-06-01
creator:
viewed: 2121
title: The Newsletter of the Department of Chemistry and Chemical Biology at Cornell University Number 28, March 1981Cornell University Department of Chemistry Newsletter Number 28, March 1981
abstract: Newsletter Number 28 includes the Chairman's Column, the Executive Director's Column, and Lauby's Recollections

url: http://hdl.handle.net/1813/3114
date: 2006-06-01
creator:
viewed: 1653
title: The Newsletter of the Department of Chemistry and Chemical Biology at Cornell University Number 29, August 1981Cornell University Department of Chemistry Newsletter Number 29, August 1981
abstract: Newsletter 29 includes the Chairman's Column, Memorial Statement on Melvin L. Nichols, an article on Professor Albert Laubengayer, announcements, and Faculty News

url: http://hdl.handle.net/1813/3115
date: 2006-06-02
creator: Dean, John;Thomas, Sarah
viewed: 2147
title: Professional Development Week Reception Remarks and Lecture, May 2006
abstract: Wine & Hors d'oeuvres Reception, Lecture and Poster Session for beginning of Professional Development Week held on Monday, May 22, 2006. Opening Remarks by Sarah Thomas and talk--"Cornell's Global Preservation Efforts"--by John Dean

url: http://hdl.handle.net/1813/3115
date: 2006-06-02
creator: Dean, John;Thomas, Sarah
viewed: 2147

title: Professional Development Week Reception Remarks and Lecture, May 2006
abstract: Wine & Hors d'oeuvres Reception, Lecture and Poster Session for beginning of Professional Development Week held on Monday, May 22, 2006. Opening Remarks by Sarah Thomas and talk--"Cornell's Global Preservation Efforts"--by John Dean

url: http://hdl.handle.net/1813/3116
date: 2006-06-02
creator: Revels, Ira
viewed: 1976
title: Building a Collaborative Digitization Project Using CONTENTdm: An Overview of the Technology Used for the HBCU-CUL Digitization Initiative
abstract: This presentation will explore a variety of national collaborative digitization initiatives underway that utilize CONTENTdm digital collection management software. Ira Revels will discuss selection for collaborative projects, shared metadata standards, and how CONTENTdm makes collaborations easier.

url: http://hdl.handle.net/1813/3116
date: 2006-06-02
creator: Revels, Ira
viewed: 1976
title: Building a Collaborative Digitization Project Using CONTENTdm: An Overview of the Technology Used for the HBCU-CUL Digitization Initiative
abstract: This presentation will explore a variety of national collaborative digitization initiatives underway that utilize CONTENTdm digital collection management software. Ira Revels will discuss selection for collaborative projects, shared metadata standards, and how CONTENTdm makes collaborations easier.

url: http://hdl.handle.net/1813/3117
date: 2006-06-02
creator: Chandler, Adam;Stewart-Marshall, Zoe;Calhoun, Karen
viewed: 2169
title: Toppling the Monolith: Modularity in Next Generation Integrated Library SystemsILSes and ERMs, the Next GenerationA Possible Long-Term Scenario for the E-Resource Management System
abstract: Drawing on recent presentations and panel discussions at the 2006 Endeavor EndUser conference, the III Director's Forum, and the University of Kentucky, Zoe, Adam and Karen will speculate on the future of the integrated library system and its sometime partner, the e-resource management system.

url: http://hdl.handle.net/1813/3117
date: 2006-06-02
creator: Chandler, Adam;Stewart-Marshall, Zoe;Calhoun, Karen
viewed: 2169
title: Toppling the Monolith: Modularity in Next Generation Integrated Library SystemsILSes and ERMs, the Next GenerationA Possible Long-Term Scenario for the E-Resource Management System
abstract: Drawing on recent presentations and panel discussions at the 2006 Endeavor EndUser conference, the III Director's Forum, and the University of Kentucky, Zoe, Adam and Karen will speculate on the future of the integrated library system and its sometime partner, the e-resource management system.

url: http://hdl.handle.net/1813/3118
date: 2006-06-02
creator: Kuo, Melissa;Patrick, Fiona;Mericle, Danielle

viewed: 2661
title: Technical Challenges of Implementing the Faculty Grants: 2 Case Studies
abstract: Cornell University Library is now completing its second year of its Faculty Grants for Digital Library Collections Program. The goal of this presentation is to discuss some of the technical issues and challenges brought up by these collaborations, which are different than internal digitization projects. Three case studies will be used to illustrate the scope and diversity of these grants.

url: http://hdl.handle.net/1813/3118
date: 2006-06-02
creator: Kuo, Melissa;Patrick, Fiona;Mericle, Danielle
viewed: 2661
title: Technical Challenges of Implementing the Faculty Grants: 2 Case Studies
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url: http://hdl.handle.net/1813/3119
date: 2006-06-02
creator: Solla, Leah;Mills, Thomas;Martinez, Ida;Lamb-Deans, Debra
viewed: 3293
title: Instruction Construction: Structuring Multi-session Classes
abstract: This panel will discuss structuring information and research classes, with specific emphasis on managing multiple session courses. The panel speakers, who teach multi-session classes, will explain how they develop syllabi, assignments, and course resources and incorporate their classes into the curriculum of their colleges and departments.
PLEASE NOTE: Due to technical difficulties, only a portion of the panel was recorded.

url: http://hdl.handle.net/1813/3119
date: 2006-06-02
creator: Solla, Leah;Mills, Thomas;Martinez, Ida;Lamb-Deans, Debra
viewed: 3293
title: Instruction Construction: Structuring Multi-session Classes
abstract: This panel will discuss structuring information and research classes, with specific emphasis on managing multiple session courses. The panel speakers, who teach multi-session classes, will explain how they develop syllabi, assignments, and course resources and incorporate their classes into the curriculum of their colleges and departments.

PLEASE NOTE: Due to technical difficulties, only a portion of the panel was recorded.

url: http://hdl.handle.net/1813/3120
date: 2006-06-02
creator: Chandler, Adam
viewed: 1455
title: How OpenURL Link Resolvers Work and Why Librarians and A&I Database Vendors Should Understand Them
abstract: Drawing from experience implementing CUL's new WebBridge link resolver, Adam Chandler will describe how link resolvers work through the entire supply chain, from the A&I index to the link resolver

and back out to the "appropriate copy."

url: http://hdl.handle.net/1813/3120
date: 2006-06-02
creator: Chandler, Adam
viewed: 1455
title: How OpenURL Link Resolvers Work and Why Librarians and A&I Database Vendors Should Understand Them
abstract: Drawing from experience implementing CUL's new WebBridge link resolver, Adam Chandler will describe how link resolvers work through the entire supply chain, from the A&I index to the link resolver and back out to the "appropriate copy."

url: http://hdl.handle.net/1813/3121
date: 2006-06-02
creator: Andrews, Camille;Joos, Nicole
viewed: 2197
title: Forging International Partnerships to Foster Access to Science Literature in the Developing WorldInternational Partnerships--to Pietermaritzburg and Beyond
abstract: Nicole Joos's presentation will explore how Mann Library, in partnership with publishers and international organizations, is assessing, tailoring, promoting and delivering three programs that provide access to e-journals to meet the needs and technologies of developing world researcher libraries. Camille Andrews will discuss the rewards and challenges of providing services to distant patrons in the developing world as well of international partnerships in general.

url: http://hdl.handle.net/1813/3122
date: 2006-06-02
creator: Heyns, Erla;Markowitz, Susan
viewed: 2538
title: Panel Discussion on the Academic Promotion Process
abstract: Come prepared with your questions and participate in an informal discussion with a panel that includes the chairs of previous Review Boards for Promotion to Librarian and Associate Librarian and the chair of the Academic Personnel Policy Committee, including: Bob Kibbee, Tony Cosgrave, Debra Lamb-Deans, Scott Wicks, Susan Markowitz and Erla Heyns.

url: http://hdl.handle.net/1813/3122
date: 2006-06-02
creator: Heyns, Erla;Markowitz, Susan
viewed: 2538
title: Panel Discussion on the Academic Promotion Process
abstract: Come prepared with your questions and participate in an informal discussion with a panel that includes the chairs of previous Review Boards for Promotion to Librarian and Associate Librarian and the chair of the Academic Personnel Policy Committee, including: Bob Kibbee, Tony Cosgrave, Debra Lamb-Deans, Scott Wicks, Susan Markowitz and Erla Heyns.

url: http://hdl.handle.net/1813/3123
date: 2006-06-04
creator: Lilis, Georgios
viewed: 1292

title: Distributed Wave Field Synthesis
abstract: Many problems in geophysics, acoustics, elasticity theory, cancer treatment, food process control and electrodynamics involve study of wave field synthesis in some form or another. In the present work, the modeling of wave propagation phenomena is studied as a static problem, using Finite Element Methods and treating time as an additional spatial dimension. In particular wave field synthesis problems are analyzed using discrete methods. It is shown that a fully finite element based scheme is a very natural and effective method for the solution of such problems. Distributed wave field synthesis in the context of two-dimensional problems is outlined and incorporation of any geometric or material non-linearities is shown to be straightforward. This has significant implications for problems in geophysics or biological media where material inhomogeneities are quite prevalent. Numerical results are presented for several problems referring to media with material inhomogeneities and predefined absorption profiles. The method can be extended to three dimensional problems involving anisotropic medium properties in a relatively straightforward manner.

url: http://hdl.handle.net/1813/3124
date: 2006-06-04
creator: Hsieh, Andrea
viewed: 1252
title: The influence of moderate and high formula docosahexaenoic acid on term baboon neonate tissue composition and clinical parameters
abstract: Long-chain polyunsaturated fatty acids (LCPUFA) are indispensable for normal infant growth and development. Docosahexaenoic acid (DHA, 22:6n-3) and arachidonic acid (ARA, 20:4n-6) are LCPUFA that play a critical role in central nervous system development. During the brain growth spurt, rapid accumulation of LCPUFA occurs in the brain and retina. Currently, insufficient evidence exists to determine optimal levels of dietary LCPUFA required during the perinatal period.

In the context of a safety and efficacy study of dietary LCPUFA in baboon neonates, we examined the influence of medium and high levels of formula DHA levels on tissue fatty acid composition and hematological and clinical chemistry measures. Infant formulas were fed from birth to 12 weeks of age: Control (C, no DHA/ARA); 1? LCPUFA (L, 0.32%DHA/0.64%ARA); 3? LCPUFA (L3, 0.96%DHA/0.64%ARA).

At 12 weeks, tissue DHA levels were more sensitive to dietary manipulations than ARA. While DHA in the cerebral cortex increased with higher concentrations of DHA, no differences between L and L3 were detected in the basal ganglia and limbic system. These findings indicate that current levels of LCPUFA in infant formula are not sufficient to optimize DHA levels in the developing cortex. RBC, hematocrit, hemoglobin, and red blood cell distribution width (RDW) were significantly elevated by formula DHA and ARA. All erythrocyte values were within accepted normal ranges for infant baboons and no differences were detectable at 12 weeks. These data provide the first indication that dietary LCPUFA may influence hematopoiesis during the first weeks of life and mitigate the precipitous decline in red cell values associated with neonatal anemia.

All clinical chemistry parameters were normal up to 12 weeks of age. Many of the trends observed were similar to those documented in human infant development. No negative effects on growth measures, hematological or clinical assessments were observed between formula groups. These results suggest that levels of DHA higher than presently included in US infant formulas enhance cerebral cortex DHA and may provide additional benefits by improving erythropoiesis. They also provide a basis for interpretation of parallel human infant studies currently underway.

url: http://hdl.handle.net/1813/3125
date: 2006-06-05
creator:
viewed: 2465
title: The Newsletter of the Department of Chemistry and Chemical Biology at Cornell University Number

30, March 1982Cornell University Department of Chemistry Newsletter Number 30, March 1982
abstract: Newsletter Number 30 includes the Chairman's Column, and "My Early Days in Fluorine Chemistry", an article by Bill Miller, reprinted from the Journal of Fluorine Chemistry

url: http://hdl.handle.net/1813/3126
date: 2006-06-05
creator:
viewed: 543
title: The Newsletter of the Department of Chemistry and Chemical Biology at Cornell University Number 31, Fall 1983The Newsletter of the Department of Chemistry and the Society of Cornell Chemists Number 31, Fall 1983
abstract: Newsletter Number 31 includes the Chairman's Column, Faculty News, Lauby's Recollections, news of the Graduate Field of Study and the Society of Cornell Chemists, as well as a memorial statement about John Raven Johnson and the Order of Service from his Memorial Service.

url: http://hdl.handle.net/1813/3127
date: 2006-06-05
creator:
viewed: 1706
title: The Newsletter of the Department of Chemistry and Chemical Biology at Cornell University Number 32, Winter 1984The Newsletter of the Department of Chemistry and the Society of Cornell Chemists Number 32, Winter 1984
abstract: Newsletter Number 32 includes the Executive Director's Column (with news of a memorial service for Mitchell Joseph Sienko), alphabetical lists from the 1982 questionnaire on where the respondents live and what they do, a Letter from Lauby, and announcements.

url: http://hdl.handle.net/1813/3128
date: 2006-06-05
creator:
viewed: 797
title: The Newsletter of the Department of Chemistry and Chemical Biology at Cornell University Number 33, Spring 1984The Newsletter of the Department of Chemistry and the Society of Cornell Chemists Number 33, Spring 1984
abstract: Newsletter Number 33 includes the Editor's Column, Robert Boyle and Cornell: The Alchemy of Excellence, Lauby's Recollections, a list of 1983-84 PH.D. Graduates, Alumni News, 1983 Baker Lecturers, Faculty News, and a memorial statement for Clyde W. Mason.

url: http://hdl.handle.net/1813/3130
date: 2006-06-05
creator: Agarwal, Anshu
viewed: 1720
title: Volumetric Deformation: A New Objective Measure to Study Chair Comfort Using 3D Body Scanning Technology
abstract: Proper lumbar support is a necessary and fundamental requirement for any well-designed chair. Objective techniques to assess chair comfort necessitate the use of a sensing layer that may change the fundamental characteristics of the chair itself depending on its structure and materials. Other methods have attached equipment to subjects, which may influence their normal sitting behavior. In this study, I utilize new 3D body scanning technology to examine the person-chair interaction in flexible, material back chairs

without adding anything to either the chair or the subject. I attempt to develop a new objective measure, volumetric deformation, which assesses the reaction of a flexible, material chair back to a seated user. In addition, this study aims to understand the relationships between perceived chair back comfort, objective volumetric deformation, subject anthropometric attributes, and ratings of perceived chair attribute comfort. Total chair back deformation is found to be significantly related to some subject anthropometric attributes, which provides further evidence that deformation is a useful objective measure for assessment of the chair back. Perceived overall back comfort is significantly associated to the perceived comfort of the lumbar support but not to any of the anthropometric measurements taken. The relationship between chair back deformation and pressure distribution should be explored in future studies.Professor Alan Hedge, Faculty Advisor

url: http://hdl.handle.net/1813/3131
date: 2006-06-05
creator: Stewart, Derek
viewed: 2418
title: Muffin Tins, Green's Functions, and more!
abstract: This presentation was originally presented as part of the 2005 Cornell Nanoscale Facility Fall Workshop, "Modeling the Nanoscale World". An overview of multiple scattering theory and how it relates to electronic structure in materials is provided. In addition, different approaches based on this theory such as the Korringa Kohn Rostoker (KKR) technique and the linear muffin-tin orbital approach (LMTO) are described. Finally an overview of Green's function techniques related to nanoscale transport is also provided. The Cornell Nanoscale Facility is part of the National Nanotechnology Infrastructure Network (NNIN). The NNIN is made possible through funding from the National Science Foundation.

url: http://hdl.handle.net/1813/3132
date: 2006-06-06
creator:
viewed: 540
title: The Newsletter of the Department of Chemistry and Chemical Biology at Cornell University Number 34, Fall 1984The Newsletter of the Department of Chemistry and the Society of Cornell Chemists Number 34, Fall 1984
abstract: Newsletter Number 34 includes the Chairman's Column, Research at Cornell Chemistry, Faculty News, articles on George H. Morrison, New Instrumentation, Chemical Microscopy, Graduate Field of Chemistry, Baker Lecturer Fall 1984, and Alumni News

url: http://hdl.handle.net/1813/3133
date: 2006-06-06
creator:
viewed: 1140
title: The Newsletter of the Department of Chemistry and Chemical Biology at Cornell University Number 35, May 1985The Newsletter of the Department of Chemistry and the Society of Cornell Chemists Number 35, May 1985
abstract: Newsletter Number 35 includes the Chairman's Column, Faculty News, articles on Medical School Applicants, Debye Lecturer Malcolm L.H. Green, Staff Feature - The Stockroom, and the Letter from Lauby

url: http://hdl.handle.net/1813/3134
date: 2006-06-06
creator:

viewed: 1007
title: The Newsletter of the Department of Chemistry and Chemical Biology at Cornell University Number 36, January 1986The Newsletter of the Department of Chemistry and the Society of Cornell Chemists Number 36, January 1986
abstract: Newsletter Number 36 includes the Chairman's Column, Faculty News, articles on Research at Cornell Chemistry, Research Centers at Cornell, Debye Lectures, Baker Lecture Series, Lauby's Recollections, Memorial statements for Paul J. Flory, Harold J. Mattraw, and Earl Muetterties, and a list of PhD Graduates September 1984 - October 1985

url: http://hdl.handle.net/1813/3135
date: 2006-06-06
creator:
viewed: 881
title: The Newsletter of the Department of Chemistry and Chemical Biology at Cornell University Number 37, June 1986The Newsletter of the Department of Chemistry and the Society of Cornell Chemists Number 37, June 1986
abstract: Newsletter Number 37 includes the Chairman's Column, articles on Undergraduate Chemistry, 1986 Baker Lectures, 1986 Debye Lectures, Faculty News, a list of PhD Graduates November 1985 - April 1986, and Alumni News

url: http://hdl.handle.net/1813/3136
date: 2006-06-06
creator:
viewed: 1690
title: The Newsletter of the Department of Chemistry and Chemical Biology at Cornell University Number 38, December 1986The Newsletter of the Department of Chemistry and the Society of Cornell Chemists Number 38, December 1986
abstract: Newsletter Number 38 includes Johnson's Wax Initiates Cornell Polymer Chemistry Traineeship Program, New Faculty Members Welcomed, New Grants, Faculty News, Alumni News, Student News, Debye Lecturer, and the Chairman's Column

url: http://hdl.handle.net/1813/3137
date: 2006-06-06
creator:
viewed: 2290
title: The Newsletter of the Department of Chemistry and Chemical Biology at Cornell University Number 39, August 1987The Newsletter of the Department of Chemistry and the Society of Cornell Chemists Number 39, August 1987
abstract: Newsletter Number 39 includes Faculty News, Symposium on Protein Conformation Held in Honor of Professor Harold A. Scheraga, Alumni News, Student News, Computers in Chemistry, 1987-88 Debye Lecture Series, 1987 Baker Lecture Series, and the Chairman's Column

url: http://hdl.handle.net/1813/3138
date: 2006-06-06
creator:
viewed: 1158
title: The Newsletter of the Department of Chemistry and Chemical Biology at Cornell University Number 40, February 1988The Newsletter of the Department of Chemistry and the Society of Cornell Chemists

Number 40, February 1988
abstract: Newsletter Number 40 includes an article on Gregory S. Ezra, Faculty News, Alumni News, and Lectures and Meetings

url: http://hdl.handle.net/1813/3139
date: 2006-06-06
creator:
viewed: 2199
title: The Newsletter of the Department of Chemistry and Chemical Biology at Cornell University Number 41, May 1988Cornell Chemistry Special Edition Newsletter Number 41, May 1988
abstract: Newsletter Number 41 is a Special Edition and includes news of John Wiesenfeld becoming Cornell's Deputy Vice President for Research

url: http://hdl.handle.net/1813/3140
date: 2006-06-06
creator:
viewed: 1744
title: The Newsletter of the Department of Chemistry and Chemical Biology at Cornell University Number 42, October 1988The Newsletter of the Department of Chemistry and the Society of Cornell Chemists Number 42, October 1988
abstract: Newsletter Number 42 includes an article on Barbara A. Baird, a Remembrance of Professor Albert W. Laubengayer, Faculty News, Alumni News, Student News, Coming Events, and the Chairman's Column

url: http://hdl.handle.net/1813/3141
date: 2006-06-06
creator: Houle, Paul
viewed: 1223
title: Commonspot Installation at Cornell University Library
abstract: Microsoft Powerpoint presentation, 19 pagesCornell University Library's CommonSpot installation is scaled to meet the needs of over 21 unit libraries that publish more than 70 web sites. This talk, given at a Commonspot Show and Tell, describes our system, based on Solaris and Oracle, that serves many virtual hosts while providing for separate test and production environments.

url: http://hdl.handle.net/1813/3142
date: 2006-06-06
creator: Houle, Paul
viewed: 1743
title: Implementing Universal Accessability
abstract: Microsoft Powerpoint presentation, 50 slidesThis presentation was given at a Library Technology Exchange Forum on Accessability on May 16, 2006. Based on the work of Sarah Horton, this presentation describes the challenge of serving users with special needs, and some of the methods for doing so.

url: http://hdl.handle.net/1813/3143
date: 2006-06-06
creator: Hoyt, Peter;Houle, Paul
viewed: 2008
title: Migrating Commonspot Sites
abstract: Microsoft Powerpoint presentation, 12 slidesThis presentation, given at the Cornell Commonspot

SIG meeting on March 22, 2006, addresses issues we discovered in moving sites from a test to production server. Content is stored in a per-site Oracle schema, while user identifiers are defined in a per-server schema. When migrating, it's necessary to update user identifiers in the site database. Peter Hoyt and Paul Houle developed a Perl script that examines the database structure, identifies fields that contain user identifiers, and maps them from the old to new server.

url: http://hdl.handle.net/1813/3144
date: 2006-06-06
creator:
viewed: 2230
title: The Newsletter of the Department of Chemistry and Chemical Biology at Cornell University Number 43, January 1989The Newsletter of the Department of Chemistry at Cornell University and the Society of Cornell Chemists Number 43, January 1989
abstract: Newsletter Number 43 includes an article on Hector D. Abruna "Electrochemist Uses Many Tools", Faculty News, Alumni News, Student News, and Coming Events.

url: http://hdl.handle.net/1813/3145
date: 2006-06-06
creator:
viewed: 1115
title: The Newsletter of the Department of Chemistry and Chemical Biology at Cornell University Number 44, March 1989The Newsletter of the Department of Chemistry at Cornell University and the Society of Cornell Chemists Number 44, March 1989
abstract: Newsletter Number 44 includes articles on New Courses Added to Undergraduate Curriculum, George F. Morrison Receives Prix Francqui, Faculty News, Alumni News, Student News, and Coming Events.

url: http://hdl.handle.net/1813/3146
date: 2006-06-06
creator:
viewed: 1281
title: The Newsletter of the Department of Chemistry and Chemical Biology at Cornell University Number 45, September 1989The Newsletter of the Department of Chemistry at Cornell University and the Society of Cornell Chemists Number 45, September 1989
abstract: Newsletter Number 45 includes articles on Simon Bauer Honored for 50 Years of Service, Faculty News, 31st National Organic Symposium, The Year in Review (a photo collage), Alumni News, Student News, and the Chairman's Column.

url: http://hdl.handle.net/1813/3147
date: 2006-06-06
creator:
viewed: 1581
title: The Newsletter of the Department of Chemistry and Chemical Biology at Cornell University Number 46, March 1990The Graduate Alumni Newsletter of the Department of Chemistry at Cornell University and the Society of Cornell Chemists Number 46, March 1990
abstract: Newsletter Number 46 includes articles on Molecular Modeling, Spring Lecture Series, Faculty News, Alumni News, and the Letter from the Chairman.

url: http://hdl.handle.net/1813/3148
date: 2006-06-06
creator:
viewed: 1161
title: The Newsletter of the Department of Chemistry and Chemical Biology at Cornell University Number 47, May 1990The Graduate Alumni Newsletter of the Department of Chemistry at Cornell University and the Society of Cornell Chemists Number 47, May 1990
abstract: Newsletter Number 47 includes articles on Environmental Prize Shared by Cornell Chemist, Biologist, Roger Loring Wins Sloan Fellowship, Laura Philips Wins AAUW Award, David Zax Joins Faculty, New Physical Sciences Librarian Joins Cornell Staff, Alumni News, Chemistry Alumni and Friends Survey Spring 1990, and the Editor's Letter.

url: http://hdl.handle.net/1813/3149
date: 2006-06-06
creator:
viewed: 1256
title: The Newsletter of the Department of Chemistry and Chemical Biology at Cornell University Number 48, August 1990The Newsletter of the Department of Chemistry at Cornell University and the Society of Cornell Chemists Number 48, August 1990
abstract: Newsletter Number 48 includes articles on Reunion 1990, Alumni News, the Letter from the Editor, Department News, Undergraduate Student News, Graduate Student News, and Commencement 1990.

url: http://hdl.handle.net/1813/3150
date: 2006-06-06
creator:
viewed: 1703
title: The Newsletter of the Department of Chemistry and Chemical Biology at Cornell University Number 49, December 1990The Newsletter of the Department of Chemistry at Cornell University and the Society of Cornell Chemists Number 49, December 1990
abstract: Newsletter Number 49 includes an article "David Zax Joins the Department", Department News, Alumni News, and A Letter from the Chair.

url: http://hdl.handle.net/1813/3151
date: 2006-06-06
creator:
viewed: 1823
title: The Newsletter of the Department of Chemistry and Chemical Biology at Cornell University Number 50, February 1991The Newsletter of the Department of Chemistry at Cornell University and the Society of Cornell Chemists Number 50, February 1991
abstract: Newsletter Number 50 includes the article "Polymer Scientist Sogah Joins the Department", Department News, and Alumni News.

url: http://hdl.handle.net/1813/3152
date: 2006-06-06
creator:
viewed: 887
title: The Newsletter of the Department of Chemistry and Chemical Biology at Cornell University Number 51, May 1991Cornell Chemistry Number 51, May 1991

abstract: Newsletter Number 51 includes articles on Undergraduate Research, Cornell's First Chemistry Professor Honored by ACS (George C. Caldwell), Department News, Faculty News, Graduate Student Prizes, Alumni News, A Letter from the Editor, and the Chemistry Alumni and Friends Survey Spring 1991.

url: http://hdl.handle.net/1813/3153
date: 2006-06-06
creator:
viewed: 1272
title: The Newsletter of the Department of Chemistry and Chemical Biology at Cornell University Number 52, September 1991Cornell Chemistry Number 52, September 1991
abstract: Newsletter Number 52 includes articles on Reunion 1991, Alumni News, Commencement 1991, PhD Recipients, Convocation 1991, Sogah Honored by State of Delaware, Project Bookshare, and 1991 Baker Lectures.

url: http://hdl.handle.net/1813/3154
date: 2006-06-06
creator:
viewed: 1810
title: The Newsletter of the Department of Chemistry and Chemical Biology at Cornell University Number 53, February 1992Cornell Chemistry Number 53, February 1992
abstract: Newsletter Number 53 includes An Essay on Teaching Science, Cornell Science Connection, Chemistry Lecturer Wins Clark Teaching Award, Remembrance of Richard F. Porter, Faculty News, Student News, Alumni News, and Distinguished Lecture Series, Spring 1992

url: http://hdl.handle.net/1813/3155
date: 2006-06-07
creator: Hernandez-Cordero, Sonia Lizeth
viewed: 1560
title: Gestational Weight Gain, Weight Retention and Risk to Develop Overweight and Obesity in Rural Guatemalan Women
abstract: Data from the INCAP longitudinal study and 1996-1999 follow-up were used to explore the association of total and timing of gestational weight gain (GWG) with postpartum weight retention (PWR) and the risk of developing overweight and obesity at 6 months postpartum in rural Guatemalan women. The contribution of genetics to the variability of GWG was also explored.
Total and timing of GWG and postpartum weight retention: Women with a pre-pregnancy BMI < 30 kg/m2 retained more weight with increasing GWG. We also found that for women who started pregnancy overweight (BMI = 25-29.9 kg/m2) for every month of predominantly exclusive breastfeeding, the PWR at 6 months decreased by 0.8 kg ($p< 0.0001$), whereas in women who started pregnancy with BMI < 25 kg/m2 there was no association between breastfeeding practices and weight retention (Interaction p-value= 0.03). The PWR at 6 months was associated with late GWG, but not with early GWG. Late GWG of 100 g/wk or 2.0 kg for the last half of pregnancy was associated with an increase 1.0 kg in PWR at 6 months. Total and timing of GWG and risk of becoming overweight and obese at 6 months postpartum: After adjusting for initial BMI and breastfeeding practices, the risk of becoming overweight by six months postpartum increased by 40% for every kg of net GWG in women with pre-pregnancy BMI between 20 and 24.9 kg/m2, and the risk of becoming obese increased by 200% for every kg of net GWG in women with pre-pregnancy BMI between 25 and 29.9 kg/m2. The risk of becoming overweight was reduced in women with the most intensive breastfeeding patterns. The late GWG, but not early GWG, was associated with greater risk of becoming overweight at 6 months postpartum.

Heritability of weight change during pregnancy: Our analysis lacked statistical power to test whether weight change during pregnancy is inherited. Studying whether the high variability in weight change during pregnancy has a genetic basis is of clinical and public health interest thus better approaches to address the question need to be explored.

url: http://hdl.handle.net/1813/3156
date: 2006-06-07
creator: Martinez, Linnell
viewed: 1083
title: HIGH CONFINEMENT SUSPENDED MICRO-RING RESONATORS IN SILICON-ON-INSULATOR
abstract: A method for suspending micro-ring resonators in a silicon-on-insulator substrate was developed. Due to the low insertion loss of the suspension mechanism and high confinement of the resonant cavity, quality factors exceeding 15,000 of micron-size suspended rings were achieved. Often, applications of such resonant cavities require tunability of its resonant wavelength. In this work, we also present two methods of tuning the cavity, one by thermal stimulation and the other by MEMS electrostatic actuation.

url: http://hdl.handle.net/1813/3161
date: 2006-06-07
creator: Sawaf, T.; Al-Maleh, K.; Barazangi, Muawia; Brew, Graham
viewed: 3417
title: Tectonic and geologic evolution of Syria
abstract: Publisher's version archived with permission from publisher.Using extensive surface and subsurface data, we have synthesized the Phanerozoic tectonic and geologic evolution of Syria that has important implications for eastern Mediterranean tectonic studies and the strategies for hydrocarbon exploration. Syrian tectonic deformation is focused in four major zones that have been repeatedly reactivated throughout the Phanerozoic in response to movement on nearby plate boundaries. They are the Palmyride Mountains, the Euphrates Fault System, the Abd el Aziz-Sinjar uplifts, and the Dead Sea Fault System. The Palmyrides include the SW Palmyride fold and thrust belt and two inverted sub-basins that are now the Bilas and Bishri blocks. The Euphrates Fault System and Abd el Aziz-Sinjar grabens in eastern Syria are large extensional features with a more recent history of Neogene compression and partial inversion. The Dead Sea transform plate boundary cuts through western Syria and has ssociated pull-apart basins. The geological history of Syria has been reconstructed by combining the interpreted geologic history of these zones with tectonic and lithostratigraphic analyses from the remainder of the country. Specific deformation episodes were penecontemporaneous with regional-scale plate-tectonic events. Following a relatively quiescent early Paleozoic shelf environment, the NE-trending Palmyride/Sinjar Trough formed across central Syria in response to regional compression followed by Permian-Triassic opening of the Neo-Tethys Ocean and the eastern Mediterranean. This continued with carbonate deposition in the Mesozoic. Late Cretaceous tectonism was dominated by extension in the Euphrates Fault System and Abd el Aziz-Sinjar Graben in eastern Syria associated with the closing of the Neo-Tethys. Repeated collisions along the northern Arabian margin from the Late Cretaceous to the Late Miocene caused platform-wide compression. This led to the structural inversion and horizontal shortening of the Palmyride Trough and Abd el Aziz-Sinjar Graben.

url: http://hdl.handle.net/1813/3162
date: 2006-06-07
creator: Zaza, T.; Sawaf, T.; Barazangi, Muawia; Litak, Robert; Brew, Graham
viewed: 1725
title: Tectonic evolution of northeast Syria: Implications for regional tectonics and hydrocarbons

abstract: We present the Phanerozoic tectonic evolution of northeast Syria and incorporate the results into regional deformation models of the northern Arabian Platform and nearby Arabian Plate boundaries. Based on analysis of extensive seismic reflection profiles and well data, we interpret that the Sinjar-Abd el Aziz area in northeast Syria was subsiding under extension at various rates from the Carboniferous until the end of the Mesozoic, most markedly during the latest Cretaceous. The predominant basin through most of the Late Paleozoic and Mesozoic was southwest-northeast trending; this formed the northeast extension of the major Palmyride Basin to the southwest. During the Late Cretaceous, extension in eastern Syria initiated along southeast-northwest and then eastwest trends - possibly as a result of changing subduction geometries and plate motions in the Neo-Tethys to the northeast. The east-west striking faulting resulted in syntectonic deposition of up to approximately 1,600 meters of Late Campanian-Maastrichtian marly limestones in the Sinjar-Abd el Aziz area. The area was subjected to horizontal shortening throughout the Cenozoic, primarily during Plio-Pleistocene time, resulting in structural inversion along some of the faults. Although crustal shortening through the Syrian Sinjar and Abd el Aziz structures is relatively minor (approximately 1%), this has been critical to hydrocarbon trap formation in Mesozoic and Cenozoic strata through the formation of fault-propagation folds. We present regional models that show the interrelated tectonic history of northeast Syria, the Palmyrides, and the Euphrates Fault System are all inseparably linked to the polyphase opening and closing of the nearby Neo-Tethys Ocean.

url: http://hdl.handle.net/1813/3163
date: 2006-06-07
creator:
viewed: 1666
title: Cornell Alumni News Vol. 01, No. 1 - No. 12, April - June 1899
abstract: Cornell Alumni News Vol. 1, No. 1 - No. 12, April - June 1899.

url: http://hdl.handle.net/1813/3164
date: 2006-06-07
creator:
viewed: 2954
title: Cornell Alumni News Vol. 02, No. 1 - No. 36, 1899 - 1900.
abstract: Cornell Alumni News Vol. 2, No. 1 - No. 36, 1899 - 1900. Please note the following: Issue 1 contains a Volume Index. 002_035s.pdf is a Special Issue.

url: http://hdl.handle.net/1813/3165
date: 2006-06-07
creator:
viewed: 1278
title: Cornell Alumni News Vol. 03, No. 1 - No. 37, 1900 - 1901.
abstract: Cornell Alumni News Vol. 3, No. 1 - No. 37, 1900 - 1901. Please note the following: Issue 1 contains a Volume Index.

url: http://hdl.handle.net/1813/3166
date: 2006-06-07
creator:
viewed: 1734
title: Cornell Alumni News Vol. 04, No. 1 - No. 36, 1901 - 1902
abstract: Cornell Alumni News Vol. 4, No. 1 - No. 36, 1901 - 1902. Please note the following: Issue 1 contains a Volume Index.

url: http://hdl.handle.net/1813/3167
date: 2006-06-07
creator:
viewed: 1836
title: Cornell Alumni News Vol. 05, No. 1 - No. 34, 1902 - 1903
abstract: Cornell Alumni News Vol. 5, No. 1 - No. 34, 1902 - 1903. Please note the following: Issue 1 contains a Volume Index.

url: http://hdl.handle.net/1813/3168
date: 2006-06-07
creator:
viewed: 2154
title: Cornell Alumni News Vol. 06, No. 1 - No. 39, 1903 - 1904
abstract: Cornell Alumni News Vol. 6, No. 1 - No. 39, 1903 - 1904.

url: http://hdl.handle.net/1813/3169
date: 2006-06-07
creator:
viewed: 2815
title: Cornell Alumni News Vol. 07, No. 1 - No. 40, 1904 - 1905
abstract: Cornell Alumni News Vol. 7, No. 1 - No. 40, 1904 - 1905. Please note the following: Issue 40 contains a Volume Index.

url: http://hdl.handle.net/1813/3170
date: 2006-06-07
creator:
viewed: 2217
title: Cornell Alumni News Vol. 08, No. 1 - No. 40, 1905 - 1906
abstract: Cornell Alumni News Vol. 8, No. 1 - No. 40, 1905 - 1906. Please note the following: Issue 40 contains a Volume Index.

url: http://hdl.handle.net/1813/3171
date: 2006-06-07
creator:
viewed: 2242
title: Cornell Alumni News Vol. 09, No. 1 - No. 40, 1906 - 1907
abstract: Cornell Alumni News Vol. 9, No. 1 - No. 40, 1906 - 1907. Please note the following: Issue 40 contains a Volume Index.

url: http://hdl.handle.net/1813/3172
date: 2006-06-07
creator:
viewed: 904
title: Cornell Alumni News Vol. 10, No. 1 - No. 40, 1907 - 1908
abstract: Cornell Alumni News Vol. 10, No. 1 - No. 40, 1907 - 1908.

url: http://hdl.handle.net/1813/3173

date: 2006-06-07
creator:
viewed: 1970
title: Cornell Alumni News Vol. 11, No. 1 - No. 40, 1908 - 1909
abstract: Cornell Alumni News Vol. 11, No. 1 - No. 40, 1908 - 1909. Please note the following: Issue 40 contains a Volume Index.

url: http://hdl.handle.net/1813/3174
date: 2006-06-07
creator: Barazangi, Muawia;Brindisi, Carrie;Sandvol, Christine;Sandvol, Eric;Steer, David;Seber, Dogan
viewed: 1853
title: Design and development of information systems for the geosciences: An application to the Middle East
abstract: Publisher's version archived with permission from publisher. http://www.gulfpetrolink.net/publication/geoarabia.htmAs our understanding grows of how the Earth functions as a complex system of myriad interrelated mechanisms, it becomes clear that a revolutionary and novel approach is needed to study and understand it. In order to take advantage of an ever-growing number of observations and large data sets and to employ them efficiently in multidisciplinary studies aimed at solving earth system science problems, we are developing a comprehensive Solid Earth Information System (SEIS). The complex nature of the solid earth sciences raises serious challenges for geoscientists in their quest to understand the nature and the dynamic mechanisms at work in the planet. SEIS forms a first step in developing a broader and more comprehensive information system for earth system sciences designed for the needs of the geoscientists of the 21st century. In a way, SEIS is a step towards the Digital Earth. Application of SEIS to the complex tectonics of the Middle East shows that information systems are crucial in multidisciplinary research studies and open new avenues in research efforts. SEIS includes an Internet module that provides open access to anyone interested. Researchers as well as educators and students can access this knowledge and information system at http://atlas.geo.cornell.edu.

url: http://hdl.handle.net/1813/3175
date: 2006-06-07
creator: Barazangi, Muawia;Sandvol, Eric;Seber, Dogan;Al-Lazki, Ali
viewed: 2486
title: A crustal transect across the Oman Mountains on the eastern margin of Arabia
abstract: Publisher's version archived with permission from publisher. http://www.gulfpetrolink.net/publication/geoarabia.htmThe unique tectonic setting of the Oman Mountains and the Semail Ophiolite, together with ongoing hydrocarbon exploration, have focused geological research on the sedimentary and ophiolite stratigraphy of Oman. However, there have been few investigations of the crustal-scale structure of the eastern Arabian continental margin. In order to rectify this omission, we made a 255-km-long, southwesterly oriented crustal transect of the Oman Mountains from the Coastal Zone to the interior Foreland via the 3,000-m-high Jebel Akhdar. The model for the upper 8 km of the crust was constrained using 152 km of 2-D seismic reflection profiles, 15 exploratory wells, and 1:100,000- to 1:250,000-scale geological maps. Receiver-function analysis of teleseismic earthquake waveform data from three temporary digital seismic stations gave the first reliable estimates of depth-to-Moho. Bouguer gravity modeling provided further evidence of depths to the Moho and metamorphic basement.
Four principal results were obtained from the transect. (1) An interpreted mountain root beneath Jebel Akhdar has a lateral extent of about 60 km along the transect. The depthto-Moho of 41 to 44 km about 25 km southwest of Jebel Akhdar increased to 48 to 51 km on its northeastern side but decreased to 39 to 42 km beneath the coastal plain farther to the northeast. (2) The average depth to the metamorphic basement

was inferred from Bouguer gravity modeling to be 9 km in the core of Jebel Akhdar and immediately to the southwest. A relatively shallow depth-to-basement of 7 to 8 km coincided with the Jebel Qusaybah anticline south of the Hamrat Ad Duru Range. (3) Based on surface, subsurface, and gravity modeling, the Nakhl Ophiolite block extends seaward for approximately 80 km from its most southerly outcrop. It has an average thickness of about 5 km, whereas ophiolite south of Jebel Akhdar is only 1 km thick. The underlying Hawasina Sediments are between 2 and 3 km thick in the Hamrat Ad Duru Zone, and 2 km thick in the Coastal Zone. (4) Southwest of Jebel Akhdar, reactivated NW-oriented strike-slip basement faults that deformed Miocene to Pliocene sediments were inferred from the interpretation of seismic reflection profiles.

url: http://hdl.handle.net/1813/3176
date: 2006-06-08
creator:
viewed: 2111
title: The Newsletter of the Department of Chemistry and Chemical Biology at Cornell University Number 54, August 1992Cornell Chemistry Number 54, August 1992
abstract: Newsletter Number 54 includes articles on the Gala Celebration Held May 16, The Cornell/Industry Connection, Undergraduate Student News, Graduate Student News, Faculty News, Department News, Reunion 1992, and Alumni News

url: http://hdl.handle.net/1813/3177
date: 2006-06-08
creator:
viewed: 2254
title: The Newsletter of the Department of Chemistry and Chemical Biology at Cornell University Number 55, December 1992Cornell Chemistry Number 55, December 1992
abstract: Newsletter Number 55 includes articles on the New Coordinator for Freshman Chemistry (Steve Russo), Chemists as Administrators, 4-H Teens Visit Chemistry, Faculty News, Postdoctoral News, Graduate Student News, Ben Widom Honored, and Alumni News

url: http://hdl.handle.net/1813/3178
date: 2006-06-08
creator:
viewed: 1154
title: The Newsletter of the Department of Chemistry and Chemical Biology at Cornell University Number 56, May 1993Cornell Chemistry Number 56, May 1993
abstract: Newsletter Number 56 includes articles on Drug Delivery Research in the Chemistry Department, Improving Science Literacy, Memorial Statement for James Lynn Hoard 1905-1993, Undergraduates Learn from Alumni, Chemistry Days, Alumni Gifts, Alumni News, Faculty and Department News, Cornell Art Museum Exhibits Chemistry-related Show, and A Letter from the Chair

url: http://hdl.handle.net/1813/3179
date: 2006-06-08
creator:
viewed: 1022
title: The Newsletter of the Department of Chemistry and Chemical Biology at Cornell University Number 57, July 1993Cornell Chemistry Number 57, July 1993
abstract: Newsletter Number 57 includes articles on Commencement 1993, Undergraduate Awards for 1993, Graduate Degrees Awarded 1992-93, Alumni News, Graduate and TA Awards and Fellowships, Faculty

News, and Department News

url: http://hdl.handle.net/1813/3180
date: 2006-06-08
creator:
viewed: 1212
title: The Newsletter of the Department of Chemistry and Chemical Biology at Cornell University Number 58, December 1993Cornell Chemistry Number 58, December 1993
abstract: Newsletter Number 58 includes articles on Invisible Support, Alumni News, Student News, Endowed Chemistry Professorship, Faculty News, Alumni and Friends Survey Fall 1993, and a piece From the Chairman's Office

url: http://hdl.handle.net/1813/3181
date: 2006-06-08
creator:
viewed: 383
title: The Newsletter of the Department of Chemistry and Chemical Biology at Cornell University Number 59, April 1994Cornell Chemistry Number 59, April 1994
abstract: Newsletter Number 59 includes: Two New Faculty Members Join the Department (Melissa A. Hines and H. Floyd Davis), Faculty News, Organic Synthesis in Water: A Solution to the Problem of Toxic Waste?, Alumni News, Department News, and a piece From the Chairman's Office

url: http://hdl.handle.net/1813/3182
date: 2006-06-08
creator:
viewed: 1238
title: The Newsletter of the Department of Chemistry and Chemical Biology at Cornell University Number 60, August 1994Cornell Chemistry Number 60, August 1994
abstract: Newsletter Number 60 includes articles on H. Floyd Davis, Commencement 1994, Undergraduate Awards for 1994, Graduate Degrees Awarded 1993-94, Graduate and TA Awards and Fellowships, Alumni News, Reunion 1994, Faculty and Department News, Cornell Chemists Career Survey, and a piece From the Chairman's Office

url: http://hdl.handle.net/1813/3183
date: 2006-06-08
creator:
viewed: 1064
title: The Newsletter of the Department of Chemistry and Chemical Biology at Cornell University Number 61, December 1994Cornell Chemistry Number 61, December 1994
abstract: Newsletter Number 61 includes articles on Cornell Chemist Stumbles on an Explanation for the "Ozone Deficit", Linus Pauling - the Cornell Connection, The George Fisher Baker Lecture Series Publications, Alumni News, Student News, and Faculty and Department News

url: http://hdl.handle.net/1813/3184
date: 2006-06-08
creator:
viewed: 1258
title: The Newsletter of the Department of Chemistry and Chemical Biology at Cornell University Number

62, March 1995Cornell Chemistry Number 62, March 1995
abstract: Newsletter Number 62 includes articles From the Chairman's Office, Alumni News, Faculty News, and Department News

url: http://hdl.handle.net/1813/3185
date: 2006-06-08
creator:
viewed: 528
title: The Newsletter of the Department of Chemistry and Chemical Biology at Cornell University Number 63, August 1995Cornell Chemistry Number 63, August 1995
abstract: Newsletter Number 63 includes articles From the Chairman's Office, Department Inaugurates Aggarwal Lecture, Reunion 1995, News from Alumni and Friends, Faculty and Department News, Commencement 1995, PhDs Awarded 1994-95, Undergraduate Awards, and Graduate Awards

url: http://hdl.handle.net/1813/3186
date: 2006-06-08
creator:
viewed: 426
title: The Newsletter of the Department of Chemistry and Chemical Biology at Cornell University Number 64, November 1995Cornell Chemistry Number 64, November 1995
abstract: Newsletter Number 64 includes articles The Chairman's Notebook, Science on the Silver Screen, Department News, Summit Technology, Baker Lab: A Thumbnail History, Lab Notes: Self-Condensing Polymerization Has Industrial Application, and Synthesized Pheromone Traps Lovesick Tomato Pests, Faculty and Department Briefs, BChems of 1911, and News from Alumni and Friends

url: http://hdl.handle.net/1813/3187
date: 2006-06-08
creator:
viewed: 753
title: The Newsletter of the Department of Chemistry and Chemical Biology at Cornell University Number 65, March 1996Cornell Chemistry Number 65, March 1996
abstract: Newsletter Number 65 includes The Chairman's Notebook, The Benefits of Consulting, Department News, New Lectures Honor Memory of Alfred T. Blomquist, Money Rather Than Mud For Her Toil (re Jing Li, Doctorate in Chemistry from Cornell, 1990), Lab Notes, Chemical Prospecting Sustains Ethnobotanical Tradition, Polymer Substrate Improves Drug Delivery, Faculty and Department Briefs, News from Alumni and Friends, Reunion 1996, and Retorts

url: http://hdl.handle.net/1813/3188
date: 2006-06-08
creator:
viewed: 1823
title: The Newsletter of the Department of Chemistry and Chemical Biology at Cornell University Number 66, August 1996Cornell Chemistry Number 66, August 1996
abstract: Newsletter Number 66 includes articles on October Symposium Marks Scheraga's 75th Birthday, Things You Wouldn't Find Anywhere Else on Earth, Cornell Chemist Improves Chances for Cancer Therapy, Retorts, Faculty and Department Briefs, and News from Alumni and Friends

url: http://hdl.handle.net/1813/3189

date: 2006-06-08
creator:
viewed: 1310
title: The Newsletter of the Department of Chemistry and Chemical Biology at Cornell University Number 67, November 1996Cornell Chemistry Number 67, November 1996
abstract: Newsletter Number 67 includes The Chairman's Notebook: Who Owns Scientific Data, World's Smallest Wire Set in Polymer Sleeve, Biomolecules Characterized By New Technique, Department News, Faculty and Department Briefs, Retorts, and News from Alumni and Friends

url: http://hdl.handle.net/1813/3190
date: 2006-06-08
creator:
viewed: 1359
title: The Newsletter of the Department of Chemistry and Chemical Biology at Cornell University Number 68, September 1997Cornell Chemistry Number 68, September 1997
abstract: Newsletter Number 68 includes The Chairman's Notebook, New Faculty: Geoffrey Coates Join the Department as an Assistant Professor, Faculty and Department Briefs, Reunion Open House 1997, Commencement 1997, Undergraduate Awards, Graduate Degrees 1996-1997, Graduate Awards, and News from Alumni and Friends

url: http://hdl.handle.net/1813/3191
date: 2006-06-08
creator:
viewed: 1295
title: The Newsletter of the Department of Chemistry and Chemical Biology at Cornell University Number 69, April 1998Cornell Chemistry Number 69, April 1998
abstract: Newsletter Number 69 includes The Chairman's Notebook, Lab Notes: Undergraduate Research - A Perspective by Frank DiSalvo, Chemical helps ants remember where they left their food, shows promise for Alzheimer's disease; Cornell scientists report excited ants follow pheromone trail of same chemical they will use to paralyze their prey; Wild tomatoes yield formula for nontoxic insect repellent, Cornell researchers say; U.S. patent granted to 'Non-cyclic Esters for Pest Control"; Faculty News, Department News, and News from Alumni and Friends

url: http://hdl.handle.net/1813/3192
date: 2006-06-08
creator:
viewed: 399
title: The Newsletter of the Department of Chemistry and Chemical Biology at Cornell University Number 70, January 1999Chemistry and Chemical Biology Number 70, January 1999
abstract: Newsletter Number 70 includes The Chairman's Notebook; In Memoriam: William T. Miller; New Faculty - Steve Ealick; Seeking Perfection: Researcher [Melissa Hines] Aims at Flat Surfaces without Bumpy Atoms; Lab Notes: Researchers - Clever Chemistry Keeps Trend-Setting Beetle Babies Off Menu; Rawlings Affirms Dedication to Further Chemistry and Chemical Biology at CU; Department News; Ganem Receives Johnson & Johnson Award to Support Chemical Research; 1,000 Scheraga "Hits" Honored at Celebration; Undergraduate News; Graduate Awards; Graduate Degrees Awarded

url: http://hdl.handle.net/1813/3193
date: 2006-06-08

creator:
viewed: 419
title: The Newsletter of the Department of Chemistry and Chemical Biology at Cornell University Number 71, August 1999Chemistry and Chemical Biology Number 71, August 1999
abstract: Newsletter Number 71 includes The Chairman's Notebook; Frank and Robert Laughlin Chair of Physical Chemistry; The Peter J. W. Debye Professorship; In Memoriam: Franklin A. Long; New Faculty: Stephen Lee and Rick Cerione; Lab Notes; Department News; Commencement 1999; Graduate Awards; and Alumni and Friends News

url: http://hdl.handle.net/1813/3194
date: 2006-06-08
creator:
viewed: 2509
title: The Newsletter of the Department of Chemistry and Chemical Biology at Cornell University Number 72, May 2000Chemistry and Chemical Biology Number 72, May 2000
abstract: Newsletter Number 72 includes The Chairman's Notebook: A New Building in Our Future?; New Faculty: John Marohn Joins the Department as an Assistant Professor; Lab Notes; Faculty News; Department News; and Alumni News

url: http://hdl.handle.net/1813/3195
date: 2006-06-08
creator:
viewed: 2528
title: The Newsletter of the Department of Chemistry and Chemical Biology at Cornell University Number 73, March 2001Chemistry and Chemical Biology Number 73, March 2001
abstract: Newsletter Number 73 includes The Chairman's Notebook: An Important New Collaboration Caps a Very Good Year; New Faculty: Brian R. Crane Joins the Department as an Assistant Professor; Lab Notes; Department News; Faculty News; Commencement 2000; Undergraduate Awards; Graduate Diplomas and Awards; News from Alumni and Friends; and Reunion 2000

url: http://hdl.handle.net/1813/3196
date: 2006-06-08
creator:
viewed: 914
title: The Newsletter of the Department of Chemistry and Chemical Biology at Cornell University Number 74, October 2001Chemistry and Chemical Biology Number 74, October 2001
abstract: Newsletter Number 74 includes The Chair's Notebook - Looking to the Future; New Faculty: Paul J. Chirik and D. Tyler McQuade Join the Department as Assistant Professors; Lab Notes: New Process for Producing Near-Atomic Scale Silicon Structures - Nanobumps - Developed by Cornell Researchers; Cornell-Led Research Group Wins $19.6 Million NIH Grant to Build Biological Research Facility at Argonne's Advanced Photon Source; New Class of Rubbery Plastic Materials, with Promise of Big Economies, Produced in Lab by Cornell Researchers; Faculty News; Department News; Commencement 2001; Undergraduate Awards; Graduate Diplomas and Awards; News from Alumni and Friends; and Reunion 2001

url: http://hdl.handle.net/1813/3197
date: 2006-06-08
creator:
viewed: 1961

title: The Newsletter of the Department of Chemistry and Chemical Biology at Cornell University Number 75, June 2002Chemistry and Chemical Biology Number 75, June 2002
abstract: Newsletter Number 75 includes The Chair's Notebook: Reality Check; Department News; Lab Notes; Faculty News; and Department News

url: http://hdl.handle.net/1813/3198
date: 2006-06-08
creator:
viewed: 2360
title: The Newsletter of the Department of Chemistry and Chemical Biology at Cornell University Number 76, July 2003Chemistry and Chemical Biology Number 76, July 2003
abstract: Newsletter Number 76 includes The Chair's Notebook: Highs and Lows; In Memoriam: Walter C. McCrone Jr., and Andreas C. Albrecht; Lab Notes; Faculty News; Department News; Commencement 2002; Undergraduate Awards; Graduate Diplomas and Awards; Reunion 2002; and News from Alumni and Friends

url: http://hdl.handle.net/1813/3199
date: 2006-06-08
creator:
viewed: 2178
title: The Newsletter of the Department of Chemistry and Chemical Biology at Cornell University Number 77, June 2004Chemistry and Chemical Biology Number 77, June 2004
abstract: Newsletter Number 77 includes The Chair's Notebook: Past, Present, and Future; Lab Notes; Faculty and Department News; Commencement 2003; Undergraduate Awards; Ph.D. Diplomas and Awards; Reunion 2003; and News from Alumni and Friends

url: http://hdl.handle.net/1813/3200
date: 2006-06-08
creator:
viewed: 2168
title: The Newsletter of the Department of Chemistry and Chemical Biology at Cornell University Number 78, May 2005Chemistry and Chemical Biology Number 78, May 2005
abstract: Newsletter Number 78 includes The Chair's Notebook: Saludos; In Memorium: George H. Morrison and Betty R. Miller; New Faculty: Garnet Chan and Jon Njardarson Join the Department as Assistant Professors; Lab Notes; Faculty and Department News; Commencement 2004; Undergraduate Awards; Ph.D. Diplomas and Awards; Reunion 2004; News from Alumni and Friends; and Survey 2005

url: http://hdl.handle.net/1813/3201
date: 2006-06-12
creator: Mack, Jared Lynn
viewed: 2824
title: DEPOSITION OF ORGANIC THIN FILMS USING ENERGY TUNABLE MOLECULAR BEAMS ON SILICON DIOXIDE AND OCTADECYLTRICHLOROSILANE MODIFIED SILICON DIOXIDE
abstract: Organic semiconductors, in particular organic thin-film transistors (OTFTs), have been gaining recognition and spurring development in the electronics world now for more than a decade. The use of organic semiconductors is playing an ever increasing role in today?s industrial research in an effort to fill niches in technology left behind by traditional semiconductors such as silicon.
The vast majority of research leading this outreach has been limited to the capabilities of thermally evaporated

deposition techniques. A more advanced approach to investigating the underlying growth mechanics of organic semiconductors employs the use of a tunable molecular beam. Through controlling the expansive parameters of a molecular gas, a supersonic beam for molecular deposition can be created with strict control over the incident kinetic energy.
This supersonic beam technique was employed to study the growth characteristics of pentacene and how they pertain to the electrical properties of an organic semiconducting device. At a constant growth rate, films were deposited at three incident kinetic energies (1.5 eV, 2.7 eV, 4.5 eV, and 6.7 eV) and analyzed using ellipsometry and atomic force microscopy. Growth characteristics of the film (roughening exponent ?, growth exponent ?, and the correlation length) were then extracted. Finally, surface modification of the dielectric with the self-assembled monolayer (SAM) octadecyltrichlorosilane (OTS) was used to influence the nucleation and growth parameters of the pentacene film. These parameters were studied as a function of the incident kinetic energy and electrical properties that resulted.

url: http://hdl.handle.net/1813/3202
date: 2006-06-13
creator: Wyman, Mark
viewed: 2090
title: Cosmic Superstrings: Observable Remnants of Brane Inflation
abstract: Brane inflation provides a natural dynamical model for the physics which underlie the inflationary paradigm. Besides their inflationary predictions, brane models imply another observable consequence: cosmic strings. In this dissertation I outline the background of how cosmic strings arise in brane inflationary models and how the properties of the strings and the models are mutually tied (Chapter 2). I then use cosmological observations to put limits on the properties of any actually-existing cosmic string network (Chapter 3). Next, I study the question of how cosmic superstrings, as the cosmic strings arising from string theory are known, could be distinct from classical gauge-theory cosmic strings. In particular, I propose an analytical model for the cosmological evolution of a network of binding cosmic strings (Chapter 4); I also describe the distinctive gravitational lensing phenomena that arecaused by binding strings (Chapter 5). Finally, I lay out the background for the numerical study of a gauge theory model forthe dynamics of cosmic superstring binding (Chapter 6).

url: http://hdl.handle.net/1813/3203
date: 2006-06-13
creator: Houle, Paul
viewed: 2545
title: Tapir User Manager
abstract: User management is essential for community and interactive web systems. User management is often an afterthought in a project; although it is critical to the usability (a user that can't register log in can't use the service) and managability of a site, developers often build ad hoc solutions that are unreliable, insecure and hard to use.
Tapir User Manager is a user management system that's been used to support large traffic sites. This presentation introduces TUM and explains how it's been used for projects at CUL and elsewhere.

url: http://hdl.handle.net/1813/3204
date: 2006-06-13
creator: Revels, Ira;Houle, Paul
viewed: 2592
title: Demo Slides for "Novel Catalog Tutorial"
abstract: Microsoft Powerpoint presentation, 11 slidesThis presentation consists of demonstration slides

given at the Endeavor Mid-Atlantic user group in October 2004 at Syracuse University by Paul Houle and Ira Revels. This presentation shows an instruction application layered over the OPAC by a PHP application running on a transparent http proxy server. The application can display instructions for the user, monitor the users progress, reward the user for successful completion or give the user additional hints as to how complete a task

url: http://hdl.handle.net/1813/3205
date: 2006-06-13
creator: Sazonova, Vera A.
viewed: 2162
title: A tunable carbon nanotube resonator
abstract: Nanoelectromechanical systems (NEMS) have recently been the subjectof much exciting research. They have been proposed for use in various applications such as mass and force detection, RF processing, and investigating quantum effects in the mechanical motion of resonators. Attempts to increase sensitivity for these applications has led to further and further miniaturization of the mechanical devices. When their size reaches the range of hundreds of nanometers, these devices have active masses in the hundreds of the femtograms and operational frequencies in the GHz. An ultimatelimit to this miniaturization is a mechanical resonator based on a single molecule. Such a resonator should not only be able to push the limits of the measurements sensitivities, but can also probe decrease of the quality factor values with size that has so far been attributed to the increase of the surface-to-volume ratios in these resonators. Carbon nanotubes (CNTs), thin tubes of graphene, are light, stiff, strong, and electrically active, which makes them a perfect candidate for a such a NEMS structure.
By employing a capacitive actuation and detection technique, we investigate the performance of a resonator based on a doubly-clamped, suspended CNT in a transistor geometry. We excite vibrations by applying an AC driving voltage to the gate electrode, and we detect them by measuring the current through the CNT device. Controlling the CNT's tension, by applying a downward DC force with a DC voltage on the gate electrodes, enables us to tune the resonant frequency, resulting in the first tunable and self-detecting carbon nanotube resonator.
This setup also allows us to probe the loss mechanisms in these small structures. We systematically study correlation of the quality factor with each of the device characteristics, including electrical resistance, fabrication geometry, and resonant mode harmonic number. We also study dependence of the quality factor on the experimental knobs, such as pressure, temperature, DC gate voltage, and AC driving voltage. We find that the quality factors in CNTs continue the trend previously established by NEMS, and that several dissipation mechanisms must be responsible for losses in this system. We identify coupling to the environment, the thermoelastic effect, and surface-related losses as the three key mechanisms.

url: http://hdl.handle.net/1813/3206
date: 2006-06-15
creator: Armstrong, Drew Douglas
viewed: 2916
title: Generalized noncrossing partitions and combinatorics of Coxeter groups
abstract: This thesis serves two purposes: it is a comprehensive introduction to the ``Catalan combinatorics'' of finite Coxeter groups, suitable for nonexperts, and it also introduces and studies a new generalization of the poset of noncrossing partitions. This poset is part of a ``Fuss-Catalan combinatorics'' of finite Coxeter groups, generalizing the Catalan combinatorics.
Our central contribution is the definition of a generalization $NC^{(k)}(W)$ of the poset of noncrossing partitions corresponding to each finite Coxeter group W and positive integer k. This poset has elements counted by a generalized Fuss-Catalan number $\Cat^{(k)}(W)$, defined in terms of the invariant degrees of

W. We develop the theory of this poset in detail. In particular, we show that it is a graded semilattice with beautiful structural and enumerative properties. We count multichains and maximal chains in $NC^{(k)}(W)$. We show that the order complex of $NC^{(k)}(W)$ is shellable and hence Cohen-Macaulay, and we compute the reduced Euler characteristic of this complex. We show that the rank numbers of $NC^{(k)}(W)$ are polynomial in k; this defines a new family of polynomials (called Fuss-Narayana) associated to the pair (W,k). We observe some fascinating properties of these polynomials.
We study the structure $NC^{(k)}(W)$ more specifically when W is a classical type A or type B Coxeter group. In these cases, we show that $NC^{(k)}(W)$ is isomorphic to a poset of ``noncrossing'' set partitions in which each block has size divisible by $k$. Hence, we refer to $NC^{(k)}(W)$ in general as the poset of ``k-divisible noncrossing partitions''. In this case, we prove rank-selected and type-selected enumeration formulas for multichains in $NC^{(k)}(W)$. We also describe new bijections between multichains of classical noncrossing partitions and classical k-divisible noncrossing partitions.
It turns out that our poset $NC^{(k)}(W)$ shares many enumerative features in common with the generalized nonnesting partitions of Athanasiadis and the generalized cluster complex of Fomin and Reading. We give a basic introduction to these topics and describe several new conjectures relating these three families of ``Fuss-Catalan objects''. We mention connections with the theories of cyclic sieving and diagonal harmonics.

url: http://hdl.handle.net/1813/3207
date: 2006-06-15
creator: Sroka, Nicole
viewed: 2869
title: A Meta-Analysis Of Published Literature On The Role Of Loose Parts In The Play Behavior Of Non-Typically Developing Children
abstract: Prior research shows that the type of props that typically developing children play with may affect the amount and quality of their play. Less research has been conducted on the role of loose parts in the play behavior of non-typically developing children. This thesis was conducted in order to expand the knowledge on this topic. Five studies were analyzed; the published research suggests that loose parts props can aid non-typically developing children to engage in dramatic play, especially when prompted.

url: http://hdl.handle.net/1813/3208
date: 2006-06-16
creator: Phipps, Jon;Hillmann, Diane I.
viewed: 2248
title: The NSDL Registry
abstract: Presented at the Metadata Working Group forum, June 16, 2006.

url: http://hdl.handle.net/1813/3210
date: 2006-06-20
creator: Manzo, Justin
viewed: 1533
title: Analysis and Design of a Hyper-Elliptical Cambered Span Morphing Aircraft Wing
abstract: Morphing aircraft are a focus today due to their ability to combine multiple mission flexibility with a single vehicle. The Hyper-Elliptical Cambered Span (HECS) wing is one such wing being developed as a testbed for morphing technologies, due to its ability to vary the spanwise curvature in order to alter a craft's lift-to-drag performance. Through analysis of the aft-swept wing geometry and review of theory, predictions of aerodynamic performance are benchmarked against quasi-static rigid wing models in the Cornell University low-speed wind tunnel facility. Models assume a discretized approximation of the continuously varying spanwise curvature, with system order reduced significantly via a spool-and-tendon mechanism linking

motions proportionally. The traditional rib-and-skeleton framework is replaced by a composite structure more adept at withstanding compressive loads due to actuation as verified through finite element analysis. Actuation methods are contrasted between a DC motor driven system and one employing shape memory alloy (SMA) wires, which generate proportional motion by linking sections electrically rather than mechanically. An energy comparison reveals the SMA wire to be more efficient, resulting in a prototype with embedded SMA wire actuators. The prototype employs a nonlinear proportional-integral controller to reach desired wing setpoints, which can be modified to user specifications based on flight conditions. A thermomechanical system model for the SMA is detailed and implemented in the feedback law, which relates well to observed actuation. The prototype half-wing is dynamically tested over a range of angle of attack in the wind tunnel facility. Results confirm the hypothesis that the planar wing will perform better than an elliptical wing of comparable characteristics, while morphing to the 'furled' state further increases lift-to-drag only over a small range of angle of attack. The SMA mechanism is demonstrated to be a viable means of morphing the wing, capable of overcoming aerodynamic loads and holding a desired wing shape based on the feedback law. Metrics of success are delineated and future revisions and inclusions are discussed.

url: http://hdl.handle.net/1813/3211
date: 2006-06-20
creator: Abue, Peter Obele
viewed: 1448
title: Participation and Social Learning in Church-Based Organizations: Implications for Poverty Eradication in Nigeria
abstract: The task of poverty eradication requires the joint action of various agencies (IFAD, 2001). In Nigeria, there is a lack of alternative institutions to counter the social processes entrenched in local settings that lead to poverty (Obadan, 2002). The main purpose of this study is to investigate the potentials of Church-based organizations (CBOs) as alternative mechanisms for poverty eradication. I begin by defining poverty from a country perspective and argue that modernistic tendencies have led to a limited understanding. I proffer a communitarian approach for understanding the meaning of poverty and its eradication strategies. I examine the organizational dynamics of a diocese in order to explore the elements within its structure that favor social inclusion in relation to the Roman Catholic Social Justice Agenda.

I use Social Learning theory as a theoretical framework to assess how a diocese learns to build on the capacity of individuals and groups as stakeholders that influence poverty eradication at the local level. I build on the role of religious emotions and spiritual values in improving the professional practice of a diocese toward poverty eradication. I also investigate how the means of communication play a role in improving social learning within a diocese, tracing the old social learning tradition from individual cognitions to the new understanding of social learning in social group dynamics. Based on the shifting paradigm in development, I analyze the implications of social learning for CBOs in designing learning for individuals and groups.

I further review the concept of Participation and its role in poverty eradication, tracing the historical evolution of participation from the basic needs approach to the populist model that emphasizes broader processes of governance within organizations. The implication of this paradigm shift for CBOs is that a diocese as an organization can learn to become a social change agent by reviewing its "structures" and its understanding of "power." I set out to investigate the Catholic diocese of Ogoja Nigeria, to explore its potential to involve people in social development and the fight against poverty.

url: http://hdl.handle.net/1813/3212
date: 2006-06-20
creator: Berman, Kimberly Ann
viewed: 2179
title: CARPET WEAVERS AND WEAVING IN THE GLOBAL MARKET: THE CASE OF TURKEY

abstract: The purpose of this study is to examine factors affecting the lives of women who weave carpets in rural Turkey by investigating these questions: 1) Why do rural Turkish women weave carpets? 2) What are the influences of the global market on carpet design? 3) In what ways is the government involved in the weaving industry?

Data were collected in Turkey during the summer of 2005 from weavers, university professors, government officials, and carpet dealers. Data collection took place via key-informant interviews, observation of carpets and weaving venues, and gathering statistical information. These data were then analyzed as case studies pertaining to the research questions.

The intention of this thesis is to present a picture of some of the factors that impact the lives of rural Turkish women, and how these factors are reflected in the carpets that they weave. These factors include the economy and geographic location of their villages, access to markets and education, and local traditions.

The findings of this research suggest that if other income generating activities are available, women seem to be less likely to weave for sale. This also appears to be true if women continue their educations beyond the eighth-grade level. Even so, a tradition of weaving, and the pride and creative outlet associated with being a good weaver may mean that some women will continue to weave for themselves. Also, high-end weaving may be able to generate enough income to be attractive labor even when other opportunities are available. Some women were found to alter traditional designs in order to suit the global market; others were not. This may be due to contact, or lack thereof, with consumers in the global market. The government appears to be withdrawing support from the weaving industry, although changes in policy in anticipation of accession to the EU may strengthen the industry. It seems as though the low-end weaving industry might disappear, but high-quality weaving may continue.

url: http://hdl.handle.net/1813/3213
date: 2006-06-20
creator: Zhu, Lan
viewed: 2418
title: COMPOSITE LIKELIHOOD AND REGRESSION BASED METHODS FOR INFERRING POPULATION GENETIC PARAMETERS FROM DNA SEQUENCES
abstract: This doctoral dissertation is composed of three projects and four chapters. Chapter 1 presents the background theories and models in the field of population genetics that are related to these projects.

In Chapter 2, I develop a composite likelihood ratio test (CLRT) for detecting genes and genomic regions that are subject to recurrent natural selection while relaxing the assumption of free recombination. We find that the test has excellent power to detect weak negative selection and moderate power to detect positive selection. Moreover, the test is quite robust to the bias in the estimate of local recombination rate, but not to certain demographic scenarios such as population growth or a recent bottleneck.

In Chapter 3, I present a novel method, Poisson pairwise difference method (PPDM), which efficiently co-estimates the selection coefficient and mutation rate from arbitrarily correlated SFS data. We demonstrate that the PPDM log-likelihood ratio test has good power to detect positive selection and moderate power to detect weak negative selection.

Current state-of-the-art approaches for quantifying meiotic recombination rates (R) and/or identifying hotspots are mostly based on the likelihood of observed haplotypes or linkage disequilibrium (LD) patterns. In Chapter 4, I describe a flexible, efficient, and population structure robust approach via multiple linear regression and non-parametric bootstrap based on the frequency spectra of unphased single nucleotide polymorphism sites (SNPs) and provide confidence intervals of R between adjacent pairs of SNPs. No LD information is required. We evaluate this new approach via Monte Carlo simulation as well as application to the well-characterized hotspots near the human TAP2 gene and a 206-kb region on ch1q42.3 near MS32.

url: http://hdl.handle.net/1813/3214

date: 2006-06-20
creator: Young, Joshua
viewed: 788
title: On Metadata: Performing Arts Materials In Our Digital World
abstract: Along with the paper file in PDF format are a number of tab-delimited text files that contain the current contents of certain performing arts vocabulary lists in the database. These are the lists of functions, performing arts roles, sections of performance, types of significant components in the performing arts, and types of pieces. Each file is prefaced with a short explanation of the use of the list in the database system.This paper is intended to describe the development of the Global Performing Arts Database (GloPAD) system for performing arts materials, in particular to describe for non-information technology people the metadata structure on which this system is based and how this structuring relates to the study of performing arts. After a brief introduction to the workings of the database system, this paper discusses the crucial information structures for the study of performing arts histories, focusing in particular on how to describe performance productions, pieces that are performed, and the functions of people within the performing arts.
The Global Performing Arts Database (GloPAD) is an online, multilingual system that collects and offers for display digital media and their descriptive information. While the database itself is a complex arrangement of tables and rows of numbers and text and relations among them, the real power of the system lies in the interfaces that allow information to be entered or extracted from that arrangement of data tables. The main power of these interfaces is that they allow many people to write and read on the same collection of items and their information. There are two main interfaces for GloPAD: an "Editors' Interface" that allows a group of editors to add and edit information and to upload digital files such as photos or video, and a "Public Interface" that displays the items and their related information. Both of these interfaces are Web-accessible. Structurally the heart of the GloPAD system is the Editors' Interface, for it is the environment that allows the collaborative addition and revision of information and it defines the records that can be created by editors.
The event of performance is the core around which other information is built. The performance moment (which may be represented by the tenth of a second required to click a camera, or the 30 minutes of a video recording) is the momentary act of performance caught in the artifact object (digital object). The subject for GloPAD is the performing art history that is related to the artifact.Creating an Open Access Paradigm for Scholarly Publishing, a project funded by Atlantic Philanthropies

url: http://hdl.handle.net/1813/3215
date: 2006-06-20
creator: Young, Joshua; Ferguson, Ann; Brazell, Karen; Howard, Rachel
viewed: 3331
title: Documenting a Metadata Standard for the Performing Arts: An Application Profile for the Global Performing Arts Database (GloPAD)
abstract: This paper explains the implementation of the metadata standards for the Global Performing Arts Database, a database of digital objects related to the performing arts worldwide. The paper discusses how the controlled vocabularies were developed, the existing metadata standards used, and how to read the GloPAD Application Profile, a version of which is attached to this record.Creating an Open Access Paradigm for Scholarly Publishing, a project funded by Atlantic Philanthropies

url: http://hdl.handle.net/1813/3216
date: 2006-06-21
creator: Philips, Diane Held; Hawkes, Janet E.
viewed: 2726
title: Birds in Your Backyard
abstract: Attracting birds to your backyard can allow people young and old to study the different size, shape

and markings of their visitors. This publication shows ways to attract birds, different foods to attract different types of birds and even plans for several simple feeders. The publication touches on ways of identifying birds by color, shape, size and markings. This publication has gone out of print but due to steady demand it is offered here for free download or printing.

url: http://hdl.handle.net/1813/3217
date: 2006-06-21
creator: Carroll, Juliet E.
viewed: 2257
title: Growing Button Mushrooms
abstract: This publication gives instruction on how to grow mushrooms at home. Users can build simple trays from scrap lumber, create a compost bed, order and apply spawn, add peat and wait for growth. An advantage of home growing of mushrooms is that they can be picked at the ideal time when the flavor is perfect.

url: http://hdl.handle.net/1813/3218
date: 2006-06-22
creator: Hizi, Uzi
viewed: 1598
title: Effective Hamiltonians of the pyrochlore antiferromagnet
abstract: The pyrochlore lattice Heisenberg antiferromagnet is a highly frustrated model, and possesses, classically, a macroscopic continuous ground state degeneracy. We study the semiclassical limit of large spin length S and examine the effect of quantum fluctuations on the energy within various theories. In each of these theories, we focus on deriving an effective Hamiltonian, as a function of a small number of degrees of freedom. The effective Hamiltonian gives us a simple formula for calculating the energy and facilitates the search for a unique ground state among the large number of classical ground states.
First, we consider the harmonic spin-wave theory, in which we keep only the lowest order (in 1/S) correction to the classical Hamiltonian. We perform a detailed analysis of the harmonic order spin-wave modes and, using a real-space loop expansion, produce an effective Hamiltonian, in which the degrees of freedom are Ising variables representing products of the classical spin directions around loops in the lattice. We find a family of exactly degenerate collinear ground states, related by gaugelike Z2 transformations and provide bounds for the zero-temperature entropy.
We carry the spin-wave calculation to the next ?anharmonic? order in the 1/S expansion, utilizing a a self-consistent variational Hamiltonian approach, equivalent to Hartree-Fock approximation. We find that the harmonic degeneracy is broken, but there remain a large number of seemingly degenerate ground states. We develop an alternative approximation, employing the widely used, but not well controlled generalization of the SU(2) ?= Sp(1) theory to Sp(N), in the limit of infinite N. We develop an effective Hamiltonian for this mean-field theory, using an analytical loop-expansion. We find that in this case, the ground state of the large-N theory cannot possibly be the physical ground state in the limit S ? 1, since it is not a harmonic spin-wave ground states. Nonetheless, when restricted to the manifold harmonic spin-wave ground states, both the anharmonic spin-waves and the large-N theory result in similar effective Hamiltonian. We further demonstrate that the harmonic theory can readily be applied to determine the harmonic-order ground state manifolds of the Heisenberg Hamiltonian on related lattices, and to field-induced collinear magnetization plateau states.

url: http://hdl.handle.net/1813/3219
date: 2006-06-22
creator: Lauren, Peritz
viewed: 2751

title: The International Criminal Court, Sovereignty, and the United States: global power and the case for non-participation
abstract: At the heart of the debate over the International Criminal Court lies the amorphous notion of globalization. Calling into question the normative assumptions driving international humanitarian efforts, the evolving conception of the sovereign state, strategic interactions among countries and the ability of the international community to work multilaterally towards a common vision of justice, the debate spans a broad range of issues concerning global governance. The United States? rocky relationship with the International Criminal Court is a particularly revealing entry point. Is the United States? opposition simply an expression of unilateralist arrogance and refusal to concede to an increasingly important system of global governance that much of the international community accepts? In fact, American non-support runs much deeper. Both a strategic approach to United States? foreign policy objectives and an examination of the ideological incompatibilities between the United States? Constitution and participation in the Court reveal the centrality of sovereignty in the debate. In a strategic sense, it is not in the interest of the United States to concede judicial autonomy to the International Criminal Court. In an ideological sense, the tensions are seemingly irresolvable. Both point to why the United States has become a global hegemonic power and how this hegemony plays out. Further, both reveal just how deeply the International Criminal Court renegotiates state sovereignty by shifting the standards of international human rights law. This thesis proceeds in three stages. First, it explores the position the International Criminal Court occupies in relation to the established tradition of international and specifically human rights law. Second, it evaluates the argument against American participation in the Court examining the alleged dissonance with constitutional democracy and tangible threats the institution poses to US foreign-relations objectives. Finally, it places the debate in the context of larger theoretical questions concerning sovereignty. Does the Court create an upheaval in the global order of sovereign nations in general? Or, does this claim of universality thinly veil the United States? ultimately particular concerns about the maintenance of hegemony within a changing global order. This thesis ends by exploring the potential alternatives for creating better agreement between the most deeply held ideological concerns driving the United States? foreign policy and the changing demands of international political environment while questioning the efficacy of international criminal adjudication in achieving human rights goals.

url: http://hdl.handle.net/1813/3220
date: 2006-06-22
creator: Ripple, Richard;Griffiths, Jean T.
viewed: 2613
title: Creativity and CloverbudsWorking with the Youngest 4-H Members
abstract: This fact sheet explores essential facets of leadership for small groups of young 4-H members 5-8 years of age. The importance of children's needs and self-esteem are discussed, as well as the qualities of a good teacher. The sheet discusses how this is an informal education, where kids learn while having fun.

url: http://hdl.handle.net/1813/3221
date: 2006-06-22
creator: Wellington, G.H.
viewed: 1770
title: Cutting Meat
abstract: This straightforward publication instructs the reader in the steps needed to prepare several types of animals for freezing and consumption. The publication details the importance of sanitation, the tools needed (and care of) as well as the yields expected for different animals. Dozens of black and white photos with step-by-step descriptions guide the reader through the process of cutting meat down to manageable cuts.

url: http://hdl.handle.net/1813/3222
date: 2006-06-22
creator: MacNeill, Davis B.;Malchoff, Mark H.
viewed: 2316
title: Guidelines to Increase Survival of Released Sport Fish
abstract: This publication details the methods anglers should employ when returning fish to the water. Different types of lures and bait are discussed to increase survival odds, as well as tools used in the process. The publication details differing methods for marine offshore species, bottom fish, warm water freshwater species as well as Trout and Salmon from greater water depths.

url: http://hdl.handle.net/1813/3224
date: 2006-06-26
creator: Noethen, Kimberly Grace
viewed: 1948
title: Teacher Expertise and Personal Theories of Learning: Master and Novice Teachers' Interpretations of a Constructivist Teaching Episode
abstract: This study is an investigation of some of the similarities and differences between Novice and Master science teachers. The research focused on Novice and Master teachers? personal theories of learning as revealed through their perception and interpretation of a videotape of a teaching episode. The teaching episode was selected to illustrate teaching practices consonant with constructivist learning theory. Participants? interviews, during and following the video-clip, provided the sources of data. I transcribed all the interviews and analyzed them using both deductive and inductive analysis tools. Category development proceeded using both open-coding, for data-driven category development, as well as anticipated categories drawn from the three theoretical frameworks. Anticipated categories were drawn from research studies of teacher expertise, from the teacher development literature, and from cognitive science expert/novice research. Qualitative data analysis methods were used to determine Novice and Master teachers? perceptions and interpretations of the video-clip. The Novice teachers were pre-service science teachers. Some had completed student teaching and some were about to student teach. The Master teachers were Nationally Board Certified science teachers. The Novices were students in a reform-based teacher education program. They have had a variety of experiences with contemporary methods of instruction, but from this research, appear to straddle both a traditional approach to learning and a more constructivist approach. For both the Novices and the Master teachers, the best indicators of their personal theory of learning lies with the role they see for the teacher in the science classroom, the degree of responsibility for learning that is placed on students, and the role student misconceptions play in teaching and learning science.

url: http://hdl.handle.net/1813/3225
date: 2006-06-26
creator: Wang, Yanxin
viewed: 900
title: MILLIMETER WAVE TRANSCEIVER FRONTEND CIRCUITS IN ADVANCED SIGE TECHNOLOGY WITH CONSIDERATIONS FOR ON-CHIP PASSIVE COMPONENT DESIGN AND SIMULATLION
abstract: A novel design approach for implementing millimeter wave wireless transceiver front-end circuits is proposed. The design methodology takes advantage in advances in Silicon Germanium (SiGe) fabrication technology and sophisticated Electro-Magnetic (EM) simulation software to ensure successful implementation of circuits designed to operate in millimeter wave range. The discussion covers basic circuits common in typical transceiver architecture such as low noise amplifier (LNA), active balun, and mixer. The design methodology is not limited to the above circuits. It can be applied to many other situations where operating frequency is high and the dimensions of passive structures are comparable to signal wavelength.

A comprehensive solution to the design of millimeter wave wireless transceiver front-end circuits requires consideration for active devices as well as passive structures. For circuits operating at 94 GHz, 40 GHz and 18 GHz discussed in this dissertation, each design generally has two parts of discussion ? one devoted to circuit design and one devoted to passive design. Optimization of circuit performance and reliability is analyzed in each case. Simulation results from both the circuits and the passives are presented and an integrated simulation environment is proposed to simply the design flow. Some measurement results are provided to confirm the validity of the proposed design methodology. Summaries are given at the end of each chapter and future research direction is highlighted at the end of the dissertation.

url: http://hdl.handle.net/1813/3226
date: 2006-06-26
creator: Irwin, Brian
viewed: 1871
title: EVALUATING EFFECTS OF ECOLOGICAL CHANGE ON IMPORTANT SPORT FISHES IN ONEIDA LAKE, NEW YORK
abstract: Aquatic ecosystems provide numerous resources to diverse user groups. As a result, these systems are often targets of planned management actions but are also sensitive to uncontrolled biological invasions. Oneida Lake has a rich history of ecological study across multiple trophic levels and has experienced notable perturbations to its food web during the past half-century. To evaluate large-scale ecological changes, I used multiple approaches to examine dynamics in several long-term data series. In Chapter 1, I quantified age-0 yellow perch density at four early life stages and calculated mortality and growth rates. At all stages, densities have declined over time. Mortality rates from egg to 18mm showed no time trend, increased for 18mm - 1 Aug., and decreased from 1 Aug. - 15 Oct. Depensatory mortality, prevalent in the 1960s to early 1970s, was not seen in recent years. Growth has increased, was density dependent, and was significantly correlated with increased Secchi depth. The combined effect has been a decline in abundance and an increase in individual size by the end of the first year. In Chapter 2, I combined three long-term data sets for walleye to simultaneously estimate mortality, catchability in gillnets and trawls, and density using a non-linear minimization routine. A multi-mortality model with two time periods suggested decreased fishing mortality but increased sub-adult mortality during recent years when more restrictive size limits were in place and double-crested cormorants were abundant. In Chapter 3, I used gillnet and bottom trawl catches to identify changes in fish abundance after zebra mussel colonization. Based on a priori expectations, I evaluated changes between pre- and post-zebra mussel periods and compared observed values with projections from 30-year population trajectories. Between periods, gillnet catches of Pelagic fishes declined while catches of Littoral and Benthic fishes increased. Population trajectories indicated declining percids; however, gillnet catches of smallmouth bass and pumpkinseed sunfish remained high throughout much of the zebra mussel period. Changing ecological conditions (increased water clarity, temperature, and macrophytes; altered nutrient pathways; and variable top predators) appear to favor a fish community shift away from percids and towards centrarchids.

url: http://hdl.handle.net/1813/3227
date: 2006-06-26
creator: Dolan, Emily
viewed: 1271
title: The Idea of Timbre in the Age of Haydn
abstract: At the end of the 18th century, instrumental music, formerly subordinate to vocal music and shackled to the doctrine of imitation, dramatically emerged as a new and powerful form or art, capable of expression. Many scholars today turn to developments in aesthetic philosophy--the birth of German Idealism, “absolute music,” or Kantian formalism-- to explain the changing perception of instrumental music. Such

explanations, though they illuminate important aspects of contemporary philosophy, ultimately blind us to fascinating developments in musical practice. This dissertation locates the heart of this transformation not in philosophical aesthetics, but in the musical medium itself, specifically focusing on the birth of the concept of timbre and the ensuing transformations to musical discourse.

Tracing the concept of timbre from its birth in the writings of Rousseau through its crystallization in the early 19th century with the emergence of "orchestra machines" and a widespread obsession with effect, the dissertation explores the impact of the new focus on the musical medium in different registers of musical culture. The project examines the use of the metaphor of color borrowed from painting and Newtonian science, the philosophical attitudes towards transience and sensation in the writings of Kant and Herder, ideas of composition and orchestration in music treatises, and composers' new uses for the orchestra through close analysis of Haydn's style of orchestration in the 1790s. In addition, the dissertation draws upon as resources many now-forgotten instruments that were invented in this period. Celebrated in their day, these instruments serve as invaluable repositories of the sonorities that captured the 18th- and early 19th-century ear.

These changes in musical practice were fueled by the solidification of the orchestra as a concept, musical body, and institution. Whereas earlier critics likened instrumental sonorities to random paint splatters, later thinkers emphasized the individual character and inherent expressive capacity of each instrument. Only after this radical reevaluation of its foundations could music begin to be recognized as a means to connect with the human heart and mind.

url: http://hdl.handle.net/1813/3228
date: 2006-06-26
creator: Neeves, Keith
viewed: 1499
title: Convection-Enhanced Drug Delivery: Porous Media Models and Microfluidic Devices
abstract: Promising treatments of many brain diseases are often thwarted due to their inability to cross the blood-brain barrier. Convection-enhanced drug delivery (CED) uses direct infusion of drug-containing solutions into tissue to circumvent the blood-brain barrier. The aim of this thesis was to combine models of transport in porous media with microfabricated devices to develop novel methods for controlling the distribution of infused drugs. We used a poroelastic model of the brain to explore the effect of infusion induced dilation on transport. We calculated that during infusions at flow rates greater than one microliter/minute, the effective pore size of the extracellular matrix was doubled by dilation from approximately fifty nanometers to one-hundred nanometers. A computational fluid dynamic model of the rat brain determined the perturbation of the flow field between white and gray matter. We found no further perturbation of the flow field when the ratio of permeabilities between white and gray matter exceeded one-hundred. The results of our models suggest that the material properties of a targeted tissue region dictate the transport of infused solutions. To better control and manipulate drug distribution we developed a novel microfluidic platform for delivering drug-solutions at flow rates relevant for CED. The microfluidic devices consisted of parylene channels with a cross-section area of fifty microns by ten microns on a silicon structure with a cross-sectional area of one-hundred microns by one-hundred microns. These probes were tested in the normal rat brain and demonstrated performance advantages over standard needles, including no channel occlusion and attenuation of backflow. We expanded on the simple single channel device to implement more advanced strategies using multiple channels. A two-channel device was fabricated for infusing an enzyme or mannitol solution prior to infusing polystyrene nanoparticles. By pre-treating the targeted tissue region with enzymes or mannitol we increased the effective pore size of the extracellular matrix which resulted in a doubling of the distribution volume of nanoparticles.

url: http://hdl.handle.net/1813/3229
date: 2006-06-26

creator: Dale, Richard A C
viewed: 1492
title: Continuity in categorization and theoretical implications
abstract: sorry for the silly error. hopefully this'll do the trick. --rickTraditional theories of cognition assume that motor action is executed in an all-or-none fashion, and has little importance for understanding cognitive representation and processing. A series of experiments and simulations presented here challenges this assumption. A relatively higher-order cognitive process, categorization, is shown to have graded effects that are reflected in manual motor output, measured through streaming x-y coordinates from mouse trajectories. Two simulations show that these effects are likely generated from a system in which cognition and action interact fluidly. Finally, theoretical implications of these experiments are drawn out. Symbolic dynamics is introduced, a potential means for reconciling both traditional and continuous accounts of cognition. A broad philosophical discussion follows, in which an integrative and pluralistic approach to cognition is proposed and briefly discussed.

url: http://hdl.handle.net/1813/3230
date: 2006-06-26
creator: Murphy, James
viewed: 1758
title: Spatial distributions of Lake Erie walleye
abstract: The spatial distributions of Lake Erie walleye stocks are examined from tagging data from 1990-2001. Releases and recoveries from four western basin tagging sites ? Monroe, Chicken and Hen Islands, Sandusky Bay, and Sandusky River ? and from one eastern basin site, Van Buren Bay, are analyzed. Walleye tagged at the Monroe, Chicken and Hen Islands, and Van Buren Bay are considered individual stocks and walleye tagged at the Sandusky Bay and Sandusky River sites are considered one stock. Spatial distributions are quantified by construction of a spatially-explicit population model that follows groups of releases from the first May after spring tagging through October of the second year after release and estimation of model parameters in a maximum-likelihood framework. Two different estimation frameworks are implemented that handle tag-loss rates and tag-reporting rates uniquely, so the effects of these ?nuisance parameters? can be analyzed. The results confirm previous tagging studies that show movement of western basin walleyeGreat Lakes Fisheries Commission

url: http://hdl.handle.net/1813/3231
date: 2006-06-27
creator: Thrasher, Seana Michele
viewed: 967
title: The role of mast cells in rapid expulsion of Trichinella spiralis in the rat
abstract: The aim of this research was to test the hypothesis that immune complexes activate mucosal mast cells to cause rapid expulsion of the Trichinella spiralis from the rat intestine. Rapid expulsion is a phenomenon in the rat that is characterized by nearly complete elimination of a secondary infection. To test this hypothesis, mast cells were cultured from bone marrow precursors. These cells have a homogenous mucosal phenotype and were compared with the mucosal mast cell line, RBL-2H3 cells. Each cell type was assayed for binding and activation by parasite specific immune complexes. The results showed that IgE- and IgG2a-containing immune complexes bound and activated RBL-2H3 cells, but only IgE significantly activated bone marrow-derived mast cells (BMMC). IgG1 and IgG2b immune complexes bound both cells types but did not trigger degranulation. IgG2c did not bind mast cells. Because IgG2a-containing complexes activated RBL-2H3 cells in vitro and this isotype differed from other isotypes in its mechanism for induction of rapid expulsion, we investigated whether this isotype might activate mast cells in vivo. Rats infected with Heligmosomoides polygyrus then passively immunized with IgG2a demonstrated rapid expulsion without significant mucus

entrapment of larvae. IgG2a-mediated protection was complement independent and Fc-dependent; however, no significant increase in RMCP-II release was detected during expulsion. These results are consistent with a role for other FcR-bearing cells in IgG2a-mediated protection. In a parallel investigation, confounding inflammatory factors induced by oral infection were eliminated by assaying rapid expulsion induced by parenteral infection. Protection conferred by parenteral immunization was as potent as that induced by natural infection was more robust than the H. polygyrus model. Parenterally infected rats did not display intestinal mastocytosis, eosinophilia, or goblet cell hyperplasia; however, mast cells were activated and mucus entrapment of larvae occurred at levels comparable to those observed in rats infected naturally. Complement was not necessary for protection mediated by parenteral immunization.

url: http://hdl.handle.net/1813/3232
date: 2006-06-27
creator: Pultz, Jennifer M.
viewed: 1531
title: Be a Waterfront Winner! A Shoreline Residents Guide for the Northeast
abstract: This fact sheet tells those who live on the waterfront in the northeast how to protect the environment, reduce waste, and improve the look and value of their property. This sheet details the effect of the three major water threats: Nitrogen, Phosphorous and Sediments. The sheet gives tips for septic system care, lawn care, and landscape maintenance and design. This publication is no longer available in print form, but due to its timeless nature, it is being made available here.

url: http://hdl.handle.net/1813/3233
date: 2006-06-28
creator: Taylor, Masako
viewed: 2031
title: Leveraging Intercultural Work Relationships: A Study of Cultural Diversity, Perceptions and Leader-Member Exchange between Expatriate Managers and Host National Subordinates
abstract: The purpose of the dissertation is to understand the positive and negative processes of intercultural work relationships between expatriate managers and host national subordinates. As such, the research question is: How does cultural diversity affect the quality of work relationships between expatriate managers and host national subordinates? To answer the question, ideas are drawn from the cultural diversity literature and leader-member exchange theory. Hypotheses are proposed that cultural diversity can positively and negatively relate to the quality of the work relationships depending on how it is perceived by the parties involved. Specifically, if cultural diversity is perceived as a source of dissimilarity, it leads to an affect-based process, negatively impacting the quality of the work relationships. If it is perceived as a valued resource, on the other hand, it leads to a resource-based process, positively affecting the quality of the work relationships.
Using a sample of 72 expatriate manager- host national subordinate dyads, regression analyses are performed to test the proposed hypotheses. The results indicate that indeed, perception of dissimilarity relates negatively, and perception of resource value relates positively, to the quality of the work relationships. Partial support is found that the perceptions mediate the relationships between cultural diversity and the quality of the work relationships. Furthermore, there are different processes for expatriate managers and host national subordinates. The comparison between the two revealed that: (1) expatriate managers regard value diversity (deep level cultural diversity) more negatively as a source of dissimilarity, whereas host national subordinates regard it more positively as a valued resource; (2) host national subordinates are more open to nationality differences (surface level cultural diversity) than expatriate managers. In addition, a positive relationship is found between the quality of the work relationships and host national organizational commitment, task performance and organizational citizenship behaviors, underscoring the long-term significance of expatriate-host national work relationships for multicultural organizations. Overall, the findings suggest that leveraging

intercultural work relationships for competitive advantage requires strategies to develop host nationals in addition to the expatriate managers.

url: http://hdl.handle.net/1813/3234
date: 2006-06-28
creator: Shume, Esayas
viewed: 1254
title: The Equatorial Electrojet: Radar Observations and Modeling
abstract: This dissertation describes a theoretical, experimental, and modeling investigation of the equatorial electrojet. We review low latitude ionospheric current models, synthesizing developments from the early times until the present. We then show how to utilize equatorial electrojet irregularities to infer E region electron density and wind profiles from coherent scatter radar experiments. The procedure involves a numerical model of the equatorial ionosphere that relates the vector electric field and current density to the winds.
We present electron densities inferred in the equatorial electrojet inferred using a new bistatic radar system installed between Paracas and Jicamarca, Peru. The radar system monitors density profiles using a coherent scatter radar technique that utilizes the Faraday rotation of the scattered signal. Radar measured density profiles are validated by comparing with other electron density measures.
A three dimensional electrostatic potential model of the equatorial ionosphere in a magnetic dipole coordinate system is described. The model incorporates realistic ionospheric conductivities, electric fields, winds, and includes anamalous collision effects. The model utilizes bistatic radar measured densities, coherent scatter spectral measurements made at large zenith angles, and electric fields derived from 150 km echo drifts. The model is also constrained by magnetometer records.
We next present a technique for extracting zonal winds in the equatorial electrojet from the Doppler shifts of type II radar echoes measured by a narrow beam, obliquely oriented antenna at the Jicamarca Radio Observatory. The wind profiles were retrieved by combining the 3-D model with theory and measurements of type II echo Doppler shifts. The amplitude and phasing of the calculated wind profiles are in general agreement with satellite and rocket-borne wind measurements. We have used height varying type I radar echoes and large-scale electrojet irregularities inferred from interferometric imaging to validate wind profiles estimates derived from type II echoes.

url: http://hdl.handle.net/1813/3235
date: 2006-06-28
creator: Fogle, Homer William Jr
viewed: 1813
title: The Deke House at Cornell: a concise history of the Delta Chi Chapter of Delta Kappa Epsilon, 1870-1930
abstract: Electronic reproduction.
The story of the Chapter's founding and development during the first sixty years.
Interim draft of 29 May 1994, reformatted and revised, 25 November 2005.The author recounts the Chapter's founding in 1870, the conduct of meetings, literary exercises, social gatherings, involvement in University activities, and matters of internal discipline. The author identifies the first and second Halls of DKE (rented meeting chambers) in downtown Ithaca, the occupation of the first lodge on Ozmun Place in 1877 and the ultimate construction of the present lodge at 13 South Avenue in 1893. The author addresses rushing, pledging, dining, chapter customs, inter-fraternity affairs, fraternity politics within Delta Kappa Epsilon, incidents involving the undergraduate brothers and the exploits of alumni up until the year 1930.

url: http://hdl.handle.net/1813/3236
date: 2006-06-29

creator: Camenga, Kristin A.
viewed: 3348
title: Angle Sums on Polytopes and Polytopal Complexes
abstract: We will study the angle sums of polytopes, working to exploit the analogy between the f-vector of faces in each dimension and the α-vector of angle sums. The Gram relation on the α-vector is analogous to the Euler relation on the f-vector. Similarly, the Perles relations on the angle sums of simplicial polytopes are analogous to the Dehn-Sommerville relations.
First we describe the spaces spanned by the angle sums of certain classes of polytopes, as recorded in the $\alpha_{}$-vector and the α-f-vector. Families of polytopes are constructed whose angle sums span the spaces of polytopes defined by the Gram and Perles equations. This shows that the dimension of the affine span of the space of angle sums of simplices is $\left\lfloor \frac{d-1}{2}\right\rfloor$, and that of the combined angle sums and face numbers of simplicial polytopes and general polytopes are $d-1$ and $2d-3$, respectively.
Next we consider angle sums of polytopal complexes. We define the angle characteristic on the α-vector in analogy to the Euler characteristic. Then we consider the effect of a gluing operation to construct new complexes on the angle and Euler characteristics. We show that the changes in the two correspond and that, in the case of certain odd-dimensional polytopal complexes, the angle characteristic is half the Euler characteristic. In particular, we show that many non-convex spheres satisfy the Gram relation and handlebodies of genus g constructed via gluings along disks have angle characteristic $1-g$.
Finally, we consider spherical and hyperbolic polytopes and polytopal complexes. Spherical and hyperbolic analogs of the Gram relation and a spherical analog of the Perles relation are known, and we show the hyperbolic analog of the Perles relations in a number of cases. Proving this relation for simplices of dimension greater than 3 would finish the proof of this result. Also, we show how constructions on spherical and hyperbolic polytopes lead to corresponding changes in the angle characteristic and Euler characteristic. However, the angle characteristic and Euler characteristic do not have the 1:2 ratio that held for Euclidean polytopal complexes.This work was partially supported by NSF grants 0100323 and 9983660.

url: http://hdl.handle.net/1813/3237
date: 2006-06-29
creator: McNaughton, Caitlyn Harris
viewed: 1270
title: Social Behavior in FMR1 KO Mice: a Model of Fragile X Syndrome
abstract: The fmr1 “knockout” (KO) mouse is a model for fragile X syndrome, the most common form of heritable mental retardation (Hagerman, 2002). The present study was designed to further assess the validity of this mouse model. Specifically, in light of the prominence of social anxiety in the human FXS phenotype, the present study assessed various aspects of social behavior in fmr1 KO mice and wild-type (WT) littermates. A three-chambered apparatus was used to assess: (1) the preference for being near a novel conspecific vs being alone; and (2) the preference for a novel conspecific vs. a familiar one. In the first phase, experimental subjects were exposed to a restrained unfamiliar male mouse in one of the side compartments. Subsequently, in the second phase, a second unfamiliar male mouse was restrained in the opposite compartment. In both phases, square crossings, the time spent in each area, sniffing each restraining cage, rearing, grooming and wall climbing were measured. The results revealed that both the KO and WT mice preferred to be near a novel conspecific rather than to be alone; the magnitude of this effect was comparable in the two genotypes. Preference for a novel conspecific over a familiar conspecific was also seen in both groups, but only when the stimulus mouse was a preferred animal. When a non-preferred stimulus mouse was the novel animal, both groups showed a diminished novelty preference, but the magnitude of this effect varied by genotype. Under this condition, the WT mice showed a more pronounced negative reaction to the non-preferred mouse than did the KO mice. In addition, two other genotypic differences indicated that the KO mice may have been

more anxious than controls in these social encounters: (1) a greater proportion of the KO mice had high total grooming times; and (2) the average duration of nose contact with the stimulus mouse was significantly shorter for the KO mice than for controls. These results provide further support for the validity of this mouse model, although future studies are needed to more fully characterize the social behavior alterations in the fmr1 KO mouse.

url: http://hdl.handle.net/1813/3238
date: 2006-06-29
creator: Martin, Aryn
viewed: 1533
title: "I contain multitudes": Chimeras, cells and the materialization of identities
abstract: This dissertation traces the biomedical networks through which human chimeras are clinically constituted. Chimeras are organisms in which two or more genetically distinct cell populations co-exist. Unlike their experimentally produced counterparts (often interspecies mixtures), human chimeras arise spontaneously when fraternal twin embryos fuse in the womb. While undoubtedly a rare occurrence, the true incidence is unknown because many chimeras have no visible signs of their composite being. Hence, chimeras are produced in an inadvertent encounter with the laboratory, during blood donation or tissue typing, for example. A subtype of chimerism, called microchimerism, occurs when the second cell population is tiny. The main context in which microchimerism is discussed in biomedical research is cell exchange between women and their fetuses, now thought to be a normal event during pregnancy. Human chimerism has existed since the 1950's, and microchimerism has become a research theme only in the last decade.
Like multiple personality disorder, conjoined twinning and organ transplantation, human chimerism troubles the connection between the individual and the body. Bodies, in these cases, are not neatly contained, which calls into question the inevitability and naturalness of singular embodiment. Chimerism, in particular, offers an analytical vantage point for the examination of genetics and identity in contemporary biomedicine. Using historical and ethnographic methods, and analytical tools from science & technology studies, this dissertation explores human chimerism and microchimerism. Interviews with scientists and careful analyses of published and unpublished literature reveals that biomedical researchers speak and write as though cells and people are interchangeable; not only do people contain cells, cells contain people. This tendency is an instantiation of genetic reductionism (we are our genomes), but it also refers to much older Western traditions wherein the material of the body is one and the same as the person. In chimerism, though, ascribing personal identity to cells leads to a confusion of the boundaries by which individuals are normally separated. While the location of personhood in cells is no doubt a reductionist tendency, the result - the fragmentation and interspersion of selves - leads to a provocative anti-reductionist conclusion: we all contain multitudes.National Science Foundation Award #0432120

url: http://hdl.handle.net/1813/3239
date: 2006-06-29
creator: Brixey, Shawn
viewed: 1189
title: Rockefeller New Media Foundation Proposal
abstract: 25 page project proposal for Rockefeller New Media Grant."Eon" is a new work in progress that uses the rare phenomenon of sonoluminescence (the process by which intense sound energy in liquid an be converted directly into visible tight) and the Internet to extend my current artistic research in the field of telepresence, telepistemology and emulation.

url: http://hdl.handle.net/1813/3240
date: 2006-06-29

creator: Trautmann, Nancy M.;Reid, W. Shaw;Klausner, Stuart D.;van Es, Harold M.
viewed: 1458
title: Nitrogen and the Environment
abstract: This sixteen page Extension bulletin discusses the use of Nitrogen in Agriculture. Sources and forms of Nitrogen are discussed as well as the benefits to crop yields. Excessive Nitrogen use is discussed with possible detriments to Groundwater and livestock and resulting human health concerns. This timeless bulletin gives summary management recommendations as well as information about having soil tested.

url: http://hdl.handle.net/1813/3241
date: 2006-06-30
creator: Fogle, Homer William Jr
viewed: 2639
title: DX of DKE Special Study #01: Pledging in 1967
abstract: 8 p.; endnotes. Electronic reproduction. The form and substance of the Delta Chi Chapter Pledge Program as it was conducted in the late Nineteen Sixties. Original of 1989, reformatted and revised, October 2005.The author describes the form and substance of the Delta Chi Chapter Pledge Program as it was conducted in the late Nineteen-Sixties with details concerning bid signing, communal dining, date nights, flick (motion picture) reports, DKE catechism, red and black balls, House projects, quiz nights and the pledge skit.

url: http://hdl.handle.net/1813/3242
date: 2006-06-30
creator: Fogle, Homer William Jr
viewed: 2433
title: DX of DKE Special Study #02: Delta Chi Chapter Cookbook, 1963-1987
abstract: 10 p; endnotes; 28 cm. Electronic reproduction. The form and substance of the Delta Chi Chapter Pledge Program as it was conducted in the late Nineteen Sixties. Original of 1989, reformatted and revised, 29 May 1995 (catalog reference, DKE4-064), and 29 June 2006.The author describes cookery in the Cornell University chapter of Delta Kappa Epsilon as it was practiced during the post World War II period, and particularly during the days when Mrs. Florence Lansdowne served in the Deke House kitchen. Recipes for various entrees, breads, desserts and party punches are recorded.

url: http://hdl.handle.net/1813/3243
date: 2006-06-30
creator: Welch, Brian
viewed: 1490
title: Millimeter Wave Integrated Silicon Transceiver Design for High Data Rate Communications
abstract: With the explosion of information hungry computational and multimedia applications, the need for exceptionally high communication data rates has leapt to the forefront of electronic design. Advances is silicon technologies, manifested both in the speed of the transistors and complexity of the IC wiring stack, has bolstered the ability to meet new communication needs on a platform common to most consumer electronics. This ability becomes beneficial to historical approaches, both in system performance and costs, with the later being a huge benefit over existing solutions.
In this work the design of high speed wireless and wired communications on silicon platforms is investigated. The work uses both standard silicon CMOS technologies and silicon germanium BiCMOS technologies to demonstrate operations beyond 100 GHz and 100 GB/s. Activities in the wireless domain investigate both receivers and transmitters up to 100 GHz, with the most substantial work performed on the design and analysis of voltage controlled oscillators and low noise amplifiers. Differential and quadrature VCOs have been designed for operation between 16-64 GHz, with innovation in design methodologies and varactor

degeneration. LNA design has been performed for operation from 20-110 GHz, with emphasis on balanced/unbalanced operations. Wireline development has focused on the design of two parallel systems for operation beyond 80 GB/s and 120 GB/s. Parallel development of half-rate 4 to 1 multiplexers and 1 to 4 demultiplexers has been performed, as well as development of a 60 GB/s full rate flip-flop and 60 GHz static divider. Aggressive clocking techniques were developed to enable broadband operation from below 1 GB/s to the upper frequency bounds, and an area-centric design methodology was developed to mitigate the common perils of high frequency design.

Collectively, the circuits demonstrated here show a methodology aimed at enabling high frequency design despite the hurdles inherent in silicon processes. Most of these techniques are aimed at combating the limitations of the silicon substrate, even beyond the frequency limitations of the devices, and towards overcoming the amplified effects of interchip wiring at increased frequencies. In many instances the latter effects drive the electrical design of the circuits, where certain conventional techniques for high frequency design become impaired and undesirable.

url: http://hdl.handle.net/1813/3244
date: 2006-06-30
creator: Boehner, Kirsten
viewed: 3291
title: Interfaces with the Ineffable
abstract: In recent years, Human Computer Interaction (HCI) designers and researchers have shifted focus from a primary concern with procedural, generic, and task based applications to applications that address messy, personal, and aesthetic experiences. These difficult to formalize experiences, such as feelings of intimacy, spirituality, or a sense of place, are conceptualized as experiences of the ineffable. In this work, I use a reflective design practice to look at two primary approaches to designing interfaces with the ineffable, one emphasizes reduction and the other openness to interpretation. I discuss issues of control and reification that result from the reduction approach and develop the interpretation approach as a viable alternative requiring a re-thinking design and evaluation strategies and criteria. These issues and approaches are explored in detail through the development of two case studies. Case study one addresses the ineffable experience of art and presents a series of applications for interfacing with the ineffable in the art museum. Case study two details the ineffable experience of affect and presents a system designed for augmenting affective presence in an office environment. To further this work, I examine new thinking in both HCI and Communication for understanding every day interpretive acts and the implications for design. In addition, I advance reflective design as a new process based practice for the field of Communication.

url: http://hdl.handle.net/1813/3246
date: 2006-06-30
creator: Castro, Jorge
viewed: 2623
title: Rockefeller New Media Foundation Proposal
abstract: JN Beta Test 1 .0.1 My project is an investigation about Real time video software, experimental interface and construction (realization) of video performances as and example of the power of this new program.

I am interested in the investigation of the language of video, both the formal and conceptual aspects of it. At the beginning my research has been centered in technical issues and later in the aesthetic investigation of compositions in addition to sound and image editing, and the development of software specific to my research.

My work deals with the limits, transgression and development of technology, specifically video software.

url: http://hdl.handle.net/1813/3248
date: 2006-06-30
creator: Daniel, Sharon
viewed: 1302
title: 2003 Rockefeller New Media Foundation Proposal
abstract: "Need_X_Change," is designed to help the staff and clients of Casa Segura, an HIV prevention and needle exchange clinic in Oakland, California attain social and political "voice", through communication with their local community and participation in the global information culture. There are an estimated 22,000 injection drug users in Oakland and Alameda County, California. A total of 37.8% of all AIDS cases in Alameda County are related to injection drug use. Needle exchange programs are a proven method of reducing needle-related HIV risk behaviors among injection drug users. Casa Segura is a community based organization that provides easily accessible services to promote health and stop the spread of HIV, Hepatitis C, and other drug related harm among people who use drugs, their families and their community. The "voices" of the many individuals who both use and staff Casa Segura (the Safe House) will be made audible to the public through the project web-site and public graphics program. The project has three phases, Voice, Education, and Outreach.

url: http://hdl.handle.net/1813/3250
date: 2006-06-30
creator: Decker, Shawn
viewed: 2129
title: Rockefeller New Media Foundation Proposal
abstract: A Small Migration consists of many piano wires strung roughly 8 or 9 feet above the ground across an open gallery or public space. The wires are attached directly to the gallery walls with tuning blocks, so that the walls of the gallery then act as a "sounding board" for the piece. Each motor is sent a series of short electrical pulses by the microcontroller, causing it to strike the wire, which creates a disturbance that generates sound and also visibly shaking the wire. The rhythmic patterns used are those found in nature, and are constantly accelerating and decelerating.

url: http://hdl.handle.net/1813/3252
date: 2006-06-30
creator: Even, Tirtza
viewed: 1583
title: 2003 Rockefeller New Media Foundation Proposal
abstract: Counterface, an interactive video installation, is one component within a larger two-fold work-in-progress that also comprises Painted Devil, a linear, single channel video. The focus of both pieces is the issue of women's different roles in contemporary Turkish society, with all the nuances and conflicts that have developed among the secular and non-secular, rural and urban, modern and traditional.

url: http://hdl.handle.net/1813/3253
date: 2006-06-30
creator: Even, Tirtza
viewed: 2670
title: Slip, an interactive video installation: Documentation
abstract: Slip, an interactive video installation made in collaboration with Sha Xin Wei, was shot at Peachtree Pine Homeless Shelter in Atlanta, Georgia. Individual studies of homeless people, even with the best intentions, all too often flatten their subjects into iconic figures of misfortune and pathology, ignoring, or damping, for strategic reasons, the social context in which they are defined and confined. By taking portraiture to its

logical conclusion, we highlight the problems of the form.

url: http://hdl.handle.net/1813/3254
date: 2006-07-01
creator: Fogle, Homer William Jr
viewed: 1013
title: DX of DKE Special Study #03: Deke House Terms and Expressions, 1966-1970
abstract: 15 p; ill.; endnotes; 28 cm. A tabulation of terms and expressions used within the Delta Chi chapter of Delta Kappa Epsilon at Cornell University at various times during the late Nineteen-Sixties. Electronic reproduction. Original of 1989, revised, 12 January 1995, reformatted and revised, 2 January 2006.The author tabulates terms and expressions used within the Delta Chi chapter of Delta Kappa Epsilon at Cornell University during the late Nineteen-Sixties.

url: http://hdl.handle.net/1813/3255
date: 2006-07-02
creator: Fogle, Homer William, Jr
viewed: 1256
title: DX of DKE Special Study #04: The Roosevelt Spruce Trees
abstract: 8 p; ill.; footnotes; 28 cm. Electronic reproduction. Original of 1988, revised, 1993, reformatted and expanded, 2 July 2006.The author recounts the death of Brother Clifton Beckwith Brown '00 at the Battle of San Juan Hill on 1 July 1898, the 1899 visit of Governor Theodore Roosevelt '80 to Cornell University, and the dedication of the Deke House spruce trees in memory of the fallen soldier.

url: http://hdl.handle.net/1813/3256
date: 2006-07-03
creator: Fogle, Homer William Jr
viewed: 1760
title: DX of DKE Special Study #09: John DeWitt Warner '72
abstract: 11 p; ill.; endnotes; 28 cm. Electronic reproduction. Original, 2 January 2006, reformatted, 3 July 2006.The life of DKE Brother John DeWitt Warner '72 is recounted with a brief chronology and transcriptions of several published biographies. Warner was a distinguished statesman, attorney, classics scholar and patron of the arts. He provided critical leadership to the Delta Kappa Epsilon Fraternity during the period of centralization circa 1881-1890 and to the Delta Chi Chapter at Cornell University when the 13 South Avenue lodge was conceived and finally dedicated in 1893.

url: http://hdl.handle.net/1813/3257
date: 2006-07-04
creator: Fogle, Homer William Jr
viewed: 2505
title: DX of DKE Special Study #12: Registry of Distinguished Members
abstract: 6 p; references; 28 cm. Electronic reproduction. Original, 29 November 2005, revised and reformatted, 4 July 2006.The author tabulates the names of Delta Chi Dekes who have won notice and acclaim in war and in peace.

url: http://hdl.handle.net/1813/3258
date: 2006-07-07
creator: Fogle, Homer William Jr
viewed: 1694

title: DX of DKE Special Study #06: Chapter Arms and Motto
abstract: 24 p; footnotes; appendices; 28 cm. Electronic reproduction. Original, 1993, revised to add illustrations, 26 November 2005, and reformatted, 6 July 2006.The author reviews the armorial bearings of the Delta Kappa Epsilon Fraternity and the Delta Chi chapter at Cornell University. Blazons and pictorial renditions are considered. The Greek mottos of the Fraternity and the chapter are discussed in detail. A glossary of pertinent heraldic terms is included.

url: http://hdl.handle.net/1813/3261
date: 2006-07-10
creator: Hershman, Lynn
viewed: 2006
title: Rockefeller New Media Foundation Proposal
abstract: Agent Ruby is an Artificial Intelligent Web agent that is shaped by encounters with users?thereby simultaneously being part of the real and virtual worlds. Ruby converses with users, remembers their questions and names, and is ultimately able to recognize their voices and have moods corresponding with whether or not she likes them.

url: http://hdl.handle.net/1813/3262
date: 2006-07-10
creator: Hershman, Lynn
viewed: 2460
title: Agent Ruby Documentation
abstract: Agent Ruby Documentation.
http://www.agentruby.com

url: http://hdl.handle.net/1813/3264
date: 2006-07-12
creator: Pagano, Angela
viewed: 2012
title: FUNCTION SITE OF SUPPLEMENTAL ESCHERIACHIA COLI PHYTASE IN THE GASTROINTESTINAL TRACTS AND ITS ROLE IN BONE METABOLISM OF YOUNG PIGS
abstract: This thesis consists of two studies on phytase. The objective of the first study was to determine the functional site of a supplemental Escherichia coli AppA2 phytase and its impact on digesta phosphorus and calcium concentrations in different segments of the gastrointestinal tract of pigs. In Exp. 1, 18 weanling pigs [8.3 ? 0.2 kg body weight (BW)] were allotted to three groups (n = 6) and fed a low-P (0.4%) corn-soy basal diet (BD), BD + phytase [500 units (U)/kg] or BD + inorganic P (0.1%) for 4 wk. In Exp. 2, 30 weanling pigs (14.5 ? 0.2 kg BW) were allotted to three groups (n = 10) and fed BD, BD + phytase (500 U/kg) or BD + phytase (2000 U/kg) for 2 wk. Five or six pigs out of each treatment group were slaughtered at the end of both trials to collect digesta from six segments of the digestive tract to assay for phytase activity, soluble P concentration, and(or) total P and Ca concentrations. Pigs fed BD + phytase had similar phytase activities in the stomach, duodenum, and upper jejunum digesta, and the detected activities were proportional to the supplemental levels of dietary AppA2. But, no phytase activity was detected in digesta of these three segments from pigs fed BD or BD + 0.1% iP or in digesta of lower jejunum and ileum from any of the treatment groups. Digesta soluble P decreased sharply from the stomach to duodenum of pigs fed BD + phytase or BD + iP, whereas it peaked in the upper jejunum of pigs fed BD. Colonic digesta phytase activity and soluble P were highest ($P < 0.05$) in pigs fed only BD and were inversely affected by dietary phytase supplementation. Pigs fed BD + phytase showed phytase-dose dependent reductions ($P < 0.05$) in total colonic P and (or) Ca concentrations, compared with those fed BD or BD + iP. In conclusion, supplemental dietary AppA2 mainly functioned in

the stomach, but remained fairly active in the upper jejunum. Colonic microbial phytase activity was greatly reduced by the supplemental phytase-mediated phytate-phosphorus hydrolysis in the fore segments of the digestive tract via substrate limitation. The objective of the second study was to determine if high levels of supplemental dietary microbial phytase, in a phosphorus (P)-adequate diet, additionally improved bone strength of growing female pigs. For three experiments a total of 80 pigs (28-35 d old) were fed a low-P (0.4%) corn-soy basal diet (BD), or BD + 0.2% or 0.25% inorganic P and (or) 1,000 or 2,000 units E. coli AppA2 phytase/kg for 4-6 wk. At the end of the experiments, pigs were slaughtered to collect 3rd and 4th metacarpals from front legs to test for bone strength. In Exp. 3, metacarpals were analyzed for their contents of Ca, P and other minerals. Weekly growth performance, plasma alkaline phosphatase activity and plasma inorganic P, were improved by phytase and inorganic P in BD. While these measures were not further improved by supplementing phytase at 2,000 U/kg in the P-adequate diets, bone strength of pigs fed the additional phytase was 12% ($P < 0.05$) greater than that of those fed only the P-adequate diets. The additional 2,000 U/kg in the P-adequate diets did not affect bone concentrations of Ca, P, K, Na, S, Mg, Fe, Mn, Zn, B or Cr, but resulted in 7% ($P < 0.05$) increase in bone Sr concentration. In conclusion, supplementing phytase at 2,000 U/kg of the P-adequate diets produced additional benefit on bone strength of young female pigs, and the improvement was not directly associated with P accretion.
In summary, the two studies reported in this thesis help in locating the functional site of E. coli AppA2 phytase in the digestive tract of young pigs, in unveiling a novel role of high levels of AppA2 activity in bone metabolism of young pigs.

url: http://hdl.handle.net/1813/3265
date: 2006-07-12
creator: Briggs, Heather
viewed: 1754
title: Presenting Archaeology to the American Public Through Documentary Film
abstract: While feature films such as the Indiana Jones and Lara Croft: Tomb Raider series have popularized the field of archaeology, they are hardly useful for providing an accurate and educational depiction of the practice of archaeology itself. Yet archaeological research provides an often underrated, outstanding way of deriving information about the past that may or may not be known otherwise.In light of ?Hollywoodized? films, which largely present a romanticized, unrealistic view of the true practice of archaeology, one may wonder if more true-to-life visual depictions of archaeological research do exist. Accordingly, this manuscript seeks to analyze the availability of archaeology-related documentary films to the public, with a focus on audiences in the United States. How substantial is the availability of archaeology films to the general public? Or are such films restricted to academic institutions and scholars? What about age-range considerations? Are most films directed towards children, or a more adult audience? What type of language is used in presenting archaeology to the public through film? Are films geared ? whether consciously or unconsciously ? towards a well-educated audience that would properly understand complex terminology? Or do films incorporate ?everyday language? to attract and inform a more educationally diverse population?
In considering documentaries produced by a number of different production companies, this thesis also aims to discuss social issues. For example, are societal differences and/or customs presented, or not presented, through the documentary medium?
In striving to answer the aforementioned questions, this thesis scrutinizes both archaeological research practices as well as filmmaking procedures. Ultimately, such evaluations conclude that archaeological research, excavation, and interpretation enables one to learn not only about the archaeological findings themselves, but often also leads towards the incorporation and presentation of other related facets. In a case study of the archaeological work performed at Robert H. Treman State Park, archaeological research, excavation, and interpretation has enabled scholars, park employees, visitors, and others to learn more about the history of the park itself ? a history that may have been lost had archaeology not been a factor. Furthermore, such

research initiatives have also made possible an installation of an outdoor walking exhibit of the multiple archaeological sites within the park and work performed thereon. Accordingly, the archaeology chapter of the accompanying DVD, entitled Past, Present, Future: an Introduction to Robert H. Treman State Park, serves as an example of an archaeology-based documentary film. The DVD as a whole further supports the notion that archaeological research often leads to the presentation of other related aspects.

url: http://hdl.handle.net/1813/3266
date: 2006-07-12
creator: Forshey, C.G.
viewed: 1111
title: Training and Pruning Apple Trees
abstract: Training and pruning principles are discussed with the physiology of tree growth, northeast climate conditions, and growers' objectives in mind. Pruning and training of young, non-fruit bearing apple trees is discussed separately from pruning of fruit bearing trees. Mechanical pruning, renovating old trees, supports, scaffold limbs, central-leader development, and economics of pruning are covered.

url: http://hdl.handle.net/1813/3267
date: 2006-07-12
creator: Schaufler, Ernest;Hossenlopp, Ann
viewed: 3104
title: Pressed-Flower Pictures
abstract: This information bulletin offers step-by-step instructions to a 300-year-old craft for preserving summer's beauty. You'll learn how to select appropriate plant material and dry it properly, and then use six basic types of dried-flower picture designs to create your own attractive pictures. Suggestions for group activities are included as well.

url: http://hdl.handle.net/1813/3268
date: 2006-07-12
creator: Mower, Robert G.;Meyer, Mary Hockenberry
viewed: 2243
title: Ornamental Grasses for the Home and Garden
abstract: This information bulletin highlights 33 common ornamental grasses, sedges, and rushes with technical data and illustrations. The bulletin lists dozens of other grasses for use near ponds and swimming pools, in perennial borders, rock gardens, water gardens, shady locations, naturalized areas or for dried arrangements. Cultural information, a glossary and a key to selected types of grasses is included as well.

url: http://hdl.handle.net/1813/3269
date: 2006-07-12
creator: Lee, R.E.;Mower, R.G.
viewed: 4106
title: Sequence of Bloom of Perennials, Biennials, and BulbsIncluding Height and Color Range
abstract: August 10, 2006 Errata:

On page 8 Lythrum salicaria is listed for use in the Home Garden. Since this publication was printed, this plant, Purple Loosestrife has become an invasive species in New York. Please disregard this reference and do not encourage the growth of Lythrum salicaria.This popular information bulletin for the home gardener, will help you select and situate those perennials and bulbuous plants for a continuous display of bloom from early spring until the killing frosts of autumn. The list of perennials is limited to those that are generally hardy.

An average height is given so that gardeners unfamiliar with certain species will know whether the plants are low growing and belong in the foreground or are tall and should be planted in the background. Nearly 300 species with information about color, period of bloom, and plant height are covered. An essential guide for planning gardens of maximum beauty.

url: http://hdl.handle.net/1813/3270
date: 2006-07-13
creator: Pan, Bruce
viewed: 3003
title: Physiological Nitrogen Isotopic Responses in Paracoccus denitrificans
abstract: The natural abundances of stable isotopes in our environment serve as intrinsic tracers that are incorporated into biological compounds and create unique isotopic signatures that record molecular history. Use of stable isotopes in the investigation of biochemical, geological, and forensic applications has become increasingly popular in the past two decades, in large part due to the recent development of requisite instrumentation capable of measuring the subtle variations of naturally occurring isotope ratios. Progress towards a universal model describing the behavior of isotopes in physiology has seen little consolidation due to the empirical nature of isotopic response. Elucidation of underlying mechanisms requires tightly controlled experiments with careful isotopic characterization of specific physiological states.
We exploit the environmentally-relevant and nutritionally versatile bacteria, Paracoccus denitrificans, to assess the fractionation of nitrogen in the metabolism of amino acids as a means to deduce physiological state. The manipulation of respiratory state and osmotic stress yields distinctive distributions of relative isotopic enrichment which is indicative of changes in metabolic pathways. We report the first in vivo position-specific measurement of the poly-nitrogenous amino acid, Lysine, and note a dramatic deviation in isotope ratios between sidechain and peptide nitrogen, which is correlated with respiratory state. In aerobic cells, the lysine intramolecular delta-delta-15N was negligible, but in anaerobic cells it was a remarkable delta-delta-15N = +11.0 permil, driven predominantly by enrichment at the peptide N. With regard to osmotic stress, we report a linear response with salt concentration in nitrogen isotope ratios of several amino acids, indicating an isotopic enrichment in amino acids which exhibit known osmoprotective properties. Bulk 15N/14N increased by delta-delta-15N = +5.603 ? 0.79 permil from 1% to 1.75% NaCl and significant linear trends of delta-delta-15N values with salt concentration between 1% and 1.75% ($p<0.05$) were found for five amino acids, Ala (delta-delta-15N = 4.66 ? 0.23 permil), Gly (delta-delta-15N = 4.03 ? 0.84 permil), Val (delta-delta-15N = 3.59 ? 0.32 permil), Pro (delta-delta-15N = 6.13 ? 0.76 permil), and Asx (delta-delta-15N = 5.27 ? 0.56 permil). These findings illustrate the sensitivity of isotope ratios in amino acids to physiological state and establish a premise for diagnostic techniques to assess metabolism.

url: http://hdl.handle.net/1813/3271
date: 2006-07-13
creator: Abrams, Daniel Michael
viewed: 2437
title: Two Coupled Oscillator Models: The Millennium Bridge and The Chimera State
abstract: Cornell University PhD Dissertation
Theoretical and Applied MechanicsEnsembles of coupled oscillators have been seen to produce remarkable and unexpected phenomena in a wide variety of applications. Here we present two mathematical models of such oscillators. The first model is applied to the case of London's Millennium Bridge, which underwent unexpected lateral vibration due to pedestrian synchronization on opening day in 2000. The second model analyzes a new mode of collective behavior observed for a ring of nonlocally coupled phase oscillators.NSF - National Science Foundation

url: http://hdl.handle.net/1813/3272
date: 2006-07-13
creator: Archer, Andrew
viewed: 1847
title: Synthesis and Reactivity of the Bis(phenylimino)pyridine Iron Bis(dinitrogen) Complex: Catalyst Deactivation Via Arene Coordination
abstract: In pursuit of highly active iron-based catalysts for bond-forming reactions, the phenyl-substituted bis(phenylimino)pyridine iron bis(dinitrogen) complex, (iPrPhPDI)Fe(N2)2 (iPrPhPDI = 2,6-(2,6-(CHMe2)2C6H3N=CC6H5)2C5H3N), was prepared by sodium amalgam reduction of the ferrous dichloride precursor under four atmospheres of dinitrogen. The bis(dinitrogen) compound displayed catalytic productivity for the hydrogenation and hydrosilation of 1-hexene superior to that of the methyl-substituted analog, (iPrPDI)Fe(N2)2 (iPrPDI = 2,6-(2,6-(CHMe2)2C6H3N=CCH3)2C5H3N). However, the catalytic productivity with more hindered substrates, such as cyclohexene and (R)-(+)-limonene, was inferior. The diminished catalytic productivity with these substrates precipitated from competitive deactivation via irreversible formation of n6-aryl and -phenyl complexes unobserved in the chemistry of (iPrPDI)Fe(N2)2. Dissolution of (iPrPhPDI)Fe(N2)2 in coordinating solvents such as THF or cyclohexene prompted exclusive formation of the n6-phenyl derivative, whereas dissolution in non-coordinating solvents such as pentane, ether, and mesitylene afforded solely the n6-aryl compound.
A family of bis(imino)pyridine ligands bearing alkylimino-substituents (rather than arylimino-substituents) was also synthesized and complexed to ferrous dibromide. Conversion to the corresponding dicarbonyl compounds was affected by sodium amalgam reduction under four atmospheres of carbon monoxide. Electronic studies of these alkylimino-substituted bis(imino)pyridine iron dicarbonyls demonstrated the electron-donating character of the ligands relative to their arylimino-substituted counterparts. Initial attempts to isolate effective precatalysts for C-H bond-forming reactions bearing the alkylimino-substituted bis(imino)pyridine ligand were unsuccessful. However, through the course of these attempts, a new precatalyst bearing the arylimino-substituted EtPDI ligand (EtPDI = (2,6-(2,6-Et2C6H3N=CMe)2C5H3N) was isolated by sodium amalgam reduction in the presence of excess 1,3-butadiene. The catalytic productivity of this butadiene complex for hydrogenation of simple olefins was assayed. An induction period was identified, and its origins examined.

url: http://hdl.handle.net/1813/3273
date: 2006-07-14
creator: Nowogrodzki, Richard;Ratnieks, Francis L. W.
viewed: 1474
title: Small-Scale Queen Rearing by Beekeepers in the Northeast
abstract: This publication is intended to help hobby or commercial beekeepers rear queens for their own use or for sale. Experience in beekeeping is assumed, as well as familiarity with many beekeeping terms. Covers how, why, when, and where to rear queens.

url: http://hdl.handle.net/1813/3274
date: 2006-07-14
creator: Dyce, E. J.;Morse, R. A.
viewed: 1562
title: Beekeeping: General Information
abstract: This information bulletin explains how, when and, where to best start beekeeping, including how to obtain bees, and what equipment is needed. Describes the extent of the beekeeping industry in New York State, and includes references for additional information regarding inspections, associations, literature, and Cornell beekeeping courses.

url: http://hdl.handle.net/1813/3275
date: 2006-07-14
creator: Dale, Adam; Pritts, Marvin
viewed: 739
title: Dayneutral Strawberry Production Guide
abstract: An information bulletin that will help serious hobbyists and commercial growers make the most of this recently developed cultivar. Plants can flower and fruit continuously, yielding fresh strawberries through the summer into October. Production expectations, marketing, pre-plant considerations, cultural practices, pests, irrigation systems, harvesting and economics are all covered.

url: http://hdl.handle.net/1813/3276
date: 2006-07-14
creator: Green, D. M.; Reigier, H. A.; Eipper, A. W.
viewed: 2567
title: Fish Management in New York Ponds
abstract: Covers design and construction features, water temperature, sources of water, water plants, eliminating undesirable fish, and controlling muskrats and other pond animals. Tells where and how to obtain fish for a pond; addresses growth, survival, reproduction, and yield.

url: http://hdl.handle.net/1813/3277
date: 2006-07-14
creator: Stiles, Warren C.; Merwin, Ian A.
viewed: 3099
title: Integrated Weed and Soil Management in Fruit Plantings
abstract: Explains how various weed management systems affect fruit crops, soils, and groundwater. The advantages and disadvantages of various methods for managing weed competition are described. Action thresholds and other weed integrated pest management (IPM) strategies are covered. Mulches and other non-chemical weed controls, timing of control applications, ground cover management systems, and herbicide applicators are included. Color photographs show detail.

url: http://hdl.handle.net/1813/3278
date: 2006-07-14
creator: Mower, Robert G.
viewed: 1739
title: Shrubs for Landscape Plantings in New York State
abstract: This information bulletin provides a list of many of the most useful and attractive shrubs for landscape planting. Most are available from commercial nurseries and garden supply centers. Cultural information on low, small, medium, and large shrubs is covered.

url: http://hdl.handle.net/1813/3279
date: 2006-07-14
creator: Fox, Raymond T.;Fischer, Charles C.
viewed: 1600
title: The Selection, Care, and Use of Plants in the Home
abstract: A carefully selected, well located, and well-cared-for plant is an important item in any d?cor. However, because indoor plants are out of their natural habitats and are confined in containers, optimum growth is difficult. This publication discusses growth requirements, including light intensity, temperature, humidity,

watering practices, nutrient and fertilizing practices, potting mixtures, general maintenance, and correcting common problems, to help your plants flourish. A separate sections lists popular plants by light requirements, while another section focuses on decorative uses, including choosing containers for effective display. A final chapter deals with care of flowering plants. Dozens of black and white photographs, a diagnostic table for managing common problems supplement this helpful and informative text.

url: http://hdl.handle.net/1813/3280
date: 2006-07-14
creator: Thacker, G. H.
viewed: 2825
title: The Home Poultry Flock
abstract: This leaflet will help you start a flock at home, from information on how to obtain chicks to disposal of the flock. Information on shelter, equipment needed, feeding, and caring for the birds and the eggs. Diagrams of chick brooders and simple, inexpensive, convenient housing for the hobby flock are included. Since the publication was updated last in 1996, readers would be well advised to check current costs of feeds and chicks with current market prices.

url: http://hdl.handle.net/1813/3281
date: 2006-07-14
creator: Carroll, Juliet E.
viewed: 1264
title: Know Your Plant's Disease
abstract: How do plants become diseased? What can you do to prevent it? Helps beginners of all ages recognize symptoms of plant disease, identify causes, and learn to manage plant disease.

url: http://hdl.handle.net/1813/3282
date: 2006-07-14
creator: Mower, Robert G.;Stiles, Jerry S.
viewed: 2182
title: Rock Gardens
abstract: A timeless, how-to-guide that covers design and construction, maintenance and propagation of plants for rock gardens. Full-color photographs of 50 rock garden plants, with descriptions and recommendations for use are included. Sources for obtaining plants, a glossary of terms and plant diagrams are included.

url: http://hdl.handle.net/1813/3283
date: 2006-07-14
creator: Mazza, Charles;Rakow, Donald A.;Warner, Philson A.
viewed: 1822
title: Grow With the Flow
abstract: This 10 session project-based curriculum includes simple instructions for constructing 2 different types of hydroponic units, setting plants, observing growth, and harvesting. Entomology, physics, social studies, marketing, math, nutrition and careers in horticulture, are integrated into the basic plant science focus. These projects are best suited for middle-school aged youth, and allows for a balanced approach with group and individual activities.

This is a 44 page publication and will likely take some time to load or print.

url: http://hdl.handle.net/1813/3284

date: 2006-07-14
creator: Aquila, Meredith Suzanne Hahn
viewed: 2451
title: Video Play Pathways for Females: Developing Theory
abstract: ABSTRACT
This study explores the diversity of females in the realm of video games. Previous studies have focused on the differences between males and females in order to understand the dearth of female gamers. However, these studies have failed to acknowledge that even among subjects of the same gender, great diversity can, and does, exist. For this reason, the research contained herein will focus solely on females; trying to understand what sets female gamers (for they do exist) apart from female non-gamers.

The main question guiding this thesis is; ?How do female gamers and non-gamers differ in their perceptions of and engagements with video games?? That is, how do members of each group (gamer vs. non-gamer) tend to define videogames? How and why do they interact with them (for social reasons, for the challenge, to relieve boredom, because they are conveniently available, etc.) if they interact with them at all? How do their videogame experiences relate to childhood experiences, non-game interests/skills, and social climate if there is any correlation at all?

The project sought out women who have set themselves apart by participating in game-related activities (the Cornell Dance Dance Revolution Club and the Game Design Initiative at Cornell) and compared their experiences and opinions to those of women who neither participate in these activities nor would consider themselves ?gamers? in any other way. Some of these non-gamers were found among participants in a pilot study. Others were found within COMM201?an undergraduate communication class. In-depth one-on-one interviews provided the data that helps us to see the complexity of the female game experience.

Results of the study indicate that the dearth of female gamers may be tied to social factors more than the psychological ones some scholars have proposed. At younger ages, females seem to generally enjoy video games and other recreational technologies however, with maturity and gender socialization come a mindset that ?women don?t play video games?. In order to overcome the gaming gender gap, it may be necessary to change the way we as researchers think about games in order to change the way that women think about them. Furthermore, in order to advance the field of video game research, it may be necessary to question some popular assumptions, and press for standardized definitions of the major terminology.

url: http://hdl.handle.net/1813/3285
date: 2006-07-14
creator: Balcetis, Emily E.
viewed: 3204
title: Motivated Visual Perception: How We See What We Want To See
abstract: In 2001, a U.S. nuclear submarine surfaced underneath a Japanese fishing vessel, causing it to sink-9 died. In 1999, 41 bullets fired by 4 New York police officers hit and killed Amidou Diallo, who pulled from his pocket a wallet rather than what the police thought was a gun. In both tragedies, one might ask how these central actors could have failed to see what was plainly visible. With this work, I ask how perceptual systems represent the surrounding world if not in a veridical manner. I propose that the perceptual representations of which perceivers are consciously aware are colored by nonconscious motivational forces. Motivations, including wishes, dissonance reduction, and visceral needs, bias visual perception.

Three streams of research examined the ways in which motivations constrain perceptual processing. The first stream demonstrated that people's wishes biased the resolution of visual ambiguity. In 5 studies, participants shown an ambiguous visual figure reported seeing the desired interpretation. This finding was affirmed by unobtrusive and implicit measures of perception including eyetracking, lexical decision response times, and experimental manipulations.

In the second stream, I explored whether the motivation to reduce cognitive dissonance biased perception

and assisted in the regulation of psychological states. In 2 studies, participants performed an aversive task under high or low choice conditions. Participants saw components of their environment in less extreme ways in order to reduce dissonance. Those experiencing high choice perceived distances to travel as shorter and slopes to climb as shallower.

In the third stream, 5 studies showed that desires such as hunger, thirst, and general preferences led to a narrowed focus of attention on a desired object. Narrowly focusing attention reduced estimates of distance. Participants saw desired objects as closer than less desired objects.

I end by discussing the implications for marketing, self-screening in early cancer detection and relationship satisfaction among other applied domains. This work explores the limits of motivations, testing whether they cross the boundary separating how people think about their world and how they see it.The research in Chapters 2, 3, and 4 was supported financially by National Institute of Mental Health Grant RO1 56072, awarded to David Dunning.

url: http://hdl.handle.net/1813/3286
date: 2006-07-17
creator: Harrison, Ellen Z.;Bonhotal, Jean
viewed: 3042
title: Compost Equipment
abstract: Cornell Cooperative Extension, New York State Energy Research and Development Authority, Sustainable Agriculture Research and Education, Cornell University's College of Agriculture and Life Sciences

url: http://hdl.handle.net/1813/3287
date: 2006-07-17
creator: Schroeder, Mathis
viewed: 2454
title: A Detailed Analysis Of The Premium Variation In The Market For Medicare Supplemental Insurance
abstract: Medicare guarantees health insurance coverage for any person 65 or older. However, Medicare coverage is not complete and the additional costs are substantial: for example, the hospital deductible for part A is $956 and the part B deductible amounts to $123 in 2006. The elderly can insure against these financial risks by obtaining supplemental insurance from different sources. A private market designed to cover the "gaps" in Medicare is known as the "Medigap" market. This market is regulated since 1992 by the Omnibus Budget Reconciliation Act of 1990. The law created markets with homogenous goods mainly by standardizing the policies that could be offered. Economic theory predicts that in a market for homogenous goods, there should be little or no price variation. However, premiums of Medigap policies continue to vary even within narrowly defined markets.

This dissertation is concerned with finding economic explanations for this puzzle. Sources of premium variation in the Medigap market are empirically investigated as well as reasons for why premium variation is sustained. Chapter one provides a general overview of the Medigap market and points out specific peculiarities due to the Omnibus Budget Reconciliation Act of 1990. In the second chapter, which is joint work with Nicole Maestas and Dana Goldman, differences in the populations covered by insurance firms are investigated with respect to their impact on actuarially fair premiums. The third chapter focuses on how firms set prices for specific components of Medigap premiums and how these change over time. Also, the degree to which firm and state specific variables explain premium variation is investigated. The fourth chapter (joint with Nicole Maestas and Dana Goldman) targets the consumer side of the Medigap market by estimating a structural model that allows for sustained price variation due to consumer search costs.

The findings in this dissertation suggest that premium variation is at least partially caused by firm specific differences The premium variation is sustained through consumer search costs and thus uninformed

consumers. However, there are some indications that the market experienced an increase in competition that reduces premium variation.

url: http://hdl.handle.net/1813/3294
date: 2006-07-19
creator: Sirkeci, Birsen
viewed: 1396
title: Distributed Cooperative Communication in Large-Scale Wireless Networks
abstract: Cooperative communication employs distributed transmission resources at the physical layer as a single radio with spatial diversity in order to increase the performance of wireless networks. However, node cooperation entails large communication overhead, and distributed protocols that eliminate or reduce the communication overhead are desirable. This dissertation proposes distributed cooperative schemes for wireless ad hoc networks and develops new methods to analyze their performance.

First, we study the behavior of distributed cooperative transmission in wireless networks for both point-to-point and broadcasting scenarios. In particular, we analyze the effect of critical network parameters on the number of nodes reached by cooperative transmission. We show that there exists a phase transition in the network behavior: if the decoding threshold is below a critical value, the message is delivered to the intended recipient(s). Otherwise, only a fraction of the nodes is reached. Our approach is based on the idea of continuum approximation, which yields closed-form expressions that are accurate when the network density is high.

We next study the optimal power allocation problem for the cooperative broadcast in dense large-scale networks. The transmission order (schedule) and the transmission powers of the relays are designed so that the message reaches the entire network with the minimum possible total power consumption. In general, finding the best scheduling in cooperative broadcast is known to be an NP-complete problem. We show that the optimal scheduling problem can be solved for dense networks, which can be expressed as a continuum of nodes.

Finally, we study the design of distributed space-time codes for cooperative communication. With few exceptions, most of the literature on the subject proposes coding rules such that either inter-node communication or a central control unit is required for code assignment. We introduce novel randomized strategies that decentralize the transmission of a space time code from a set of distributed relays. Our simple idea is to let each node transmit an independent random linear combination of the codewords that would have been transmitted by all the elements of a multi-antenna system. We show that the proposed scheme achieves the optimal diversity order.

url: http://hdl.handle.net/1813/3295
date: 2006-07-19
creator: Godert, Amy
viewed: 2095
title: Investigating the Biosynthesis of Thio-Quinolobactin and the Development of a Proteomics Probe for Thiamin Utilizing Enzymes
abstract: Quinolobactin, 8-hydroxy-4-methoxy-quinaldic acid, is a siderophore produced by P. fluorescens ATCC 17400. A tryptophan catabolite, quinolobactin is isolated as the thio-carboxylate, referred to as thio-quinolobactin. The biosynthesis of thio-quinolobactin appears to combine two pathways that have been studied previously in the Begley laboratory. The first half of the pathway catabolizes tryptophan to 3-hydroxykynurenine and appears to require similar enzymes to those found in the biosynthesis of nicotinamide. The latter half of the pathway incorporates sulfur into the quinolobactin molecule as a thio-carboxylate. The enzymes responsible for the sulfur transfer are highly similar to those found in sulfur transfer in thiamin in B. subtilis and cysteine in M. tuberculosis.

We have identified activities for the proteins in the pathway that are responsible for the transformation of

3-hydroxykynurenine, the point at which this pathway diverges from that of nicotinamide biosynthesis, to quinolobactin. QbsB, a hydroxykynurenine aminotransferase, is responsible for the deamination and cyclization of 3-hydroxykynurenine to xanthurenic acid. QbsL then methylates the 4-hydroxy position of xanthurenic acid, and also activates the carboxylate as the acyl adenylate. Although we have not characterized sulfur transfer to quinolobactin to form thio-quinolobactin, we have identified roles for the putative sulfur transfer proteins QbsC, QbsD, and QbsE. QbsE is a small sulfur carrier protein that likely delivers sulfur to quinolobactin. Before the C-terminus of QbsE is activated as the thiocarboxylate, the two amino acids at the C-terminus following the diglycine are hydrolyzed by QbsD. This diglycine C-terminus can be adenylated and sulfurylated by QbsC, forming the thio-carboxylate.
In another project, we have synthesized and tested thiamin analogs incorporating a photo-labile substituent as proteomics probes. Thiamin pyrophosphate is an essential cofactor utilized by proteins in key prokaryotic and eukaryotic metabolic pathways. The ability to observe and compare relative amounts of these proteins when cells are grown under different conditions gives valuable insight into how cells respond to stressors. A promising probe was successfully synthesized and did exhibit the desirable properties of photo-lability and inhibition of thiamin pyrophosphate utilizing enzymes. Unfortunately, a high amount of non-specific labeling prevented it from being a useful proteome probe.

url: http://hdl.handle.net/1813/3296
date: 2006-07-19
creator: Way, Roger D.
viewed: 2135
title: Pollination and Fruit Set of Fruit Crops
abstract: This information bulletin describes the single most critical process in the production of a fruit crop. Outlines cultural practices favoring good fruit set; summarizes pollination requirements of apples and other tree fruits such as pears, peaches, nectarines, apricots, cherries, and plums. Suggests orchard planting plans for efficient apple pollination, and summarizes pollination requirements for other tree fruits.

url: http://hdl.handle.net/1813/3297
date: 2006-07-19
creator: Petrovic, Martin A.;Hummel, Norman W. Jr.
viewed: 1298
title: Athletic Field Maintenance
abstract: This technical guide provides comprehensive information on soil modification and drainage, establishing field turf, seeding, sodding, soil preparation, and species and variety selection. Describes how to maintain field turf, including fertilizer materials and programs, core cultivation, irrigation, thatch control, mowing, and weed control.

url: http://hdl.handle.net/1813/3298
date: 2006-07-19
creator: Villani, Michael G.; Nelson, Eric B.; Neal, Joseph C.; Hummel, Norman W.; Thurn, Mary C.
viewed: 1392
title: Home Lawns Varieties and Pest Control Guide
abstract: Recommendations for appropriate species/variety selection and pest control. Supplements “Home Lawns Establishment and Maintenance” found elsewhere in this collection.

url: http://hdl.handle.net/1813/3299
date: 2006-07-19
creator: Silsby, Kenneth J.;Blanpied, G.D.

viewed: 2306
title: Predicting Harvest Date Windows for Apples
abstract: This information bulletin discusses how harvest dates affect apple quality, how to forecast and verify harvest windows, picking, and segregating lots for long-term CA storage. Full-color plates show how to use and interpret the starch-iodine test for determining maturity and the best harvest dates for quality. McIntosh, Cortland, Empire, Delicious, Mutsu/Crispin, and Idared varieties are covered. Dates for other varieties can be interpreted from the information presented.

url: http://hdl.handle.net/1813/3300
date: 2006-07-19
creator: Richmond, M.E.;Curtis, P.D.;Fargione, M.J.
viewed: 1623
title: Resistance of Woody Ornamental Plants to Deer Damage
abstract: This fact sheet will help you pick the appropriate plants to meet your whitetail deer management goals. Deer are selective feeders, so you can plant species that they don't like to eat thus reducing costly damage to ornamentals - or use this information to attract them if you wish.

url: http://hdl.handle.net/1813/3301
date: 2006-07-19
creator: Gravani, Robert B.
viewed: 2120
title:
abstract:

url: http://hdl.handle.net/1813/3302
date: 2006-07-20
creator: Nicolls, Michael
viewed: 2176
title: Radar and Airglow Studies of F-Region Composition and Dynamics at Low Latitudes
abstract: This thesis presents a series of studies investigating the composition and dynamics of the low latitude F-region ionosphere using airglow imagers and the Arecibo and Jicamarca incoherent scatter radars (ISRs), along with supporting instrumentation.

Some dynamical aspects of the low latitude ionosphere are investigated. The effects of a large-scale traveling ionospheric disturbance (TID) are studied. The TID characteristics are consistent with an atmospheric disturbance caused by high latitude Lorentz forcing associated with periodic substorms. Plasmaspheric coupling is necessary to explain the observed electron densities and airglow intensities.

Evidence is presented for post-midnight uplifts during which the low latitude ionosphere is lifted by tens of kilometers in mild events and by over a hundred kilometers in severe events. The uplifts are not caused by a reversal of the zonal electric field, instead occurring as a response to a decreasing westward field in conjunction with sufficient recombination and plasma flux. The midnight pressure bulge may play a role in the dynamics and the disturbance dynamo may enhance the uplifts.

The spectral properties of daytime penetration fields are analyzed using ground-based magnetometer data. The spectrum deviates from a power law under disturbed conditions, and the integrated power is a strong function of geomagnetic activity. The transfer function of the system is estimated using simultaneous interplanetary electric field data. Case studies support the notion of long-duration responses and of a weakly resonant system.

Models of the airglow emission rates are used to investigate the nighttime F-region ion composition. The intensities calculated including the molecular ions given by the International Reference Ionosphere (IRI) model

are much higher than measurements indicate, implying that IRI overestimates the molecular ion fraction. A revision of the IRI ion composition is needed, which could be constrained with airglow measurements. The neutral thermosphere over Arecibo is investigated using ion energy balance to estimate the neutral density and temperature. The so-called Burnside factor, associated with errors in the O+/O collision cross section, is estimated. In contrast to ion momentum studies, which typically lead to a Burnside factor greater than one, ion energy balance studies tend to result in low values for the Burnside factor. However, the ratio derived here is close to theoretical simulations of the collision cross section and may be a first step in reconciling the discrepancy between momentum and energy balance results.

url: http://hdl.handle.net/1813/3303
date: 2006-07-20
creator: Wolfe, D.W.;Abawi, G.S.;Brainard, D.C,;Stivers, L.J.
viewed: 3334
title: Cover Crops for Vegetable Production in the Northeast
abstract: This information bulletin presents characteristics of 12 major cover crops, and considers important management factors that can lead to successful soil protection and improvement, as well as weed and disease control. A four step planning guide is the cornerstone for ensuring maximum benefits and reduction of potential detrimental effects: 1) Identifying and ranking needs, 2) identifying when and where bare land is available for cover cropping, 3) matching the needs and the niches with appropriate cover crops, and 4) developing a detailed and tactical plan.

url: http://hdl.handle.net/1813/3304
date: 2006-07-20
creator: Ourecky, Donald K.
viewed: 1267
title: Minor Fruits in New York State
abstract: Minor fruits are those without a great deal of commercial value, but can still be enjoyed in preserves, jams, jellies or eaten fresh. This publication is no longer available in print form but is a timeless guide for describing these unique fruits.

url: http://hdl.handle.net/1813/3305
date: 2006-07-20
creator: reid, W. Shaw;Stiles, Warren C.
viewed: 2308
title: Orchard Nutrition Management
abstract: This information bulletin discusses the direct effects of nutritional factors, including deficiencies and toxic excesses, on yield and quality of fruit, and the many interrelationships of nutrition with other components of the total orchard system. Helps producers analyze orchard nutritional status by correctly interpreting soil sample test results, analyzing leaves, and visually inspecting the orchard. Interpretation of findings into effective fertilization programs is discussed. Eighteen color photos show symptoms of deficiency or injury to trees, leaves, and fruit.

url: http://hdl.handle.net/1813/3306
date: 2006-07-20
creator: Kelley, John W.;Howard, Ronald A.;Decker, Daniel J.
viewed: 2468
title: Let's Go FishingA Fish and Fishing Project
abstract: This is a national favorite that introduces fishing tackle and basic techniques. Includes information

on natural baits and care of the catch. It is used in youth programs, but any age novice will find the clear and concise instructions helpful.

url: http://hdl.handle.net/1813/3307
date: 2006-07-20
creator: Iesulauro, Erin
viewed: 1130
title: DECOHESION OF GRAIN BOUNDARIES IN THREE-DIMENSIONAL STATISTICAL REPRESENTATIONS OF ALUMINUM POLYCRYSTALS
abstract: Since the 1950's, researchers have studied fatigue crack propagation utilizing fracture mechanics. Such work has provided advances in calculating stress intensity factors, determining elastic-plastic crack tip parameters, and investigating the effects of crack closure. Predictions of fatigue life have been made using crack growth rate models. Over the years, this work has served to influence structural maintenance and damage tolerance philosophies; however, understanding, predicting, and simulating fatigue crack growth is still based on experimental curve fitting and phenomenological rate ``laws."

The work discussed in this thesis is a step toward understanding fatigue crack incubation, nucleation and microstructurally small crack growth from a first principles approach. To this end, capabilities have been created and assembled to generate, mesh, analyze, and post-process 3D statistical representations of metallic polycrystals with cohesive grain boundaries. A component-based framework facilitates flexibility, growth, and multiscale modeling. Components are accessed and connected through Web service interfaces. The Polycrystal Generator accesses the components for generating, meshing, and assigning properties and boundary conditions to a 3D polycrystal sample. It also provides an interface to a molecular dynamics component to facilitate loosely coupled multi-scale analyses. Analyses are conducted utilizing a parallel solution software package, PETSc, and in-house finite element library, FemLib. The large samples and resulting data is managed using Microsoft SQL Server 2000, an off-the-shelf relation database. Finally, sample geometries, mesh models, and results are visualized using PView, a real-time visualization tool created using OpenDX, Python, and SQL.

The assembled framework is used to conduct a parametric study of 3D statistical polycrystals under monotonic loading. The samples are analyzed with variation introduced in geometry, grain constitutive model and parameter values, cohesive grain boundary parameter values, and boundary conditions. This parametric study gives insight into how each variation influences when and where cracks nucleate.

Finally, the results from the parametric study are utilized to conduct simulations under cyclic loading. These analyses give insight into the ability to accurately capture grain boundary decohesion leading to fatigue crack nucleation.

url: http://hdl.handle.net/1813/3308
date: 2006-07-21
creator: Wiley, Daniel
viewed: 1458
title: Waves In Nonlocally Coupled Oscillators
abstract:

url: http://hdl.handle.net/1813/3309
date: 2006-07-21
creator: Cohen, Claire
viewed: 1845
title: Highly Active Salen-Supported, Cobalt-Based Catalysts For The Synthesis of Regio- and Stereoregular Polycarbonates

abstract: Synthetic routes to new (salen)CoX (salen = N,N'-bis(salicylidene)-1,2-diaminoalkane; X = halide or carboxylate) epoxide/CO2 copolymerization catalysts are described, and the X-ray crystal structures of (R,R)-(salen-1)CoCl (2.4) and rac-(salen-1)CoI are presented. The (salen)CoX series are highly active catalysts for the alternating copolymerization of propylene oxide (PO) and CO2, yielding poly(propylene carbonate) (PPC) with no detectable propylene carbonate byproduct. The PPC generated using these catalyst systems is highly regioregular with 92 - 99% carbonate linkages and a narrow molecular weight distribution. Inclusion of organic-based, ionic or Lewis basic cocatalysts with (salen)CoX catalysts results in a remarkable activity enhancement for the copolymerization. In the case of (R,R)-(salen-1)CoOBzF5 (2.3) with [PPN][OBzF5] (3.1), an unprecedented catalytic activity exceeding 700 turnovers per hour is achieved for the copolymerization of rac-PO and CO2, yielding iso-enriched, regioregular PPC. When the rac-PO/CO2 copolymerization is carried out with catalyst system 2.3/[PPN]Cl at -20 C, a krel of 9.7 for (S)- over (R)-PO is observed. The stereochemistry of the monomer and catalyst used in the copolymerization has dramatic effects on catalytic activity and the PPC microstructure. Using catalyst (R,R)-(salen-1)CoBr (2.5) with (S)-PO/CO2 generates highly regioregular, isotactic PPC, whereas using (R)-PO/CO2 with the same catalyst gives an almost completely regiorandom copolymer. The rac-PO/CO2 copolymerization catalyzed by rac-(salen-1)CoBr (2.30) yields syndio-enriched PPC, a novel PPC microstructure.
The (salen)CoX systems are also successful catalysts for the alternating copolymerization of cyclohexene oxide (CHO) and CO2, yielding syndiotactic poly(cyclohexene carbonate) (PCHC), a previously unreported PCHC microstructure. Variation of the salen ligand and reaction conditions, as well as the inclusion of organic-based, ionic cocatalysts, has dramatic effects on the polymerization rate and the resultant PCHC tacticity. Catalyst rac-(salen-2)CoBr (4.6) has the highest activity for CHO/CO2 copolymerization, yielding syndiotactic PCHCs with 81% r-centered tetrads. Using Bernoullian statistical methods, PCHC tetrad and triad sequences were assigned in the 13C{1H} NMR spectra of these polymers in the carbonyl and methylene regions, respectively.

url: http://hdl.handle.net/1813/3310
date: 2006-07-21
creator: Greene, H. David;Howard, Ronald A. Jr.
viewed: 1819
title: Let's Go Ice Fishing
abstract: Written for the novice, this book describes tactics; explains how to rig tilts, tip-ups, and jigs, with illustrations. Comfort and safety are emphasized.

url: http://hdl.handle.net/1813/3311
date: 2006-07-21
creator: Schulman, Matthew
viewed: 3044
title: Working With the Mass Media
abstract: How can nonprofit organizations reach their audiences quickly, directly, and in a cost-effective manner? This publication gives the basics of how to work successfully with the media. Offers inside information on personal visits, queries, advisories, tip sheets, briefings, and talk shows. Designed for people who must communicate with and through the news media but who have not had a formal communications or journalism education; also useful to journalism students and school media clubs.

url: http://hdl.handle.net/1813/3312
date: 2006-07-21
creator: Waldron, Anna
viewed: 2066

title: A MIXED METHODS EVALUATION OF AN AFTERSCHOOL SCIENCE CLUB'S INFLUENCE ON ADOLESCENT GIRLS' ATTITUDES TOWARD SCIENCE
abstract: Attitudes toward science have an impact on how and what students learn, which directly influences student achievement and student self perceptions (Cannon and Simpson 1985, Oliver and Simpson 1988, Simpson and Oliver, 1990). Attitudes have been shown to affect achievement scores and student self-concept (Peterson and Yaakobi 1980, Cannon and Simpson 1985, Oliver and Simpson 1988, Simpson and Oliver 1990). This study explores student attitudes toward science in grades seven and eight at a rural school district in Central New York. Attitudes toward science are defined as "a general and enduring positive or negative feeling about science" (Koballa, Crawley, 1985, p. 223). Attitudes toward science were measured at three different times during the school year for all students in grades seven and eight. A girls' science club intervention program was implemented for those in grades seven and eight who self-selected to participate. The club consisted of two treatments, one featuring hands-on activities and the other featuring career and role model guest speakers who were scientists. Through a switching replications design implemented at mid-year, all girls experienced both treatments. A mixed methods approach was used to collect both quantitative and qualitative data concerning attitudes over time for girls participating in the science club intervention program. Quantitative data was collected for students not participating in the club to provide data comparative data. Quantitative results indicated differences in attitudes over time for all students when data was pooled across grade levels. Additionally, grade level differences over time were observed in grades seven and eight, with grade seven showing an increase in scores over time and eighth graders showing a decrease in scores over time. No significant effects of gender were found, although there was a gender trend observed over time.
In the qualitative data, similar categories emerged over time in response to survey and interview questions. There were no major differences observed in survey responses from the beginning to the end of the year. No grade level differences were found in the categorical analysis of survey or interview responses. Qualitative data in some cases provided corroborating information in support of quantitative conclusions. In other cases, the qualitative data hinted at different conclusions.
This study found that the science club intervention program did not have a positive effect on girls' attitudes toward science. Factors beyond the intervention including the school environment and achievement expectations appeared to have more of an influence on attitudes than the intervention program. Further study is needed to determine if this phenomenon would occur in future cohorts of students and also to continue to evaluate the effectiveness of science programs in both formal and informal settings.NSF

url: http://hdl.handle.net/1813/3313
date: 2006-07-22
creator: Fogle, Homer William Jr
viewed: 2708
title: DX of DKE Special Study #07: Artifacts, Furnishings and Memorials
abstract: 22 p; ill.; footnotes; 28 cm.
Electronic reproduction.
Original, 1993, revised and illustrated, 22 July 2006.The author tabulates the various artifacts, furnishings and memorials connected with the Delta Chi chapter of Delta Kappa Epsilon at Cornell University. The illustrated listing includes items located in the 13 South Avenue Deke House and in the DKE Depository of the Cornell University Library, Division of Rare and Manuscript Collections.

url: http://hdl.handle.net/1813/3314
date: 2006-07-22
creator: Fogle, Homer William Jr
viewed: 1676
title: Chapter and Alumni Operations Handbook, 1995

abstract: 29 p; tables, appendices, bibliography; 28 cm.
Electronic reproduction.
Original, 11 March 1995.Reference data concerning the Delta Kappa Epsilon Fraternity, the Delta Chi Chapter of Delta Kappa Epsilon at Cornell University, the Delta Chi Association and Cornell University is tabulated. A bibliography of historical studies concerning the Cornell chapter is included.

url: http://hdl.handle.net/1813/3315
date: 2006-07-23
creator: Fogle, Homer William Jr
viewed: 2072
title: DX of DKE Special Study #11: Architectural Drawings and Artistic Renderings of the Chapter's Lodge
abstract: 12 p; ill; 28 cm. Electronic reproduction. Original, 23 July 2006.The author tabulates the various architectural drawings, lithographic sketches and one oil painting that depict the lodge of the Delta Chi chapter of Delta Kappa Epsilon at Cornell University. The paper is illustrated with selected floor plans, elevations, sketch images and photography.

url: http://hdl.handle.net/1813/3316
date: 2006-07-23
creator: Fogle, Homer William Jr
viewed: 1672
title: DX of DKE Special Study #18: Early Histories of the Chapter
abstract: 21 p; ill.; footnotes; 28 cm. Electronic reproduction. Original, 23 July 2006.Transcriptions of four early histories of the Delta Chi Chapter of Delta Kappa Epsilon at Cornell University are presented. The 1893 Corner-Stone Address, the 1894 Early History and the 1910 Catalogue preface are the works of Brother John Dewitt Warner '72. These writings span the Chapter's founding, the erection of the 13 South Avenue lodge and the 1910 addition to that structure.

url: http://hdl.handle.net/1813/3317
date: 2006-07-24
creator: McGuire, Michael
viewed: 1981
title: Exploring Thallium Compounds, Chevrel Phases, and Other Chalcogenides as Thermoelectric Materials
abstract: In thermoelectric materials, the coupling between thermal and electrical currents allows for the direct conversion between heat and electricity. This makes possible the construction of refrigerators and electrical power generators with no moving parts which are compact, reliable, and vibration free. Devices made from the best materials for cooling near room temperature operate at only 10% of Carnot efficiency. This is significantly less efficient than a typical compressor based kitchen refrigerator, which operates at about 30% of the Carnot limit. Thermoelectric devices are currently used where the benefits of small size and/or dependability outweigh their cost in efficiency. It is clear that the development of widespread applications for thermoelectric devices must await the discovery of new materials with improved thermoelectric properties. In this dissertation, several experimental approaches to this problem are discussed. These include (1) new compounds containing the heavy element thallium, (2) the exploration of Chevrel phase materials for high temperature applications, (3) the search for new high symmetry materials, and (4) the chemical and physical manipulation of the properties of known thermoelectric materials. The investigations described in this work did not produce an improved thermoelectric material; however, they did lead to the discovery and characterization of many new compounds, some with interesting structural, electrical, and magnetic

properties.

url: http://hdl.handle.net/1813/3321
date: 2006-07-24
creator: Holmes, Tiffany
viewed: 2665
title: Rockefeller New Media Foundation Proposal
abstract: Light Conversation, an interactive multimedia installation, dynamically transforms language into light. Individuals unfamiliar with new media installation generate narrative content for the piece through interviews with the artist and by loaning a bedside lamp to the installation. Eight table lamps form the interactive interface for the piece. In the installation, the gesture of turning on a light"a century-old technology" is loaded with motion, narrative, and consequence. By switching one lamp off and another on, viewers navigate the domestic world of the lamp-owners. Blinking bulbs transmit stories in ASCII code as images of specific bedspreads and nightstand reading zoom in and out of view. Viewers who engage a lamp spark an interactive dialogue that must be sensed, felt, read, and observed.

url: http://hdl.handle.net/1813/3323
date: 2006-07-24
creator: Knipp, Tammy
viewed: 2573
title: Rockefeller New Media Foundation Proposal
abstract: A work in progress, CASE STUDY 9983 is a performance-like interactive installation which encompasses and merges art, science, technology and culture. Through electronic media, the participant engages in a physical simulation of a near-death experience. A supplement to CASE STUDY 9983, CASE STUDY 9983-B is a wall mount display of polygraph recordings of the participant's physical responses-emulating scientific data. In the context of fine arts. CASE STUDY 9983/CASE STUDY 9983-B models a psychophysiological clinical case study (a study of the mind-body perspective) of an event-related mediated environment researching commonalities and differences among cultural and gender perceptions to a virtual simulation of implied danger. CASE STUDY 9983/CASE STUDY 9983-B is a hybrid, expanding the scope of new media to include alternative directions for research,interactions and fusions.

url: http://hdl.handle.net/1813/3324
date: 2006-07-24
creator: Knipp, Tammy
viewed: 1802
title: Case Study- Documentation
abstract: Slides & Description in PDF form.Documentation for proposal made to Rockefeller New Media Fellowship.

url: http://hdl.handle.net/1813/3326
date: 2006-07-24
creator: Kim, Hyoshin;Zick, Cathleen D.;Bryant, W. Keith
viewed: 2457
title: Household Work: What's it Worth and Why?
abstract: This information can help families decide whether to work outside the home; whether to purchase life insurance and, if so, how much; and calculate the indirect costs of having children.

url: http://hdl.handle.net/1813/3327

date: 2006-07-24
creator: Lichty, Patrick
viewed: 1067
title: Rockefeller New Media Foundation Proposal
abstract: Book of Hours is a stand-alone program that operates upon PocketPC-based handheld computers such as the Ipaq, HP Jornada, and Casio Cassiopeia. The Book of Hours critically comments upon the similarities between the medieval books of hours, which contained schedules of Catholic devotions, calendars of festivals and services, and collections of votive texts based around the High Medieval Marian cult, and shows these similarities to the PDA by turning it into a 'Book of Hours' for the Church of Technopoly. The program calls upon the similarity of the Book of Hours as a medieval PDA, and transposes this cultural structure to that of the handheld organizer. The program generates its own devotional 'hymn' and lush computer-generated illuminations based on information from the texts contained in the Book's data. Users are entreated to follow its daily schedule of rites, such as checking e-mail, making cell phone calls, tracking one's portfolio, and asks for the user to consult the Calendar of High Upgrades and System Scans. In addition, the user can read from devotional passages from the writings of Pope William I of Gates, and Bishop Stephen of Wozniak, and can enter their own passages, thus allowing the Book to modify itself to the user's style of interaction. The Book will hold all information on itself in a file in the PDA's memory, so it's use will be 'remembered' over time.

url: http://hdl.handle.net/1813/3328
date: 2006-07-24
creator: Lichty, Patrick
viewed: 2154
title: Project Documentation
abstract: Artist documentation for New Media Art Proposal.

url: http://hdl.handle.net/1813/3329
date: 2006-07-24
creator: Ostrander, Edward R.;Moore, Lois J.
viewed: 1348
title: In Support of Mobility: Kitchen Design for Independent Older Adults
abstract: Maintaining independence is important to most older adults, and design modifications in a kitchen can help achieve this. The primary recommendations include the overall kitchen plan, cabinetry and counters, walls, floors, doors, and windows, and plumbing, heating, electrical requirements, and minor modifications for a safer, more useful environment.

url: http://hdl.handle.net/1813/3331
date: 2006-07-24
creator: Zurkow, Marina
viewed: 1450
title: Rockefeller New Media Foundation Proposal
abstract: "Little NO" is an interactive, animated fairy tale based in the Buddhist cosmology of the Wheel of Life. Set in a 1960's New York City apartment against a backdrop of endless cocktail parties, "Little NO" traces multiple pathways through the story of a young girl caught up on the Wheel of Life, who struggles in her conflicts with her martini-handed parents. Like a psychological "Alice in Wonderland" story, she grows and shrinks in age and desire, projecting into her grown-up future, retreating into her child-like past.

url: http://hdl.handle.net/1813/3332

date: 2006-07-24
creator: Raymond, Lyle S. Jr
viewed: 1672
title: Watershed Conflict Resolution: Some Guiding Principles
abstract: Conflicts are normal! Tells how to draw creative policies from conflicts and how to make a watershed policy conflict productive.

url: http://hdl.handle.net/1813/3333
date: 2006-07-25
creator: Fogle, Homer William Jr
viewed: 2934
title: Articles of Governance: Effective and in Force on December 12, 1994
abstract: 78 p.; footnotes; 28 cm.
Electronic reproduction.
Original, 12 December 1994.Transcriptions of the primary articles of governance for the Delta Chi Chapter of Delta Kappa Epsilon at Cornell University (Certificate of Incorporation, Bylaws and House Rules) and the Delta Chi Association (Certificate of Incorporation and Proposed Bylaws) are presented. Historical studies on (1) the evolution of chapter organization, law and discipline, and (2) applications of formal expulsion, suspension and censure are included.

url: http://hdl.handle.net/1813/3334
date: 2006-07-25
creator: Wagenet, Robert J.;Porter, Keith S.;Trautmann, Nancy M.
viewed: 2299
title: Wellhead Protection: An Overview
abstract: More than half of US residents rely on groundwater for their drinking water. The quality of this water can be affected by septic systems, underground storage tanks, pesticides and chemical dumping sites. This bulletin discusses wellhead protection, or protective measures applied to the area around a well.

url: http://hdl.handle.net/1813/3335
date: 2006-07-25
creator: Wagenet, Robert H.;Porter, Keith S.;Trautmann, Nancy M.
viewed: 1571
title: Pesticides: Health Effects in Drinking Water
abstract: This bulletin discusses different types of pesticides found in drinking water - as well as the resulting symptoms for ingesting some of these.

url: http://hdl.handle.net/1813/3336
date: 2006-07-25
creator: Daniel, Sharon
viewed: 1864
title: 2004 Rockefeller New Media Foundation Proposal
abstract: An evolving media archive of recorded conversations with incarcerated women, their families and communities, a website with an 800 number that will allow prisoners and the public to “call-in” by phone to record and publish their views on-line, a public graphics program, a public installation and live webcast “call-in” event that will allow incarcerated women to participate in public conversations, and record and publish their views, on imprisonment as a cultural and political solution to violence, addiction and poverty. The expansion of the prison system is buoyed by the ignorance of a majority of the public about what

imprisonment really means to individuals and communities. JustVoice will challenge the assumptions of mainstream society about crime and punishment that fuel a commitment to prisons as the primary solution to our most pressing social problems.

url: http://hdl.handle.net/1813/3337
date: 2006-07-25
creator: Global Performing Arts Consortium;Nogami Memorial Noh Theatre Research Institute
viewed: 1191
title: Subtitled Video of Noh Theatre Performance of Yorimasa, 1932
abstract: A clip of selections of a 1932 performance of the noh play Yorimasa. The video has been annotated with a sound track, by the Nogami Memorial Noh Theatre Research Institute, and subtitled Japanese transcription and English translation of the audio, by GloPAC. Full information on the contents of this clip can be found in its record on the Global Performing Arts Database: http://www.glopad.org/pi/record/digdoc/1004284

url: http://hdl.handle.net/1813/3338
date: 2006-07-25
creator: Krasny, Marianne E.;Trautmann, Nancy M.
viewed: 1736
title: Composting in the Classroom: Scientific Inquiry for High School Students
abstract: National Science Foundation, Cornell Waste Management Institute, Cornell Center for the Environment

url: http://hdl.handle.net/1813/3338
date: 2006-07-25
creator: Krasny, Marianne E.;Trautmann, Nancy M.
viewed: 1736
title: Composting in the Classroom: Scientific Inquiry for High School Students
abstract: National Science Foundation, Cornell Waste Management Institute, Cornell Center for the Environment

url: http://hdl.handle.net/1813/3339
date: 2006-07-25
creator: Global Performing Arts Consortium;Brazell, Karen;Bethe, Monica
viewed: 3116
title: Subtitled Video of Noh Theatre Performance of Yamanba, 1999, kuse section
abstract: Subtitled video clip of the final section of the kuse dance in the noh play Yamanba. Performance by Izumi Yoshio, 1999, Atsuta Shrine Stage. Subtitles in English and Japanese by Global Performing Art Consortium.

url: http://hdl.handle.net/1813/3340
date: 2006-07-25
creator: GloPAC
viewed: 1922
title: Style sheet for GloPAD Video Project Explanation Web page
abstract: Just a .css style sheet to get the index html page to display correctly.

url: http://hdl.handle.net/1813/3341
date: 2006-07-25

creator: Ochshorn, Robert;Young, Joshua;Global Performing Arts Consortium
viewed: 1269
title: Creating Video For An Online, Multilingual Database
abstract: Video subtitling and authoring instructions and examples developed as part of the Global Performing Arts Database (GloPAD, see www.glopad.org), an online, multilingual database project for materials and information on performing arts worldwide. As part of developing a system for our contributors to use we wrote up several sets of instructions on creating videos and subtitled videos for use on the GloPAD system. We have abstracted from those instructions some of the procedures we think are generally useful beyond our specific project.Creating an Open Access Paradigm for Scholarly Publishing, a project funded by Atlantic Philanthropies

url: http://hdl.handle.net/1813/3343
date: 2006-07-25
creator: Brown, Sheldon
viewed: 1579
title: 2004 Rockefeller New Media Foundation Proposal
abstract: The City of Refuse(als) is an exploration of the space of in-betweeness that exists at the edges of lived experience. These edges are between cultures, classes, nations, and physicality itself. Architecture and urban form are the externalized manifestation of our desires and our actuality of inhabiting this zone.

url: http://hdl.handle.net/1813/3345
date: 2006-07-25
creator: Ho, Rania
viewed: 928
title: 2004 Rockefeller New Media Foundation Proposal
abstract: Mu Gu Gai Pan Over Rice Special #8 consists of seven to ten different folk toys collected from rural areas of China that are mechanically enhanced and then instructed to chase visitors around an exhibition space. Outfitted with electronics and light sensors, the mechanized folk toys are part of an interactive installation that combines high and low technology to create pieces that interact with one another and with the viewer.

url: http://hdl.handle.net/1813/3347
date: 2006-07-26
creator: Fogle, Homer William Jr
viewed: 1617
title: Catalogs of Photography, Documents and Artifacts: Delta Chi Chapter of Delta Kappa Epsilon DKE Depository
abstract: 93 p.; tables; footnotes; 28 cm. DKE6-001.
Electronic reproduction.
Original, 5 January 2004.Catalogs #1 to #6, inclusive, listing materials held in the DKE Depository (Collection 37-4-1535), Cornell University Libraries, Division of Rare and Manuscript Collections, Carl A. Kroch Library, Ithaca NY 14853-5302, and in the Cornell University Deke House, 13 South Avenue, Ithaca NY 14850, are presented. Collected material includes chapter meeting minute books, accounting and initiation records, news letters (The Delta Chi Deke) photography, lithographs, rushing brochures, booklets, postcards, sheet music, alumni correspondence and various artifacts (fraternity jewelry, cigar box, etc.)

url: http://hdl.handle.net/1813/3351
date: 2006-07-26

creator: Vanouse, Paul
viewed: 1526
title: 2004 Rockefeller New Media Foundation Proposal
abstract: The Active-Stimulation Feedback Platform is about networks and flows, consent and resistance, desire and aversion. It is a global simulation, extruded from the computer onto a physical interactive platform, a circle 16 feet in diameter, densely covered with arcade-style push buttons. Viewer / participants will interact with the simulation by walking, crawling and rolling across these buttons. Their movements trigger and bias playback of audio samples ("yes" or "no") recorded from 2000 people across the globe.

url: http://hdl.handle.net/1813/3353
date: 2006-07-26
creator: Wilson, Stephen
viewed: 1257
title: 2004 Rockefeller New Media Foundation Proposal
abstract: Guests, Parasites and Symbionts, is an interactive art and biology installation in which visitors will engage with live organisms derived from their own bodies and from those of other participants. Using the techniques of biology and medicine, the installation proposes to make visible these organisms and to create an engaging and provocative media environment for the interaction. It is based on what I already did in Protozoa Games. In this new version visitors will make physical contact with some device that will acquire their organisms. It then will provide for immersive sound, video, and animation events in which the flow of events are controlled by the interactions of the visitor's movements and gestures in the space (read by motion tracking technology) and the movements of the single cell organisms that are part of their body as made visible by a digital microscope. A projection screen will project their microorganisms situated as part of interactive digital animations and video created in Director. Another version of the installation will allow multiple visitors to engage with each other and each other's organisms and another version will let web visitors engage the protozoa.

url: http://hdl.handle.net/1813/3354
date: 2006-07-26
creator: Moore, Aaron Stephen
viewed: 1665
title: The Technological Imaginary of Imperial Japan, 1931-1945
abstract: "Technology" has often served as a signifier of development, progress, and innovation in the narrative of Japan's transformation into an economic superpower. Few histories, however, treat technology as a system of power and mobilization. This dissertation examines an important shift in the discourse of technology in wartime Japan (1931-1945), a period usually viewed as anti-modern and anachronistic. I analyze how technology meant more than advanced machinery and infrastructure but included a subjective, ethical, and visionary element as well. For many elites, technology embodied certain ways of creative thinking, acting or being, as well as values of rationality, cooperation, and efficiency or visions of a society without ethnic or class conflict. By examining the thought and activities of the bureaucrat, Mori Hideoto, and the critic, Aikawa Haruki, I demonstrate that technology signified a wider system of social, cultural, and political mechanisms that incorporated the practical-political energies of the people for the construction of a "New Order in East Asia." Therefore, my dissertation is more broadly about how power operated ideologically under Japanese fascism in ways other than outright violence and repression that resonate with post-war "democratic" Japan and many modern capitalist societies as well.
This more subjective, immaterial sense of technology revealed a fundamental ambiguity at the heart of technology. While many elites encoded technology as the production of all aspects of life, some articulated technology as unexpected invention, transformative action, and creative self-formation. Such possibility

was found within the very technologies that systematically structured society. By examining the thought and activities of the philosopher, Nakai Masakazu, I illuminate another notion of technology as cultural practices of invention that tactically employed the technologies mobilizing everyday life. Thus, I also explore other notions of the political in a context where politics was increasingly incorporated into the wartime effort through technology.Japan-U.S. Educational Commission (Fulbright Commission) Cornell East Asia Program German Academic Exchange Service

url: http://hdl.handle.net/1813/3355
date: 2006-07-26
creator: Even, Tirtza
viewed: 2446
title: 2004 Rockefeller New Media Foundation Proposal
abstract: Counterface, an interactive video installation, is one component within a larger two-fold work-in-progress that also comprises Painted Devil, a linear, single channel video. Both pieces focus on women's different roles in contemporary Turkish society, with all the nuances and conflicts that have developed among the secular and non-secular, rural and urban, modern and traditional.

url: http://hdl.handle.net/1813/3356
date: 2006-07-26
creator: Even, Tirtza
viewed: 2612
title: Transcripts from interviews for Counterface, an interactive video installation
abstract: Sample interviews for interactive video piece revolving around women's different roles in contemporary Turkish society.

url: http://hdl.handle.net/1813/3357
date: 2006-07-26
creator: Even, Tirtza
viewed: 1694
title: Tirtza Even Installation Slides
abstract:

url: http://hdl.handle.net/1813/3358
date: 2006-07-26
creator: Mendelsohn, Barak
viewed: 2708
title: Jihadism, International Society, and Interstate Cooperation
abstract: Why do states meet some terrorist threats through a collective effort, whereas at other times they respond separately, selecting from a variety of strategies? This dissertation advances an English School explanation arguing that the nature of the threat -- systemic or non-systemic -- posed by the terrorist entity accounts for the manner states respond: when a terrorist entity poses a threat only to the sovereignty and interests of specific states, countries will choose their policies from a range of available strategies. Interstate cooperation will be only one such option and, if taken, it is expected to be limited. However, when the terrorist challenge represents a threat to the existence of the state system, the members of the international society, under the leadership of its strongest powers, are expected to engage in a collective response at a level atypical of "normal politics." I test this theory using case studies, the prominent of which concerns the response to the al Qaeda-led jihadi movement.
The jihadis' ideology, their attitude toward the fundamental principles and institutions of the international

society, and approach to the use of weapons of mass destruction, render the global jihadi movement a threat to the international society. The nature of this threat became evident subsequent to 9/11 and led the international society, under the leadership of the American hegemony, to collectively rise to defend the state-based system. This collective action confirms and seeks to strengthen the primacy of the state in world politics. It relies on the principles of state sovereignty, states' mutual obligations, building state capacity and interstate cooperation, to fend off the jihadi threat while reinvigorating the international society. The operation of these four principles can be observed in the anti-terrorism financing regime, and the regime to deny non-state actors access to weapons of mass destruction. Together they are contributing to the creation of a worldwide infrastructure to combat the terrorist threat. This study also raises questions about state and religious logics as competing organizing principles for international relations, the role of hegemony in providing collective goods and U.S. foreign policies.

url: http://hdl.handle.net/1813/3359
date: 2006-07-26
creator: O'Neill, Kevin Ross
viewed: 2105
title: Secrecy and Anonymity in Interactive Systems
abstract: Kevin O'Neill's Ph.D. DissertationWhen building systems that guarantee confidentiality, system designers must first define confidentiality appropriately. Although researchers have proposed definitions of properties such as secrecy, anonymity, and privacy for a wide variety of system models, general definitions that are intuitive, widely applicable, and sufficiently formal have proven surprisingly elusive. The goal of this dissertation is to provide such a framework for systems that interact with multiple agents, emphasizing definitions of secrecy (to rule out unwanted information flows) and anonymity (to prevent observers from learning the identity of an agent who performs some action). The definitions of secrecy extend earlier definitions of secrecy and nondeducibility given by Shannon and Sutherland. Roughly speaking, one agent maintains secrecy with respect to another if the second agent cannot rule out any possibilities for the behavior or state of the first agent. These definitions are characterized syntactically,
using a modal logic of knowledge. Definitions of anonymity are given, with respect to agents, actions, and observers, and are also stated in terms of a modal logic of knowledge. The general framework is shown to handle probability and nondeterminism cleanly, and to be useful for reasoning about asynchronous systems as well as synchronous systems. It also suggests generalizations of secrecy and anonymity that may be useful for dealing with issues such as resource-bounded reasoning. Finally, the dissertation leverages these definitions of secrecy and formulates new strategy-based information-flow conditions for a simple imperative programming language that includes input and output operators. A soundness theorem demonstrates the feasibility of statically enforcing the security conditions via a simple type system.

url: http://hdl.handle.net/1813/3360
date: 2006-07-26
creator: West, Brooke Shannan
viewed: 2351
title: Does Employment Empower Women? An Analysis of Employment and Women's Empowerment in India
abstract: This study explores the relationship between women?s empowerment and employment in India. The current rhetoric of women?s ?empowerment? in developing countries calls for greater participation and decision-making in the economic, political and social spheres. In the economic sphere, paid employment is seen as essential to women?s empowerment.
Research on the relationship between employment and empowerment often focuses on access to employment opportunities and working conditions at the societal level, and on a woman?s control over resources and

contribution to total family earnings in the household.

In Malhotra and Mather's (1997) analysis of the impact of education and work in women?s decision-making in Sri Lanka, a combination of survey data, focus groups and life histories are used to test the relationship between employment and empowerment. They find that education and employment are important determinants of women?s decision-making in terms of finances, but not in terms of household decisions related to social or organization matters. They conclude that research on the links between education and employment and empowerment must include broader measures of education and empowerment and incorporate a greater breadth of social, household and life course factors relevant to gender and family relations.

This study uses Demographic Health Survey (DHS) data from India to empirically analyze the link between labor force participation and women?s empowerment at the individual level for ever-married women age 15-49. Employment is unpacked and includes occupation and a number of employment characteristics to demonstrate important differences in outcomes for women?s empowerment across various aspects of what ?working? consists of. This study asks the question, when does employment empower women and when does it not, and in what ways?

In this study empowerment is measured across four indicators: decision-making, freedom of movement, control over resources and views on violence against women. Ordered logit models are used to first assess the relationship between employment status and women?s empowerment across the four empowerment indicators, and then to look at the association between various occupational classifications and empowerment. Subsequent models measure the relationship between employment and empowerment by looking at the interaction between occupation and who the respondent works for and then, in the fourth model specification, including women?s contribution to total family income.

The results of this study suggest that working is important to empowerment and that women who work have a greater likelihood of higher empowerment than those women that do not, but that the strength of the relationship varies by empowerment indicator. The findings of this analysis also reveal that women in certain occupations have a greater likelihood for empowerment and that various employment characteristics are associated with some of the indicators of empowerment. The author concludes that looking deeper into the employment experience and considering a broader range of empowerment indicators is important to developing a better understanding of the complex relationship between employment and empowerment.

url: http://hdl.handle.net/1813/3362
date: 2006-07-26
creator: Flanagan, Mary
viewed: 2053
title: 2004 Rockefeller New Media Foundation Proposal
abstract: [familiar relativity] and [tether] are networked computer applications which explore how we consider and visualize physical space. The related projects take the form of both screen-based networked artworks and physical object/design in installation form. GPS and sensing technologies offer the most detailed way to observe social geographies, [familiar relativity] is a networked art project which traces the geographic movements of typical American families through typical days. Using location sensing equipment, the project monitors location as a data-driven reflection of modern life. Watch-size Global Positioning Systems will be worn by five familyparticipants in a range of households (New York, Milwaukee, San Francisco, Minneapolis, suburban Virginia) for a month at a time to generate live data for the work. Users visiting the work in a gallery setting or online will choose how to explore the datasets and compare different data pools. Based on monitoring data and user interaction online and in the gallery setting, the system will create new model forms of housing and transportation routes, [tether] is a site-specific data driven visualization project which examines deeply rooted cultural categories and assumptions through the tactical monitoring of human movement in the large urban and extended suburban area of New York City.

url: http://hdl.handle.net/1813/3363
date: 2006-07-27
creator: Sowards, Robin John
viewed: 982
title: The Metaphysics of Syntax in Nineteenth Century Lyric
abstract: Special Committee Chair: Jonathan Culler; Special Committee Members: James Eli Adams, John Bowers, and Peter Gilgen.This dissertation takes a new approach to the basic problem of literary criticism, the move from form to meaning, by rethinking the category of form through German Idealism and Chomskyan linguistics. My central methodological thesis is that we cannot develop a framework a priori and then apply it to particular cases, since such a procedure fails to read literary works in their particularity (and hence as literary), and I therefore approach issues in poetics and metaphysics from within interpretations of particular works, interpretations that do not form a unified narrative but rather a web of negative relations.
Chapter 1, on Hardy?s The Workbox, traces the shift from Plato?s alignment of form with the universal to Aristotle?s alignment of form with the particular. The Workbox traces the inverse trajectory in matter, revealing the convergence of universality and opacity in death. Chapter 2, on Keats?s To Autumn, focuses on the metaphysics of particularity and the particularity of literature, and introduces synthetic constructions as a way of understanding poetic ungrammaticality. To Autumn is concerned with the relation between a universal nature divinity and her particular manifestations, culminating in an inhuman pagan theodicy. Chapter 3, on Keats?s Ode to a Nightingale, presents a new theory of literary metaphors as synthetic constructions, in order to show that the ode deploys such constructions to think the experience of what is beyond experience. Chapter 4, on Browningss ?Childe Roland?, argues that Hegel's speculative transformation of Kant?s conception of objectivity has a terrifying underside that "Roland" explores, forcing us to re-think collectivity as requiring not only the mediation of the subject by objects but also by a (negatively) divine third term. Chapter 5, on Browning?s My Last Duchess, discusses the relationship between the verse line and syntax to show how the poem exploits the artifice of lineation to become a negative love poem, while Chapter 6 shows how Browning?s Karshish uses the negativity of lineation to rethink the theological, in line with Adorno?s Negative Dialektik, as neither a transcendent Absolute nor a pantheistic immanence, but rather as the immanence of the negative through which immanence exceeds itself.

url: http://hdl.handle.net/1813/3364
date: 2006-07-27
creator: Sinnott, Steven
viewed: 2348
title: Results in Computational Algebra of Bayesian Networks
abstract: This dissertation studies the algebraic varieties arising from the conditional independence statements of Bayesian networks. Reduction techniques are described for relating these varieties to the varieties for smaller Bayesian networks. Particular attention is paid to the issues of primality, dimension, and degree. A classification of 5-node Bayesian networks is given based on whether or not they are prime for all state vectors. A proof of the Degree-2 Conjecture is given for a subclass of Bayesian networks which includes those with binomial global Markov ideal.

url: http://hdl.handle.net/1813/3365
date: 2006-07-27
creator: Greiner, Amelia
viewed: 2073
title: Agriculture and Nanoscale Science and Engineering: A Case Study for Knowledge Translation and Risk Communication
abstract: Knowledge translation is a process and strategy that seeks to better connect knowledge producers

with knowledge users by involving the latter in the research process. This research explored the role knowledge translation could play in improving the communication between those who conduct nanoscale science and engineering (NSE) research and those agriculture stakeholders who may ultimately use some of the resulting applications. To accomplish this, I interviewed 20 scientists involved with NSE research from across Cornell to establish the varying understandings and applications of NSE, how scientists define risk in NSE, and what they think the public should know about NSE. I used the results from these interviews to generate a brochure on what NSE is and how it might relate to agriculture. To incorporate knowledge translation philosophy into the research, I then interviewed 17 agricultural stakeholders to discern their knowledge of and interest in NSE, identify their agricultural problems and understand their view of emerging technologies. Their input on the brochure content, layout and design was instrumental in appropriately contextualizing the brochure so it would be of use to the stakeholder audience. Finally, I used the combination of the interviews with the scientists and the stakeholders to understand the various perspectives on and perceptions of NSE and gain insight on how to communicate about an emerging technology. These results enabled me to identify challenges for future knowledge translation work and determine how (and if) scientists and stakeholders can more effectively share their knowledge.

url: http://hdl.handle.net/1813/3366
date: 2006-07-27
creator: Jones, Chris
viewed: 3166
title: BRANCHING RATIO MEASUREMENTS AND ISOSPIN ANALYSIS OF DECAYS OF THE D MESON TO TWO PIONS
abstract: Using 281 $\textrm{pb}^{-1}$ of data collected with the CLEO-c detector at the $\psi(3770)$ resonance, we measured branching fractions of the Cabibbo-suppressed decays $D^0 \to \pi^+ \pi^-$, $D^0 \to \pi^0 \pi^0$, and $D^+ \to \pi^+ \pi^0$. We used these branching fraction measurements to extract the ratio of isospin amplitudes $|A_2 / A_0| = 0.429\pm0.018\pm0.017$ and the relative phase $\delta = (85.5 \ pm 3.5 \pm 4.1)^{\circ}$ between these amplitudes, where the uncertainties are statistical and systematic, respectively. Our findings are consistent with, and lend support to the recently published official CLEO-c results.

url: http://hdl.handle.net/1813/3367
date: 2006-07-28
creator: Fogle, Homer William Jr
viewed: 1187
title: DX of DKE Special Study #10: Poems and Songs
abstract: 27 p; ill.; footnotes; bibliography; 28 cm. Electronic reproduction. Original, 27 July 2006.Three historically significant poems and a selection of popular Delta Kappa Epsilon song lyrics are presented.

url: http://hdl.handle.net/1813/3369
date: 2006-07-28
creator: Niehmeyer, Gregory
viewed: 2603
title: 2004 Rockefeller New Media Foundation Proposal
abstract: Since 2002,1 collaborate with composer Chris Chafe, computer graphic (CG) artists Lorenzo Wang and Christine Liu, and with game theorist Jane McGonigal to create a simulation of human organs which unfolds in three media: print, recombinant cinema, and online gaming. The print version and recombinant cinema version premiere Oct 30, 2003 at the Berkeley Art Museum. I am seeking the support of the Program for Media Artists to complete the online Organum game. Organum plays in an online multi-player simulation

of a surreal ecosystem inhabited by a cast of organs, including a brain, a lung, and a stomach, and a set of AI (artificial intelligence) cyborgs. The game involves up to 32 people playing together in one session of Organum. The goal of the game is for players to stay alive in the fragile ecosystem as long as possible by ensuring the well-being of both themselves and their ecosystem. If successful, the community of players advances to a higher level of cultural achievement. Unsuccessful players drop out and have to join another game session.

url: http://hdl.handle.net/1813/3370
date: 2006-07-28
creator: Chafe, Chris;Wang, Lorenzo;Liu, Christine;Niehmeyer, Gregory
viewed: 1045
title: Organum Narrative
abstract: The following text is a linear narrative taking place in the Organum environment featuring many of the Organum game characters. It a companion piece to the recombinant video and the game, and will be exhibited alongside the large still prints and the LAN rig (computers networked for a LAN party).

url: http://hdl.handle.net/1813/3371
date: 2006-07-28
creator: Papoyan, Ashot
viewed: 2574
title: PHYSIOLOGICAL AND MOLECULAR MECHANISMS OF HEAVY METAL TOLERANCE AND TRANSPORT IN THE HYPERACCUMULATOR PLANT SPECIES, THLASPI CAERULESCENS
abstract: Heavy metal pollution of the environment is significant problem throughout the world. One possible avenue for heavy metal decontamination of the environment is phytoremediation, which is a technology based on the remarkable abilities of certain plant species to tolerate and accumulate extremely high concentrations of heavy metals. One of the best known heavy metal hyperaccumulator plant species is Thlaspi caerulescens, which is a Zn/Cd-hyperaccumulator that can accumulate and tolerate up to 30,000 ppm Zn and 10,000 ppm Cd in the shoots without exhibiting toxicity symptoms. The research described in this dissertation focuses on identifying gene(s) that may be responsible for the extreme heavy metal accumulation phenotype in Thlaspi caerulescens.
In the research conducted here, it was demonstrated that xylem metal loading may play a key role in heavy metal hyperaccumulation. In initial studies, the influence of altered plant metal status on metal (Zn, Cd) accumulation in Thlaspi caerulescens showed that increased metal status stimulated subsequent heavy metal (Cd) accumulation in the shoots but not roots, suggesting that growth on high metal levels stimulates metal loading into the xylem. Subsequently, a heavy metal transporting P1B-type ATPase, TcHMA4, was cloned from Thlaspi caerulescens and shown to mediate cellular heavy metal efflux and tolerance when expressed in yeast. TcHMA4 is expressed primarily in the root vascular tissue and its expression is strongly upregulated upon exposure to high concentrations of heavy metals. These findings indicate that TcHMA4 may be responsible for metal xylem loading, and thus play a key role in the enhanced root to shoot metal translocation that is so important to hyperaccumulation. Furthermore, peptides derived from the C terminus of the TcHMA4 protein that harbor several heavy metal binding domains were shown to confer a significant increase in metal accumulation and tolerance when expressed in transgenic yeast (Saccharomyces cerevisiae) and plants (Arabidopsis thaliana). These findings indicate that the C terminus peptides have the capacity to serve as heavy metal binding ligands, and may be useful for enhancing the phytoremediation potential of plants via biotechnology.

url: http://hdl.handle.net/1813/3372
date: 2006-07-28
creator: Chafe, Chris;Wang, Lorenzo;Liu, Christine;Niehmeyer, Gregory

viewed: 2301
title: Organum Film Invitation
abstract: Invitation to screening of film “Organum.”

url: http://hdl.handle.net/1813/3374
date: 2006-07-28
creator: Rinehart, Richard
viewed: 2051
title: 2004 Rockefeller New Media Foundation Proposal
abstract: ClassHopper integrates technique with subject by applying strategies of information science, specifically strategies epitomized by social software such as weblogs, to examine socio-economic class. ClassHopper explores the idea of class as an emergent taxonomy, a self-organizing system, by taking participants on a journey of cultural choices and values where their own class identity and class mobility are measured against fixed markers and against the relativistic movement and perception of other participants as measured in real-time.

url: http://hdl.handle.net/1813/3375
date: 2006-07-28
creator: Mathew, Nicholas Louis
viewed: 2264
title: Beethoven’s Political Music and the Idea of the Heroic Style
abstract: Beethoven?s works of state propaganda date from the years leading up to and during the Congress of Vienna in 1814?1815?although he composed this kind of music throughout his career. Over the last hundred and fifty years, critics have marginalized these political compositions to the extent that the politics pervading Beethoven?s oeuvre are barely audible. This study reemphasizes the political dimension of Beethoven?s music by articulating the aesthetic, stylistic, and ideological continuities between his canonical works and his maligned political compositions.
Chapter One explores the critical construction of Beethoven?s musical voice, which has come to be practically synonymous with what Romain Rolland dubbed the ?heroic style??the exhortative manner associated particularly with the odd-numbered symphonies from the Eroica onwards. It reveals the radically subtractive critical methods, encouraged in part by Beethoven himself, that sustain the perception of an ?authentically Beethovenian? sound, and shows how Beethoven?s political compositions suggest a more complex vision of the composer?s voice as fundamentally collaborative and plural.
Chapter Two examines the aesthetic assumption, supposedly instantiated by Beethoven?s heroic music and its immediate reception, that ?works? transcend their own time while mere ?occasional works? remain shackled to it. The aesthetic of heroic works such as the Eroica emerges as fundamentally ambivalent, constituted by a gesture in which political and historically localized meanings are ascribed to the music and withdrawn?much as Beethoven withdrew the initial dedication to Napoleon; meanwhile, works such as Wellingtons Sieg are shown to borrow the idealizing and transcendent rhetoric of contemporary aesthetics even as they articulate more overt connections to political figures and historical events.
Chapter Three shows how analysts consider Beethoven’s overtly political music to be organized by external political programs rather than internal musical processes. For many critics, Beethoven’s political works are mere collections of contingent and disjunctive moments?works that are almost formless without an explanatory political program. Nevertheless, analysts have often explained away precisely such moments in Beethoven?s canonical works?disjunctive moments particularly susceptible to poetic interpretation and political appropriation. Formalist critical approaches thus conceal the routes through which politics enter Beethoven?s heroic masterworks.

url: http://hdl.handle.net/1813/3376
date: 2006-07-28
creator: Henry, Megan
viewed: 2225
title: Understanding the Importance of Meal Delivery for the Well-Being of Frail Elders
abstract: Qualitative methods were used to explore the role of Meals on Wheels (MOW) in the lives of frail elders. This study explored the interface between the way MOW operates and clients' need to discover the ways that a meal intervention program integrates with existing lives, beliefs, and cultural values. A random sample of 20 MOW clients (3 receiving frozen meals) was interviewed in the Bronx, New York to obtain data on social contact, lifestyle, meal satisfaction, and eating patterns. General living conditions in clients? homes were observed. Transcribed text was analyzed and coded using Atlas.ti.

Most respondents expressed a desire to eat the meal hot upon arrival although it was delivered any time from 9:00 am-3:00 pm. Satisfaction with taste and perceived healthfulness of meals varied, but respondents were appreciative of the program and viewed the meals as important for their daily diet. One-quarter of the sample reported calling to ask for healthier meals or nutritional information for meals provided by MOW. When these requests were unsuccessful, respondents turned to a variety of remedies including boiling meals, rinsing off salt, removing high-fat sauces, giving meals to friends and neighbors, and throwing meals away.

Respondents usually did not know their driver?s name and exchanged few words when food was delivered, but this was often the only social contact respondents had during the weekdays. This frequent contact may play an important role in surveillance of elders? health and safety, and may also build personal relationships over time.

By accepting help from an organization such as MOW, which has a certain amount of institutional inflexibility, respondents both gained independence and experienced certain constraints on their schedules, social contacts, and ability to make culturally appropriate and personally preferred food choices. Given the importance of MOW for ensuring the food security and well-being of frail elderly, it is important to resolve some of the tensions created by MOW related to health and cultural issues.

There is no single meal plan that is appropriate for the entire diverse group of inner city elders participating in MOW. Respondents expressed a desire for healthier meals and meals specific to common health problems, as well as culturally appropriate meals, specifically for the growing population of Latino elders. In addition, alternative meal plans such as those that incorporate cooking education, grocery delivery, or frozen meals may be appropriate for certain groups of elders based on each client?s capability. In this study, capability was captured in two important dimensions: 1) Food Preparation and 2) Food Acquisition. Examining this type of capability provides valuable insight into the food management strategies of elders and may also be a promising new way to ascertain what type of meal plan is appropriate for each client.

url: http://hdl.handle.net/1813/3377
date: 2006-07-28
creator: Slivkins, Aleksandrs Lev
viewed: 1607
title: Embedding, Distance Estimation and Object Location in Networks
abstract: Concurrent with numerous theoretical results on metric embeddings, a growing body of research in the networking community has studied the distance matrix defined by node-to-node latencies in the Internet, resulting in a number of recent approaches that approximately embed this distance matrix into low-dimensional Euclidean space. A fundamental distinction between the theoretical approaches to embeddings and this recent Internet-related work is that the latter operates under the additional constraint that it is only feasible to measure a linear number of node pairs, and typically in a highly structured way. Indeed, the most common framework here is a "beacon-based" approach: one randomly chooses a small number of nodes ('beacons') in the network, and each node measures its distance to these beacons only. Moreover,

beacon-based algorithms are also designed for the more basic problem of "triangulation", in which one uses the triangle inequality to infer the distances that have not been measured.
We give algorithms with provable performance guarantees for triangulation and embedding. We show that in addition to multiplicative error in the distances, performance guarantees for beacon-based algorithms typically must include a notion of "slack" -- a certain fraction of all distances may be arbitrarily distorted.
For arbitrary metrics, we give a beacon-based embedding algorithm that achieves constant distortion on a (1-epsilon)-fraction of distances; this provides some theoretical justification for the success of the recent networking algorithms, and forms an interesting contrast with lower bounds showing that it is not possible to embed all distances with constant distortion. For doubling metrics (which have been proposed as a reasonable abstraction of Internet latencies), we show that triangulation with a constant number of beacons can achieve multiplicative error (1+delta) on a (1-epsilon)-fraction of distances, for arbitrarily small constants epsilon, delta.
We extend these results in a number of directions: embeddings with slack that work for all epsilon at once; distributed algorithms for triangulation and embedding with low overhead on all participating nodes; distributed triangulation with guarantees for all node pairs; node-labeling problems for graphs and metrics; systems project on location-aware node selection in a large-scale distributed network.

url: http://hdl.handle.net/1813/3378
date: 2006-07-28
creator: Mayton, Hilary S.
viewed: 1140
title: THE SOIL/PLANT/PATHOGEN ASPECTS OF POTATO LATE BLIGHT
abstract: PhD DissertationOospores of Phytophthora infestans produced in vitro and in planta, were exposed to a variety of environments and their survival was assessed. Viability of oospores as measured by plasmolysis declined slightly over a period of 18 months whether they were stored in water at 4?C, in soil at 18?C, or in soil under natural field conditions. In comparison, viability as measured by germination was lower overall, but appeared to increase after storage in soil. Oospores produced in planta buried in the field were capable of infecting both tomato and potato leaflets when recovered after eighteen months, including two winters. Soil samples collected from the central highlands of Mexico (center of diversity for Phytophthora infestans) were evaluated for suppressive activity to P. infestans. A New York soil was used for comparative analysis. Even though both mating types are known to cohabit these regions of Mexico no evidence of oospores was found in the soil samples. No significant differences were observed between the Mexican and New York soils in terms of their influence on survival and infectivity of P. infestans. Bacterial diversity in the different soil types was investigated using terminal restriction fragment length polymorphism analysis (T-RFLPs). Foliar and tuber resistance to Phytophthora infestans were evaluated in a mapping population (n = 94) developed between two Solanum tuberosum breeding lines, NY121 x NY115. Foliar disease severity of the progeny clones was measured by the area under the disease progress curve (AUDPC) in field tests in 2004 and 2005. Correlation analysis of AUDPC values with amplified fragment length polymorphism (AFLP) molecular markers revealed that 56 %, 53 %, and 52 % of the quantitative phenotypic variance for resistance were associated with markers PCTMATC 184, PATMATA 171, and PATMACT 236, respectively, located on a chromosome V homolog derived from NY121 ($p < 0.00001$). The genetic component of tuber blight variance was much smaller than the foliar blight component, but still these three markers were correlated ($p < 0.01$? 0.10) with tuber blight resistance and explained 3-8 % of the variance.

url: http://hdl.handle.net/1813/3379
date: 2006-07-28
creator: Reichenbach, Robert
viewed: 2073

title: RADIO FREQUENCY SIGNAL PROCESSING WITH MICROELECTROMECHANICAL RESONATING SYSTEMS
abstract: This thesis presents a study of the dynamics and applications of a high frequency micromechanical (MEMS) resonator. Mechanical systems, which have been scaled in dimension to the micron scale, show promise for replacing electrical resonant systems, which have larger physical size and lower performance. MEMS resonators can also be integrated into a chip containing conventional field effect transistors. A process incorporating both frequency dependent resonant systems as well as analog and digital electronics will enable all hardware in a communication architecture to be placed on a single silicon chip. In this study, a micron-sized circular membrane, suspended in the middle and clamped on the periphery, forms the basis of the resonant mechanical system. A small degree of curvature is fabricated into the resonator, which serves to stiffen the device and hence increase the frequency range. A microheater, defined in proximity to the resonator, is used to induce motion in the membrane. The frequency dependent response of the membrane is then detected through either interferometric or piezoresistive techniques.
Resistive actuation and detection allow the membrane and actuators to be fabricated into a single plane of silicon, facilitating integration of the complete MEMS system. It is demonstrated how both the resonators and transducers can be implemented into two CMOS processes. Both designs incorporate the mechanical system as well as the solid-state electronics for output signal detection into a single fabrication process.
Finally, the dynamics of the MEMS resonator, both in the linear and non-linear regime, are explored. The micron-sized mechanical system is demonstrated to perform several types of signal processing that are critical for wireless communication architectures. These studies shed new light on how the nonlinear dynamics of these systems may be characterized and harnessed for new applications.

url: http://hdl.handle.net/1813/3380
date: 2006-07-28
creator: Poitras, Carl Bernard
viewed: 2292
title: Light Emitting Materials and Control of their Emission Properties for Applications in Integrated Optics
abstract: The field of nanophotonics has had numerous great achievements in the past few years. The scaling down of optical devices has created a need for active, light emitting materials whose properties need to be controlled for usage at such small scales. This dissertation presents results on the control of the emission of different light emitting materials. Chapter one presents a brief discussion of active materials for on-chip applications, what they are and their uses.
Chapter two deals with the enhancement of CdSe quantum dots embedded in a microcavity. After a brief overview of the density of photon modes and how enhancement can be achieved, the experimental details and results are presented, showing enhancement of the photoluminescence of the quantum dots by a factor of 2.7.
The third chapter discusses experiments with CdSe dots and resonant energy transfer. This effect involves a donor and an acceptor in close proximity, with the former "giving" its energy to the latter. The emission of the acceptor is further enhanced by making use of a microcavity, with a total enhancement by a factor of 13.
Experimental results on rare earth doped GaN in the form of a powder are presented in chapter four. This type of material presents highly luminescent properties, and offers the flexibility of being used in a hybrid manner (on silicon for example). Cathodoluminescence, photoluminescence and lifetime properties of various concentrations of RE dopants are discussed and presented, as well as a visible waveguide application of Eu doped GaN powder. Two temperature-sensitive changes in the lifetime behavior of Eu doped GaN occur at 104 and 195 K. The lifetime dynamics are studied in greater detail using a model with corresponding rate equations.
The last chapter shows applications of another class of a light emitting material: silica clad organic dyes.

These particles have a promising future in applications such as labeling and sensing.
Even though the materials studied here emit light in the visible portion of the spectrum, all of the experiments herein contained can be realized with their infrared counterparts.

url: http://hdl.handle.net/1813/3381
date: 2006-07-28
creator: Ogborn, Kathleen
viewed: 1693
title: Effects of Method of Delivery of Glycerol on Performance and Metabolism of Dairy Cows During the Transition Period
abstract: Thomas Overton; Michael Van Amburgh; Ynte Schukken Holstein cows (n=48) entering second or greater lactation were utilized to determine the effects of method of delivery of glycerol on performance and metabolism of dairy cows during the transition period. Beginning 21 d before expected parturition, cows were fed either a control diet or a diet containing glycerol (5% of DM). After parturition, cows were assigned to one of four treatments in a 2 (dietary glycerol; 3.3% of DM) X 2 (glycerol drench; 500 ml/d for 5 d beginning at parturition) factorial arrangement. From d 22 through 63 of lactation, cows were fed the same diet. Feeding glycerol during the prepartum period increased prepartum DMI, but feeding glycerol during the postpartum period tended to decrease postpartum DMI and drenching glycerol for the first 5 d of lactation decreased postpartum DMI. Milk yield was not affected by feeding glycerol during either the prepartum or postpartum periods or drenching glycerol during the first 5 d of lactation. Percentages and yields of milk fat and true protein were not affected by feeding glycerol during either the prepartum or postpartum periods; however, drenching glycerol tended to decrease milk protein content and decreased milk lactose content. Glycerol fed during the prepartum period resulted in no significant effects on plasma glucose, NEFA or BHBA concentrations during the prepartum period with no carry over effects on postpartum metabolites. Prepartum incorporation of glycerol in the diet resulted in no significant effects in liver triglycerides or glycogen content in liver samples collected d 1 after calving compared with control cows with no carry over effects on postpartum liver triglycerides or glycogen content. Postpartum incorporation of glycerol in the diet resulted in no significant effects on postpartum liver composition. Short term (5-d) oral drenching of glycerol beginning at calving resulted in no significant effects on liver composition (d 10 and 21 postpartum) or on plasma glucose and NEFA. However, there was a trend for an increase in BHBA concentrations for cows drenched with glycerol. Intensive blood sampling performed on d 5 post calving demonstrated that a 500 ml oral bolus of crude glycerine significantly decreased plasma NEFA concentration with no overall significant effects on plasma glucose, BHBA, or insulin. Overall, incorporation of glycerol in to the diets of transition cows or the short-term oral drench of glycerol at calving resulted in few positive performance responses and only modest effects on metabolic variables studied.West Central Soy

url: http://hdl.handle.net/1813/3382
date: 2006-07-28
creator: Bailey, Kathleen
viewed: 3596
title: EFFECTS OF GROUND-WATER FLOW ON SOIL CHEMISTRY, NUTRIENT AVAILABILITY AND PLANT SPECIES DISTRIBUTIONS IN FOUR NEW YORK STATE FENS
abstract: Occurrence of distinctive plant communities, rich fens, in specific hydrogeologic settings with high fluxes of calcium-rich ground water has been observed but not fully explained. In fens, ground-water discharge patterns induce spatial gradients in water chemistry that may determine vegetation patterns through effects on nutrient availability. However, linkages among these components are poorly characterized. I hypothesized that transformations in carbonate (CO32?) chemistry along ground-water flowpaths (GWFs) would enhance carbonate precipitation, primarily due to redox reactions and carbon dioxide degassing. I

also expected phosphorus (P) co-precipitation would lead to P-limitation of plant growth and differences in species composition along the GWF.
I compared vegetation and hydrochemical gradients among four fens during 2002 with nested piezometers set parallel to GWFs. I found that local ground water influenced soil and water chemistry of the wetland edge, whereas GWF from larger-scaled systems influenced interior areas. Topography of the underlying mineral substrate and hydraulic conductivity of the peat controlled spatial distribution of ground-water effects on chemistry of the plant rooting zone. Spatial distribution of redox-sensitive ions (e.g., nitrate, iron, sulfate) and alkalinity conformed to GWFs. Equilibrium conditions prevailed with respect to calcium minerals except where ground-water inputs of sulfate induced SO42- -reduction and net dissolution predominated. Iron minerals, including siderite and iron-sulfides, also strongly influenced pore-water chemistry.
Sulfur content and bicarbonate-dithionite extractable P increased in areas with elevated alkalinity and evidence of SO42- reduction, suggesting that iron-sulfur reactions rather than CO32? chemistry regulate P dynamics. HCl-extractable P decreased in these areas, showing that P-co-precipitation with CO32?-minerals does not substantially affect P availability. Further, CO32?- minerals comprised less than 2% of the soil, except in marl fen (25%).
Non-parametric analyses of environmental and species data showed that position along GWFs significantly affected soil characteristics and plant communities. Spearman?s rank correlations revealed that multiple environmental variables, all associated with changes in pore water chemistry along the GWF, were highly correlated with plant species composition, indicating that GWF strongly influences plant species distribution. Autocorrelation among the predictor variables suggested that GWFs control distribution of plant communities through short-term effects on pore-water chemistry and long-term effects on soil chemistry.The Nature Conservancy, Garden Club of America, Sussman Foundation, Andrew W. Mellon Foundation, National Science Foundation IGERT through the Biogeochemistry and Biocomplexity Program

url: http://hdl.handle.net/1813/3383
date: 2006-07-28
creator: St. Hilaire, Danielle Aline

title: Satan's Poetry: Fallen Art from Homer to Spenser in Paradise Lost
abstract: Special Committee Members: Winthrop Wetherbee III, Walter Cohen, William J. Kennedy, Kenneth GrossThis dissertation reconsiders Satan in Paradise Lost outside of the well-worn hero vs. fool debates by linking Satan's meaningfulness in the narrative directly to the conditions of meaning that underlie the poem. Because Satan is for Milton both the embodiment of fallenness and its cause, his journey through the poem demonstrates how the world in which Paradise Lost constructs itself comes to be. For this reason, "Satan's Poetry" argues that Satan's development in the poem underlies the poem's own development, providing us with a way to understand how the poem situates itself as a part of the fallen world and what it means for it to be thus fallen. The first chapter demonstrates that the language of poetry is the language of Satan, or fallen language more generally, and that this language is negatively constructed, a language of "enigmas" in the Adornian sense. By making this connection between Satan and Milton's poetics, this dissertation then goes on in the second and third chapters to rethink Paradise Lost's relation to its poetic tradition, arguing that this negative language produces negative relationships between individuals (human or poetic) in the fallen world. These relationships demand that we read allusion as the use of old words and images to mean something new, demonstrating Paradise Lost's distance from its predecessors rather than its proximity; reading in this way, as the second chapter demonstrates, allows us to read Milton's poem against multiple texts at once, rather than confining our readings to the linear model of influence relations. The third chapter argues that these differential relationships force us to rethink Milton's tradition not as a coherent whole or "canon" whose authority restricts subsequent literary endeavors, but as a constellation of specific relationships between individual texts that demands creation instead of repressing it. This turn to the creative individual

that is the result of the fall is, the final chapter argues, the crucial problem with which Paradise Lost grapples, and "Satan's Poetry" ends by demonstrating that the very negativity that is the symptom of fallenness also bears with it the promise of redemption.

url: http://hdl.handle.net/1813/3384
date: 2006-07-28
creator: McHugh, Oloro
viewed: 2176
title: INTEGRATED WATER RESOURCES ASSESSMENT AND MANAGEMENT IN A DROUGHT-PRONE WATERSHED IN THE ETHIOPIAN HIGHLANDS
abstract: Tammo S. Steenhuis,
Erick C.M. Fernandes,
Parfait M. Eloundou-EnyegueFood production shortfalls and accelerated land degradation are common in the semi-arid Ethiopian highlands. Both issues can be addressed to a significant extent by better water management. This dissertation presents four studies in eastern Amhara that examined effectiveness of a range of water management practices.

An on-farm study tested effectiveness of subsoiling, open and tied ridges, no till, and conventional maresha tillage to mitigate impact of dry spells on crops and to protect the soil. Tillage performance varied with seasonal rainfall distribution and intensity and land gradient. Ridges significantly increased soil moisture and grain yield and reduced soil loss. Subsoiling moderately increased grain yield and root growth, but led to higher soil loss than conventional tillage. No till minimized soil loss, but reduced yield during one season.

A second study measured plot and catchment hydrologic responses with and without conservation measures. Results show that severe erosion in the watershed occurred during few erratic storms rather than steadily across all seasons. Gently-sloped cropland generated over twice the seasonal runoff and sediment yield compared with steep rangeland. Plot runoff consistently exceeded catchment discharge demonstrating a scale effect. Catchment rehabilitation resulted in reduced peak discharge and longer duration streamflow compared to a catchment without these measures.

A third study examined hydrological and land cover changes in a wetland through remote sensing, hydrological measurements, rainfall records, and a residents? survey. All evidence indicated limited flooding and dense woody vegetation cover in the wetland 40 years ago and a trend towards current conditions of no living trees/bushes, extensive flooding, and heavy sedimentation. Results suggest changes are a consequence of increasing runoff from the catchment and higher population pressure that decreased potential of rainwater to infiltrate.

A fourth study surveyed households to assess what water resources they accessed and their water concerns. Each household relied on over 3 different water sources to assure daily supplies of 5-12 liters per person. Females assured most domestic water while male participation increased for livestock water and sources farther from home. Concerns included unhealthy water quality, unreliable year-round supply, and long up to 5 hours daily walking distances.The United States Environmental Protection Agency STAR Fellowship, Ford Foundation, Richard Bradfield Research Award, Mario Einaudi Center for International Studies Research Travel Grant, USAID-funded Amhara Micro-enterprise Agricultural Research and Extension and Watershed management (AMAREW) Project, Cornell International Institute for Food Agriculture and Development (CIIFAD)

url: http://hdl.handle.net/1813/3385
date: 2006-07-28
creator: D'Alberto, Tiffanie
viewed: 1069
title: MEASUREMENT SYSTEM FOR ULTRA-FAST PHENOMENA CONTAINED IN SLOW RELAXATION

PROCESSES
abstract: Ultra-fast transitions buried within long recovery times are difficult to measure and study directly. As an example, consider the spectroscopic measurement of a non-radiative upper level transition of a laser material possessing a long fluorescence time. The slow time constant of the overall relaxation process requires a pump with a low repetition rate. The speed of the transition in question requires an ultra-fast probe. It is difficult to obtain synchronous multi-wavelength pulses that satisfy both femtosecond duration and kilohertz repetition rates. We circumvent these issues by cavity dumping a femtosecond optical parametric oscillator. The signal is accessed at the appropriate rate to act as the pump, and the use of quasi-phase-matching provides synchronous sub-100 fs probe pulses at various wavelengths. We study the transient behavior of the singly-resonant optical parametric oscillator and develop a model to predict recovery profiles after loss events. Finally, we explore the feasibility of applying the new technique to Cr4+:YAG crystals to query the never before measured time constant of the 3E to 3B2 transition.

url: http://hdl.handle.net/1813/3386
date: 2006-07-28
creator: Sandler, Mark Moiseevich
viewed: 1167
title: Algorithms for Mixture Models
abstract: Mixture models form one of the most fundamental classes of generative models for clustered data. Specific application examples include text classification problems, image segmentation and motion detection, collaborative filtering and many others. However, quite surprisingly, very little had been known about algorithms which have provable performance guarantees within the framework of mixture models. This is the topic we study in this work.
Our contribution is twofold. First, for the canonical problem of separating mixtures of continuous distributions in the high-dimensional Euclidean space, we provide the first algorithm that can learn distributions with heavy tails, including those with infinite variance and expectation. We formulate necessary conditions and provide an algorithm which guarantees that the underlying mixture model can be learned by observing only polynomially many samples. We also show that for many classes of distributions, our separation conditions are necessary for {\em any} algorithm which guarantees accurate reconstruction.
Second for the case of \emph{discrete mixture models} we give an efficient polynomial time algorithm with provable performance guarantees. Recasting of our algorithm for the text classification problem immediately results in a very fast unsupervised learning method, with an excellent classification accuracy.

url: http://hdl.handle.net/1813/3387
date: 2006-07-28
creator: Gonzales, Amy
viewed: 1170
title: Master's Thesis
abstract: Master's ThesisThis study attempted to test the impact of audience and medium on selfconcept change as a result of self-presentation. A 2 (public/private) X 2 (introversion/ extroversion assigned trait) X 2 (FTF/CMC) experiment was used to test the relationship between self-presentation and self-concept change in different contexts. The prediction of an enhanced effect of self-presentation on self-concept change in text based mediums as a result of selective self-presentation was not supported. Predictions regarding the impact of online audiences on self-concept change were also not supported. Instead, an unexpected finding, in which extrovert-assigned subjects internalized introversion in private text based conditions, was observed. This finding is discussed in terms of Schlenker?s four-factor theory of self-identification.

url: http://hdl.handle.net/1813/3388

date: 2006-07-28
creator: Buddenborg, Jennifer
viewed: 1629
title: Changing Mindsets: Sustainable Design in Historic Preservation
abstract: At a time of rapid resource depletion and world population growth historic preservation rests at a pivotal point in the advancement of sustainable development and design. Historic preservation is inherently sustainable. Unfortunately, current green building practices focus more on the ever-growing technological innovations that can be applied to new construction. A lack of education and collaboration amongst historic preservation and sustainable design practitioners, scholarly research and publications that join the two fields, and building research, pose additional roadblocks in greening historic preservation in the United States.
The question is whether or not historic preservation and green building practice can effectively work together. They can and they do. The key to integration is the changing of mindsets. Educating industry stakeholders as to how and why this linkage can be made is a vital component to effectively taking green building and historic preservation to higher elevations of outreach and implementation. This paper investigates this statement in two ways, by [1] providing a theoretical and evolutionary framework of sustainable design and the inherent role that historic preservation plays within it, and [2] comparing the two sets of standards that guide the two practices: in historic preservation it is The Secretary of the Interior?s Standards for Rehabilitation and in green building it is the widely used Leadership in Energy and Environmental Design (LEED?) rating system.
The methodologies used to substantiate these points are varied. They include a literature review of sustainable development publications, a brief survey of the ?green? education of State Historic Preservation Officers (SHPO), an analysis of the LEED New Construction (NC) and Existing Building (EB) rating systems and their considerations of historic preservation, and a case study analysis of the green rehabilitation/renovation of the Jean Vollum Natural Capital Center in Portland, Oregon. Combined, this analysis proves that historic preservation is inherently sustainable in the most basic sense, and as a result lends itself to green building rating systems.
However, it also proves that there are many kinks to be worked out on both sides before a full integration is a reality. The rules and regulations surrounding The Secretary of the Interior?s Standards for Rehabilitation and LEED can be cumbersome, and this paper is a reminder that while both systems are worthy tools in the stewardship of natural and cultural resources, they are not hard and fast rules. They are basic guidelines, and the fusion of the two holds the potential to more closely align the fields of historic preservation and environmental conservation, and to allow the field of historic preservation to assert itself as a viable and integral means to promoting sustainability.

url: http://hdl.handle.net/1813/3389
date: 2006-07-29
creator: Fogle, Homer William Jr.
viewed: 2978
title: Collected Reports of the Alumni Historian: Delta Chi Chapter Of Delta Kappa Epsilon, 1987 to 1996
abstract: 35 p; 28 cm. Electronic reproduction. Original, 19 May 1996. DKE Depository Item #DKE5-058. Annual reports of the Alumni Historian for the years 1987 to 1996, inclusive, excepting 1992, are presented. Reports describe efforts to collect historical materials, to augment the DKE Depository collection of the Cornell University Libraries, to restore Deke House artifacts, to obtain historical registrations for the chapter?s lodge and grounds, and to publish historical studies.

url: http://hdl.handle.net/1813/3390
date: 2006-07-30
creator: Fogle, Homer William Jr
viewed: 1601

title: Report of the Alumni Historian, 2006
abstract: 8 p; ill.; 28 cm. Electronic reproduction. Original, 10 June 2006.The Alumni Historian recounts activities for FY2006: (1) conversion of the Association's historical materials to electronically accessible format, (2) the finding of Brother Clifton Beckwith Brown's burial site in Ohio, (3) the status of new studies on Brothers John DeWitt Warner '72 and Webb Cook Hayes '76, (4) progress on a study of DKE chapter mottoes, and (5) a projection of work for the coming year.

url: http://hdl.handle.net/1813/3391
date: 2006-07-31
creator: Barazangi, Nimat Hafez
viewed: 2108
title: Participatory Feminsim (PARFem)
abstract: This web site is intended to be interactive. We invite participants to contribute their work at the appropriate category. See also: www.eself-learning-arabic.cornell.edu, www.einaudi.cornell.edu/parfem.Given that Participatory Action Research (PAR) and Feminisms (Fem) share "process" as one of the fundamental principles in their philosophy and practice, we can only set the preliminary goal and objectives of the PARticipatory FEMinism Web Site (PARFem). This web site allows access to the following documents:
1.A Reader, "Selected Writings on Feminisms and Action Research," Prepared by Monica Ruiz-Casares and Nimat Hafez Barazangi
2.A Case Study, "Muslim Women in North America" (Audio) wherein Nimat Hafez Barazangi, based on her collaborative research, discusses the challenges facing American Muslim women in search of identity.
3.An electronic Bibliographic list, "Selected Writings on Feminisms and Action Research," compiled by Monica Ruiz-Casares (You may add/update any existing reference).
4.A video tape,"Feminisms and the Academy - Going Out of Business," by Patricia Maguire.
5. Another Case Study, A video tape, "The Logic and Practice of the Participatory Action Research Paradigm," by Yoland Wadsworth.
6.A working paper, "Future of social sciences and humanities in corporate universities: Curricula, exclusions, inclusions, and voice," by Nimat Hafez Barazangi.
7.A link to the discussion of the conference theme, "Feminisms and the Academy - Going Out of Business," and to the bibliography theme.-American Indian Program, Jane Mt. Pleasant, Director-Cornell International Institute for Food, Agriculture and Development, Terry Tucker, Associate Director-Cornell Education Society, Christy Dodge, Director-Cornell Public Service Center, Leonardo J. Vargas-Mendez, Director-Education Department Speakers Committee, Dalva Hedlund, Department Chair-Feminism & Legal Theory Project, Martha Fineman, Director-Gender and Global Change Program, Rose Batt, Director-Graduate and Professional Student Assembly Financial Committee-ILR Extension Division, Ann Martin, Director-Institute for European Studies, Davydd Greenwood, Director-The Mario Einaudi Center for International Studies, Gil Levine, Acting Director-Rural Sociology Department, Philip David McMichael, Department Chair-Feminist, Gender, and Sexuality Studies, Sandra Bem, Director-Cornell Academic Technology (CIT)

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date: 2006-07-31
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Institute for Food, Agriculture and Development, Terry Tucker, Associate Director-Cornell Education Society, Christy Dodge, Director-Cornell Public Service Center, Leonardo J. Vargas-Mendez, Director-Education Department Speakers Committee, Dalva Hedlund, Department Chair-Feminism & Legal Theory Project, Martha Fineman, Director-Gender and Global Change Program, Rose Batt, Director-Graduate and Professional Student Assembly Financial Committee-ILR Extension Division, Ann Martin, Director-Institute for European Studies, Davydd Greenwood, Director-The Mario Einaudi Center for International Studies, Gil Levine, Acting Director-Rural Sociology Department, Philip David McMichael, Department Chair-Feminist, Gender, and Sexuality Studies, Sandra Bem, Director-Cornell Academic Technology (CIT)

url: http://hdl.handle.net/1813/3392
date: 2006-07-31
creator: Sakai, Yuichi
viewed: 2924
title: GIS Model paper
abstract: noneAbstract Identifying sites for economic development is the first requirement for any such project. Once the developer identifies a sight, then it is often a tedious and frustrating process to receive approval from the controlling municipal authority to develop the site, often complicated by the role of the local community impacting the decision process. The socio-economic factors may be the controlling factors on whether or not economic development can take place in a community. In this study, a Geographic Information System (GIS) model is developed that includes socio-economic constraints in addition to the normally used physical constraint factors in determining the potential for a specific site for development. The proposed model uses mathematical weighting factors to reflect community opinions for a selected set of socio-economic factors. The socio-economic factors are translated into mathematical values by using three dimensions: weight (or the level of importance), acceptability, and a distance factor. Once the physical constraints have identified accepted sites, then the socio-economic values are then overlaid on top of the physical constraint suitability map that then further restricts sites to those that are acceptable to the community based upon their own criteria that was used to develop the socio-constraint portion of the GIS model. The weighting and acceptability factors are developed from community input. These factors then combined with the distance factor, which is a quantitative fact result in site restrictions.
The model was applied to a community in Southampton, New York to demonstrate its utility in addressing community concerns over a potential development project. This community was debating whether or not to allow additional near shore aquaculture activity. The conventional GIS model, which determines the potential sites solely based upon using physical conditions, e.g., oxygen, salinity, temperature, water depth-- identified 4,338 ha of appropriate submerged land, but was reduced to 162 ha once the socio-economic factors were applied in the model. Another socio-economic data set was applied to the model to see the sensitivity of the factors that were being applied. The weights of the smell, hearing, and taste/ touch combined were raised (smell by 5, hearing by 1, and touch/taste by 3) while keeping other parameters the consistent with the first data set. The model then yielded 4,312 ha of submerged land with a negative suitability index, and only 23 ha of submerged land with a positive suitability index.
This study is one of the first attempts to incorporate surrounding community non-physical parameter variables when determining whether or not to allow further economic development for the local community. This model can act as a bridge between developers and the local community when political leaders make decisions relative to allowing development to be allowed.Faculty Committee members: Mike Timmons mbt3@cornell.edu Joe Francis jdf2@cornell.edu

url: http://hdl.handle.net/1813/3393
date: 2006-07-31
creator: Saha, Rumki

viewed: 989
title: An Empirical Analysis of Gender and Education in Brazil: The Differential Effects of Mothers and Fathers on Sons and Daughters
abstract: Amongst younger cohorts in Brazil, there is an educational gender gap that favors women. As such, this dissertation empirically analyzes several aspects and dimensions of the educational gender gap in Brazil. The primary focus is the effect of mothers' versus fathers' educational attainment, with a secondary focus on expected earnings gains. Each chapter is described below.

Chapter 2, "The Determinants of the Changing Educational Gender Gap in Brazil," analyzes the inter-temporal change in the educational gender gap by household type, focusing on the contribution of maternal and paternal education. The results indicate that the combined change (both returns and levels) in the education of household heads, fathers in two-parent households and mothers in female-headed households, has benefited sons more so than daughters, thereby reducing the gender disparity. In sharp contrast, the combined change in maternal education in two-parent households benefited girls more so than boys, widening the divide between sons and daughters.

Chapter 3, "Gender Differences in Brazil's Post-Compulsory School Attendance," examines school enrollment decisions, with an emphasis on the effects of maternal and paternal education. The empirical estimates show that for girls in two-parent households, maternal education has a stronger (more positive) effect on the probability of attending school than paternal education at low levels of parental schooling. At high levels of parental schooling, however, paternal education has more of an effect for girls than maternal education.

The fourth chapter, "Expected Earnings Gains and Eventual Educational Attainment: Gender Differences in Brazil," examines the role of gender differences in expected earnings gains on eventual attainment for adults. The empirical results show that expected earnings gains has a significantly stronger (more positive) effect for women than for men. Finally, simulations of equalizing gains increases the gender gap, but equalizing the coefficients on gains decreases the gender gap.

Overall, this dissertation provides an empirical analysis on gender and education in Brazil. Despite the existence of a reverse gender gap for several decades, there is very little research on educational differences between males and females. As such, this dissertation presents new information that can offer some insights into the source of the gender gap, as well as how it may change over time.

url: http://hdl.handle.net/1813/3394
date: 2006-07-31
creator: Buckley, Joel
viewed: 1260
title: High-Energy Ultrafast Ytterbium Fiber Lasers
abstract: Within the past two decades, applications for sources of ultrafast pulses of optical radiation have expanded beyond the confines of research laboratories. Applications are too numerous to list in entirety but include uses in the fields of medicine, micromachining, high-bit-rate telecommunications, optical range-finding, and detection of trace chemicals to name a few. Currently, the market is dominated by femtosecond solid-state lasers due to their superior pulse energy and quality. However, many sources are being replaced with fiber-based lasers due to their inherent stability, compact design, and reduced cost.

This thesis summarizes research on femtosecond ytterbium-doped (Yb) fiber lasers operating in the near-infrared spectrum (~ 1-micron wavelength). There is strong interest for stable, femtosecond sources at this wavelength for biomedical imaging and noninvasive surgery. The overriding theme of this research is an attempt to better understand the limitations of short-pulse fiber lasers, with the goal of providing higher-energy, shorter-duration, and higher-quality optical pulses from fiber.

In the context of high energy, two approaches are reviewed. In the first approach, fiber nonlinearities are exploited through relatively new forms of pulse evolution which provide stable, high-power operation. In the second approach, excessive nonlinearity is avoided as much as possible, and high-energy pulse formation is

stabilized with an intra-cavity frequency filter. Experiments have successfully generated the highest pulse energy (3-times improvement), highest peak power (50% improvement), and highest average power from any fiber oscillator.

Also discussed is a new regime of modelocked operation in which highly-chirped pulses are relatively unchanged during propagation in the laser. While these pulses suffer some in quality, they can attain relatively high energy and can be de-chirped external to the laser, achieving durations of a few hundred femtoseconds.

A fiber laser is explored which is capable of generating ten-cycle pulses. By compensating for higher-order dispersion inside the oscillator, record pulse durations are generated with excellent pulse quality.

Finally, an experiment is discussed in which a fiber laser is modelocked with a semiconductor saturable absorber mirror (SESAM). Femtosecond durations are achieved. This laser represents a first step toward an environmentally stable source of high-energy, short pulses.

url: http://hdl.handle.net/1813/3395
date: 2006-07-31
creator: Ganguly, Udayan
viewed: 1789
title: INTEGRATION OF CARBON AND SILICON BASED NANOELECTRONICS
abstract: Nonvolatile memory technology has shown tremendous technological progress in the recent years. With the need for every higher memory density, the EEPROM structure has been subjected to aggressive scaling. Currently 65 nm devices are hitting production where the floating gate has been replaced by nitride traps for continued scaling. However the operational voltage has not scaled as aggressively. In this dissertation, various different structural variations of the EEPROM have been explored from experimental and theoretical perspectives. The electrostatics of nanocrystal memories with both metal and semiconductor nanocrystals have been analytically modeled to demonstrate enhanced field asymmetry in the path of least action in tunneling oxide. The larger polarization of the metal nanocrystal versus a semiconductor nanocrystal has been used to explain faster programming for metal nanocrystal memories compared to the semiconductor nanocrystal variety. The analytical model provides design intuition unlike numerical models for structural optimization. To provide a solution for the size-dependent variation of coulomb blockade self-assembled nanocrystals, molecules have been suggested as nano-floating gates in non-volatile memory. Carbon molecules like fullerenes (C60) have been integrated in the MOS gate stack. Charge injection into molecular orbital has been observed as repeatable steps in electron injection versus charging voltage data to demonstrate a successful molecular interface with CMOS. Finally, an ultra-narrow channel memory device fashioned out of self ?assembled carbon nanotube (CNT) channel with self aligned metal nanocrystals is proposed as an alternative to memory scaling. The device demonstrates large memory window and single-electron sensitivity. The single electron sensitivity at room temperature is confirmed by analysis of the transport in the CNT channel using non-equilibrium Green?s function (NEGF) formalism. The large number of charges stored in the nanocrystal at sub-5V gate bias for the 100 nm gate stack is demonstrated experimentally and explained from the electrostatic analysis of the CNT-nanocrystal memory. The ability to store large number of charges per nanocrystal and the ability of sense each of these charge charges indicates the possibility of a multi-level memory, a way of enhancing functional density while relaxing conventional memory scaling constraints.NSF, NIRT, CNF, CNS

url: http://hdl.handle.net/1813/3396
date: 2006-08-01
creator: Fogle, Homer William Jr
viewed: 3441
title: Chapter and Alumni Operations Handbook, 1988

abstract: 11 p; tables; 28 cm.
Electronic reproduction.
Original, 11 November 1988.Reference data concerning the Delta Kappa Epsilon Fraternity, the Delta Chi Chapter of Delta Kappa Epsilon at Cornell University, the Delta Chi Association and Cornell University are tabulated.

url: http://hdl.handle.net/1813/3397
date: 2006-08-01
creator: Gardner, Kathryn
viewed: 1832
title: Aspects of Foraging in Bees: Apple Pollination, Native Bee Populations, and Honey Bee Communication
abstract: Bees are well known for their ability to pollinate a diverse range of plants. In the process of gathering food (pollen and nectar), bees transfer pollen from one flower to another, facilitating reproduction. I investigate two important aspects of foraging: pollination of an important crop by native bees and communication of floral resources by social bees.
Native bees that pollinate apples are an economically important and potentially limited resource. Native bees are often overlooked since orchard growers traditionally rely on managed honey bees for pollination. Given their potential to ameliorate the deficit of honey bee pollinators, it is important to identify the suite of apple pollinators in New York State, the life history of each native bee group in relation to apple pollination, and to promote their occurrence in and around apple orchards.
In order to facilitate visiting flowers, collecting nectar and pollen, and pollinating crops, honey bees have a language that conveys information from a recent foraging trip. This communication maximizes colony-level foraging efficiency and is achieved by a complex dance language. An interesting phenomenon in the dance language is the presence of distance-dependent error; precision increases as food-source distance increases. Here, I investigate three hypotheses for why there is imprecision within dances. Bees may be constrained, either physically or physiologically, to high precision for nearby food sources. Alternately, there may be an adaptive value to scattering recruits over a larger area.
Direction indicated within dances is gleaned from the sun?s azimuth, but the extent to which to sun's position influences the precision of dances is unclear. Here, I test the hypothesis that error encoded in dances changes throughout the day.
Through a series of seminal experiments, Karl von Frisch decoded the honey bee?s dance language. Since then, it has been widely accepted that there are two distinct types of dances: the round dance and the waggle dance and that they convey different information. Here I show that distance and direction information appears to be encoded in the same manner in both forms, suggesting that there is only one recruitment signal, the adjustable waggle dance.

url: http://hdl.handle.net/1813/3398
date: 2006-08-01
creator: Toma, Catalina
viewed: 2084
title: An Examination of Deceptive Self-Presentation in Online Dating Profiles
abstract: Online dating profiles are a popular new tool for initiating romantic relationships, although recent research suggests that they may also be a fertile ground for deception. The present study examines the occurrence of lies in online dating profiles and examines deception through a variety of theoretical lenses (affordances and limitations of computer-mediated communication, relational goals, and individual differences between users). Results suggest that the deviations between participants? online self-presentations and the truth tended to be small but relatively frequent. This is consistent with the Hyperpersonal model?s

assertion that online communicators engage in strategic and selective self-presentation. Results also suggest that, when deciding what to lie about, users take into consideration both the technical affordances of online dating portals, such as the editability of profiles, as well as the more social aspects of online dating, such as warranting and relational goals. Methodologically, this study is innovative in that it objectively verifies the accuracy of participants? descriptions, in addition to asking them directly whether they have lied. This increases the reliability of the data, and allows for the first objectively obtained measure of deception in online dating profiles.

url: http://hdl.handle.net/1813/3399
date: 2006-08-01
creator: Atkin, Gret;Berkland, Melva L.;Oelberg, Edith;Reily, Rae;Stone, Janis;Majerus, Mary;Smith, Charlotte
viewed: 852
title: 4-H Clothing Project Leader Guide
abstract: The leader?s guide provides step-by-step guidelines for the chapters that make-up each unit in the curriculum. The first section presents valuable background information and philosophy regarding 4-H project leadership, family and community involvement, youth characteristics for the 9 to 11 year-old target group, student, leader and program evaluations, and competitive opportunities. A resource list is included for further exploration and development.

url: http://hdl.handle.net/1813/3400
date: 2006-08-01
creator: Burns, Kristin
viewed: 2104
title: Studies on the Biosynthesis of Cysteine in Mycobacterium tuberculosis and Studies on the Biosynthesis of Vitamin B6 in Bacillus subtilis
abstract: Cysteine is one of the 22 natural amino acids used to make proteins. Three pathways are currently known for the biosynthesis of cysteine and all include sulfide as the sulfur source. A new pathway for cysteine biosynthesis was elucidated and reconstituted from Mycobacterium tuberculosis. This pathway involves a protein bound thiocarboxylate (CysO-SH) as the sulfide donor, similar to thiamin and molybdopterin biosynthesis. MoeZ, a paralog of ThiF (thiamin) and MoeB (molybdopterin), transfers sulfide onto CysO from an unidentified source. Cysteine synthase M (CysM) catalyzes the addition of O-acetylserine to the carboxy terminus of the protein bound thiocarboxylate to generate a CysO-cysteine adduct. A protease, Mec+, hydrolyzes the CysO-cysteine adduct to release cysteine and regenerate CysO. Mec+ contains the JAMM motif and this work provides the first functional characterization of the JAMM motif in prokaryotes. This pathway could be important for M. tuberculosis under conditions of oxidative stress, as it would provide a more stable source of sulfide than the traditional pathways for cysteine formation.
Vitamin B6, an essential cellular cofactor, is biosynthesized by bacteria and lower eukaryotes and is required in the human diet. Two de novo pathways for PLP biosynthesis were known, however, the most common pathway involving the YaaD and YaaE family of genes had not been reconstituted. The substrates for Bacillus subtilis PLP synthase (YaaD and YaaE) were identified as ribose-5-phosphate, glyceraldehyde-3-phosphate and glutamine; the product is pyridoxal-5?-phosphate. In addition to PLP formation, we identified three activities catalyzed by the YaaD subunit of PLP synthase, including ribosephosphate isomerase activity, triose phosphate isomerase activity, and adduct formation with ribulose-5-phosphate. We also investigated the early steps of the mechanism of pyridoxal-5?-phosphate formation. In the absence of triose, PLP synthase forms a stable intermediate which absorbs at 320nm. This intermediate then reacts with glyceraldehyde-3-phosphate to form PLP.

url: http://hdl.handle.net/1813/3401
date: 2006-08-01
creator: Yamamoto, Yuzo
viewed: 3171
title: ENGINEERED 'GREEN' COMPOSITES USING KENAF AND BAMBOO FIBERS WITH MODIFIED SOY PROTEIN RESIN
abstract: In this thesis, fully ?green? composites using nonwoven kenaf mats and modified soy protein isolate (SPI) resin were fabricated. Moreover, fibrillated bamboo fiber (FBF) sheets were also incorporated into some kenaf mat composites to obtain engineered hybrid green composites. Potential mechanical properties of these cutting-edge materials have been proposed.

Initially, an appropriate SPI resin composition for optimal composite properties was determined by varying pH values and the amounts of glycerol, used as plasticizer. The final composition contained 10% glycerol (by wt. of SPI) and 11 pH. The effects of a self cross-linking Phytagel? on the tensile properties of the modified SPI resins were evaluated. The tensile strength and Young?s modulus of SPI resins showed a significant improvement by adding Phytagel?. The kenaf fiber/modified SPI resin interface was characterized using the single fiber fragmentation technique. The mechanical properties of these green composites fabricated with SPI modified with various percentages (0, 10, 20 and 40%) of Phytagel? (by wt. of SPI) were characterized. The tensile properties of the green composites didn?t increase significantly with the Phytagel? content. The flexural strength and chord modulus of the composites containing 20% Phytagel? in SPI resin were, however, 1.6 and 1.4 times higher than the composites with 0% Phytagel?, respectively. The composites with 40% Phytagel? in SPI resin possessed the highest impact strength.

The tensile strength and modulus of the hybrid composites using FBF sheets and SPI resin modified with 20% Phytagel? were 37.1 MPa and 2187 MPa, respectively, which represent a 10% and 20% improvement over the kenaf mat composites using the same resin. The impact strength of the kenaf mat composites improved 116% after incorporating FBF sheets.

url: http://hdl.handle.net/1813/3402
date: 2006-08-01
creator: Atkin, Gret;Berkland, Melva L.;Smith, Charlotte;Hitch, Sherilyn;Stone, Janice;Reilly, Rae
viewed: 1950
title: Strategies for Clothing
abstract: This advanced unit of the ?4-H Clothing Project Series? expands further on the skills and knowledge learned in earlier programs, and prepares students for setting out on their own. Students will learn how to develop new ideas unique to their personalities. Creativity will be sparked, leadership skills will be honed, and volunteer opportunities will arise. Principles of design, fashion, clothes shopping, advanced fiber knowledge, tailoring, stain removal, care for accessories, skin care, hair coloring, posture, history, and interview preparation are covered along with many other topics. Upon completion of the curriculum, and sometimes much sooner, students will be able to develop their own unique ?Strategies for Clothing?, and apply their best thinking on many different levels as they enter adulthood.

url: http://hdl.handle.net/1813/3403
date: 2006-08-01
creator: Atkin, Gret;Berkland, Melva L.;Banyas, Joy;Smith, Charlotte;Reilly, Rae;Stone, Janis
viewed: 1515
title: Challenges in Clothing
abstract: This second unit in the ?4-H Clothing Project Series? builds on the knowledge and beginning sewing skills developed in ?Adventures in Clothing: Unit I?. The 8 chapters in this project book begin with discovering how line, color, and texture can keep you ?Looking Good?. You?ll learn to successfully coordinate

the outfits and accessories you wear. Whether you are buying or making clothes, the challenges in the ?Choosing Clothes? and ?Learning about Fabrics? chapters is to develop your consumer decision making skills. You?ll learn to make a wardrobe plan, and to evaluate the clothing choices you make. In the chapters about ?Creative Sewing? and ?Caring for Clothes?, your challenge is to grow in creativity, independence, and responsibility. In ?You and Others?, the challenge shifts to get beyond yourself and find how clothes affect your relationship with others.

url: http://hdl.handle.net/1813/3404
date: 2006-08-01
creator: Atkin, Gret;Berkland, Melva A.;Banyas, Joy;Smith, Charlotte;Stone, Janis;Reilly, Rae
viewed: 1757
title: Adventures in Clothing
abstract: The fist unit in the ?4-H Clothing Project Series? helps students develop basic knowledge about a broad spectrum of topics related to clothing and sewing. The basic science of color is introduced and broadened into color use and color effects in clothing. Design lines as related to fabric design, trims, seams, darts, and gatherings are explored. Clothing choice is introduced based on students? personal ?likes? or preferences, as well as needs. Fabrics are explored in terms of basic science, make-up, weave and finish. A longer chapter titled ?Creative Sewing? helps participants apply their new found knowledge with basic sewing skills in several step-by-step projects. Sewing machines, sewing tools use, hand sewing, sewing with and without patterns, body measurements, cutting, marking, and pressing are all covered. Clothing care, clothing safety, and personal pointers round out this wonderful curriculum.

url: http://hdl.handle.net/1813/3405
date: 2006-08-01
creator: Feeney, Tom;Porter, Mary Jane
viewed: 1684
title: Tug Hill Aquifer: A Guide for Decision-Makers
abstract: This guide is designed to help local government officials, developers, and citizens understand and use technical information based on an exhaustive groundwater study of the Tug Hill Aquifer located in upstate New York. Part I of the guide describes maps included in a USGS report to help users understand the value of maps in making land use management decisions. Part II provides examples of how maps might be used to make groundwater protection and development decisions.

url: http://hdl.handle.net/1813/3406
date: 2006-08-01
creator: Raymond, Lyle S. Jr.
viewed: 2943
title: Aquifers
abstract: This bulletin describes aquifers in a non-technical language. Sand and gravel aquifers are emphasized because they are the most highly productive aquifers in the Northeast. They are a significant local and regional resource and should receive protection commensurate with their importance. Additional resources are referenced for further study.

url: http://hdl.handle.net/1813/3407
date: 2006-08-01
creator: Raymond, Lyle S. Jr.
viewed: 1935
title: Groundwater Contamination

abstract: Identifies and describes contamination sources, including septic systems and lawns. Since more than 97 percent of rural households get their drinking water from springs or wells, polluted groundwater is a concern.

url: http://hdl.handle.net/1813/3408
date: 2006-08-01
creator: Raymond, Lyle S. Jr.
viewed: 3724
title: What is Groundwater?
abstract: This bulletin introduces the reader to 19 basic groundwater concepts and the appropriate terminology used in describing them. Groundwater protection programs require an understanding of the groundwater resource. Learn about: Groundwater location, saturated zones, unsaturated zones, water tables, permeability, porosity, aquifers, recharge, confined or artesian aquifers, unconfined or water table aquifers, discharge points, flow rates, gaining streams, losing streams, well cones of depression and induced recharge, well contribution zones, drainage areas, and groundwater myths.

url: http://hdl.handle.net/1813/3409
date: 2006-08-02
creator: Fogle, Homer William Jr
viewed: 2217
title: Chapter and Alumni Operations Handbook, 1989
abstract: 17 p; tables; appendices; 28 cm.
Electronic reproduction.
Original, 4 December 1989.Reference data concerning the Delta Kappa Epsilon Fraternity, the Delta Chi Chapter of Delta Kappa Epsilon at Cornell University, the Delta Chi Association and Cornell University are tabulated.

url: http://hdl.handle.net/1813/3410
date: 2006-08-02
creator: Strupp, Barbara;Moon, Ji-sook
viewed: 2007
title: Attentional dysfunction, impulsivity, and resistance to change in a mouse model of Fragile X syndromeImpaired arousal regulation in a mouse model of Fragile X syndromeAttentional dysfunction, impulsivity, and resistance to change in a mouse model of Fragile X syndrome
abstract: ATTENTION, AROUSAL REGULATION & INHIBITORY CONTROL IN FMR1 KNOCKOUT MICE: A MOUSE MODEL OF FRAGILE X SYNDROME

Ji-sook Moon, Ph.D.
Cornell University 2006

Fragile X syndrome (FXS) is the most common inherited form of mental retardation, occurring in roughly 1/4000 males and 1/8000 females. An abnormal expansion of a trinucleotide CGG repeat sequence in the fmr1 gene results in transcriptional silencing of this gene, which codes for the Fragile X Mental Retardation Protein (FMRP). The loss of FMRP, directly and/or indirectly, gives rise to the FXS phenotype, which includes a characteristic set of anatomic and cognitive/behavioral features. The present studies were designed to test the hallmark areas of dysfunction (i.e. attention, inhibitory control, hyperarousal, and emotional regulation) seen in human FXS and further characterize spared and impaired functions in fmr1 KO mice. The performance of F1 hybrid fmr1 KO mice (a C57BL/6J x FVB/NJ cross) and wild-type (WT) littermate controls were

evaluated on a series of tasks designed to assess inhibitory control and various aspects of attention, Reversal Learning Task, and Associate Learning Task. Regulation of arousal and emotion, two domains affected in FXS, was also evaluated in these tasks by examining the animals reaction to the unexpected presentation of potent olfactory distractors (in the Distraction task), as well as their reaction to committing an error on the previous trial.

The present studies provided the first evidence that the hallmark deficits in human FXS -- impaired attention, inhibitory control, and arousal regulation are also impaired in the fmr1 mouse model of FXS. In addition, these findings demonstrate that attentional dysfunction and impaired inhibitory control are most prominent when task contingencies change and when the animal has just committed an error situations that arouse or disturb the mice. Analysis of videotapes further demonstrates that arousal regulation is impaired in the fmr1 KO mice. Additionally, the fmr1 KO mice were not impaired in associative learning, transfer of learning, or reversal learning. The present results provide strong support for the validity of this animal model for future studies designed to elucidate the pathogenic process in human FXS and to test new therapies.

url: http://hdl.handle.net/1813/3411
date: 2006-08-02
creator: Lauritsen, Josie Ann
viewed: 1812
title: GOVERNING LITERACY: A CRITICAL DISCOURSE ANALYSIS OF THE UNITED NATIONS DECADES OF LITERACY, 1990-2000 AND 2003-2012
abstract: Using critical discourse analysis (CDA), this study examines constructs of literacy and literacy education embedded in policy documents related to the United Nations Decades of Literacy (1990-2000 and 2003-2012) and argues that two important shifts related to discourse occur between the policies. The first shift is manifest in the construction of literacy as a concept and reflects the rising influence of New Literacy Studies (NLS), a body of research that emphasizes the plural, contextual, "ideological" (Street, 1993) nature of literacy as social practice. The second shift is marked by the intensification of the discourse of "new capitalism" (Fairclough, 2003; Gee, Hull, & Lankshear, 1996), which focuses on the societalization of economic globalization. In the "interdiscursive" (Fairclough, 2003) relationship between these two shifts, the discourse of new capitalism circumscribes features of the emerging "ideological" constructs of literacy, steering the policy's agenda toward neo-liberalist ends. In clarifying discursive relationships in these influential policies, this study contributes to an emerging body of scholarship (see Street, 2003) that connects socio-cultural models of literacy to the discursive production of meaning in institutional literacy work.

url: http://hdl.handle.net/1813/3412
date: 2006-08-02
creator: Veverka, Jesse Peter
viewed: 1929
title: Probabilistic Models for Operator Decision-Making in Intelligence, Surveillance, and Reconnaissance Type Scenarios
abstract: Master of Science Thesis, Aerospace Engineering, August 2006This thesis contains three papers related to modeling a Human in the Loop (HITL) operator interacting with a system of autonomous vehicles in Intelligence, Reconnaissance and Surveillance (ISR) type Scenarios. The thesis begins with an empirical study of one such actual system, moves to a narrow-scope detailed experimental software simulation introducing probabilistic models and culminates in experimental investigation using a time dependent information tracking function with a set of analytically tractable probabilistic models.

This first paper, entitled, ?Experimental Study of Information Load on Operators of Semi-Autonomous Systems? presents a set of experimental results studying the relationship between Human in the Loop performance and user workload in the RoboFlag test-bed. Operators played a series of games to evaluate

performance as a function of information load (speed and number of vehicles). Results showed a positive relationship between game speed and total score. In addition operators reported using more automation as number of robots increased but trusting automation less as game speed increased.

The second paper, entitled ?Modeling Tradeoffs in Decisions by Operators Controlling Autonomous Vehicles? presents the results of two decision-making experiments and two operator decision models for an Intelligence, Surveillance and Reconnaissance (ISR) type mission. The first experiment used 25 possible scenarios, each of which included enough trials to allow a formal statistical model to be derived. The distribution of operator decision data was modeled with a binomial distribution as a function of environmental variables. An optimal decision-making policy was also prescribed for all scenarios. Results show good agreement between operator data and the optimal decision-making policy in most scenarios, except when the relative utility between the choices was similar. Lower order probabilistic models using conditional probabilities and Gaussian random variables are also derived; results show a strong ability to use lower order models for operator decisions. The second experiment presented operators with the same binary decision, but from a more general choice of 90 possible scenarios. This allows the evaluation of the probabilistic model as data becomes sparse. Operator data from the second experiment was successfully binned and compared to the results of first experiment, demonstrating consistent operator decision-making between experiments.

The final paper, entitled ?Operator Decision Modeling for Intelligence, Surveillance and Reconnaissance Type Scenarios with a Time Dependent Information Function? presents a model of operator + vehicle interaction for a simplified Intelligence, Surveillance and Reconnaissance type mission utilizing a time dependent information function for target identification. The model is developed and evaluated using operator decision-making experiments where an operator controls a friendly uninhabited aerial vehicle (UAV) tasked with identifying enemy targets within a two-dimensional map. Operators must make two decisions: 1) which target to choose first, and 2) if and when to task the UAV to the second target to start data collection. Two sets of experimental data were collected. In all experimental scenarios, target choice and time on target were recorded. The data was analyzed in order to develop an analytically tractable model of operator choice. An optimal decision-making policy was also prescribed for all scenarios and compared to the operator data. Finally a both tabular and lower order probabilistic model developed to model decision making in this experiment.

url: http://hdl.handle.net/1813/3413
date: 2006-08-02
creator: Morrow, R.R.;Winch, F.E. Jr.
viewed: 2911
title: Production of Maple Sirup and Other Maple Products
abstract: Basic information covers sap flow, relation of sap to syrup, the sugar bush, equipment needed for the operation, and making syrup and other maple products.

url: http://hdl.handle.net/1813/3414
date: 2006-08-02
creator: Trautmann, Nancy M.;van Es, Harold M.
viewed: 1080
title: Pesticide Management for Water Quality, Principles and Practices
abstract: This publication intends to explain the fates of pesticides after they have been introduced into the environment. In addition, processes which affect pesticide movement and management practices which reduce their losses are discussed. We hope that this information will foster the use of sound management practices which protect the quality of New York State's water resources.

url: http://hdl.handle.net/1813/3415

date: 2006-08-02
creator: Hogarth, Jeanne;Coughlan, Mary J.;Bratton, C. Arthur;Wiegand, Elizabeth
viewed: 1112
title: Do You Know Your Valuable Papers?
abstract: This handy bulletin directs the user to inventory a family's important papers as part of a well developed emergency plan.

url: http://hdl.handle.net/1813/3416
date: 2006-08-02
creator: Cope, Edward;Hyypio, Peter
viewed: 2956
title: Giant Hogweed Heracleum mantegazzianum
abstract: Once cultivated as an unusual ornamental, this plant "escaped" into the wild and is now undesirable because its sap causes skin irritation in many people. This four-fold brochure will help you recognize and control this plant.

url: http://hdl.handle.net/1813/3417
date: 2006-08-02
creator: Krasny, Marianne E.;Phillips, Diane Held
viewed: 2937
title: Field Guides Made Easy
abstract: What to look for and how, in identifying characteristics of birds, trees, mammals, and others.

url: http://hdl.handle.net/1813/3418
date: 2006-08-02
creator: Gallardo, Maria Lourdes
viewed: 1795
title: Ethnicity Based Wage Differentials in Ecuador's Labor Market
abstract: This study first offers a brief literature survey of labor market discrimination due to ethnicity against the indigenous and Afro-descendant population in Ecuador, a largely mestizo country. We use ethnic self-identification reported in the 2000 EMEDINHO survey as a proxy for ethnicity. Next, we introduce an extended wage differential decomposition model for wage earners based on the traditional Oaxaca-Blinder methodology and a system of simultaneous equations. Using the 2000 ENEMDUR employment survey we then estimate wage, education, sector and geographic outcome differentials due to endowments and due to discrimination between two designated ethnic clusters (i) indigenous people and Afro-descendants and (ii) mestizos and whites. This methodology allows us to identify and measure the direct and indirect channels through which discrimination impacts wages. We obtain higher estimates for discrimination based on a comparative analysis of our results versus two other studies available for the country. We find evidence also about the role that the intergenerational transmission of human capital from parents to children has on education and labor market outcomes.

url: http://hdl.handle.net/1813/3419
date: 2006-08-03
creator: Fogle, Homer William Jr
viewed: 1950
title: DX of DKE Special Study #15: Delta Chi Association Articles of Governance
abstract: 21 p.; footnotes; 28 cm.
Electronic reproduction.

Original, 2 August 2006.Transcriptions of the primary articles of governance for the Delta Chi Association (Certificate of Incorporation and ratified Bylaws) are presented. The facsimile image of a superseded "Constitution of Delta Chi Alumni Association of D.K.E." is included for the historical record.

url: http://hdl.handle.net/1813/3420
date: 2006-08-03
creator: Kim, Eun-Nan
viewed: 2641
title: Information Occupations and the Socioeconomic Environments in U.S. Metropolitan Areas
abstract: Matthew P. Drennan, Susan Christopherson, and Mildred Warner are my dissertation committee members.Throughout this dissertation, I focus on information occupations, which deliver knowledge and information-intensive input to economic activities, and which are high-end jobs requiring a high level of education and skills. The main questions are fourfold: What are information occupations?; How can we define information occupations and their geographic profiles?; Why are information occupations important in metropolitan economies?; What metropolitan characteristics affect the specialization in information occupations?

Regarding these questions, I suggest a new analytical framework to define ?information occupations? and explore their geographic profiles using two databases: Occupational Network Information (O*NET) and Occupational Employment Statistics (OES). Information Occupations are becoming important in regional studies in two aspects: the growing employment in information occupations in the new economies, compared to non-information occupations, and their importance to metropolitan economies. Information occupations prefer cultural environments with innovation capacity and high density of the younger workforce, rather than diversity. In terms of economic functions, metropolitan size is more closely related to urban hierarchies than to Internet infrastructure. Policy makers are able to enhance the competitiveness of medium sized metropolitan areas if they target regular information occupations for regional development. Industry specialization is still important to location choice of information occupations.

url: http://hdl.handle.net/1813/3421
date: 2006-08-03
creator: Dafoe, Allan
viewed: 1269
title: Constrained Choice and Contingency: Military and Economic Competition as the Mechanism for Technological Determinism
abstract: The study of technology is divided. There are scholars, found especially in sociology and history, who emphasize interpretive flexibility, agency and historical contingency. These I label 'mild-constructivists.' Other scholars, found especially in business, economics, military studies and macro-history, emphasize functional adaptation and 'deterministic' trends. These I label 'sociotechnical adaptationists.' A theory of sociotechnical evolution can unify the insights of these seemingly contradictory approaches to technology.

Competitive processes constrain sociotechnical variation: the range of interpretations and choices available to an actor are constrained by the imperative to survive. Economic and military competition, in particular and in the long run, constrain an actor's decisions to those that promote, respectively, the profit or power of the encompassing 'social organism,' such as a firm or state.

Thomas Misa has noted that scholarship with large-scales of analysis tends to be technologically deterministic. At large scales of analysis, instances of economic and military competition are more common. I argue that economic and military competition is the mechanism that gives rise to emergent deterministic patterns. New technology "merely opens a door; it does not compel [us] to enter." It is economic and military competition that shoves us through.

Military competition tends to operate over longer time scales and constrain economic and social competitive

processes. Economic competition operates over middle time scales and constrains social competitive processes. These competitive forces 'select' for economically and militarily functional sociotechnical configurations. Thus, at larger scales of analysis the competitive processes giving rise to functionalist adaptation are more apparent.

A unified theory of sociotechnical evolution can reconcile the detailed micro-narratives of mild constructivism with the functionalist insights of the adaptationists. Almost all theories of technology are appropriate in their proper analytical context, defined by the character of variation (in particular, the degree of path dependency) and the kinds of competitive processes present.

There are, however, two approaches to technology which cannot be reconciled within a theory of sociotechnical evolution. They are radical social constructivism and na?ve technological determinism. Scholars in the first group claim that there is unlimited interpretive flexibility, agency and contingency. Scholars from the latter group naively attribute agency to technology, failing to acknowledge the absence of a micro-theory for their claims.

The history of Japan's use of firearms provides an illustration of the utility of the sociotechnical evolution framework. The introduction of firearms into Japan, beginning in 1543, follows the adaptationist script: two firearms arrived with some Portuguese adventurers, were bought, reverse engineered, and soon produced and used in the hundreds and then thousands.

From the 1600s to 1853, though, Japan's use and development of firearms stagnated. Constructivist scholars could productively explore the social reasons for this 'reversion to the sword.' Their findings are bounded, though, by the conditions that characterized this period, namely: the absence of internal and external military competition.

In 1853 Commodore Perry's ultimatum ended this 250 year 'retrogression' by imposing a painful imperialist challenge. Japan could no longer maintain its isolation without risking following the fate of China in the Opium Wars. Japan's ensuing industrialization and modernization poses a problem for both constructivist and adaptationist theories of technology. Japan eventually adopted superior Western military technologies, but not in the simple functionalist way that an adaptationist would expect. A satisfying history requires an appreciation for both the cultural and military context, and the ways that they interact.

url: http://hdl.handle.net/1813/3422
date: 2006-08-03
creator: Gettel, Gretchen
viewed: 3306
title: RATES, IMPORTANCE, AND CONTROLS OF NITROGEN FIXATION IN OLIGOTROPHIC ARCTIC LAKES, TOOLIK, ALASKA
abstract: Biological nitrogen (N) fixation of atmospheric N2 by free-living cyanobacteria in aquatic environments is common, and in many ecosystems, it can account for a significant portion of the biologically available N inputs. Although N fixation can compensate for N limitation, N limitation is maintained over relatively long time scales in many oligotrophic lake ecosystems. This dissertation examines the importance of benthic and pelagic N fixation in the N economies of oligotrophic lakes in arctic Alaska (Chapter 1) and examines nutrient, light, and grazer controls on benthic N fixation (Chapters 2 and 3). Both benthic and pelagic N fixation are prevalent in many lakes across the Alaskan arctic landscape, ranging from 0.12 ? 1.5 mg N m-2 day-1 and 0 ? 2.56 mg N m-2 day-1 respectively. Pelagic N fixation is much higher than has been reported elsewhere for oligotrophic lakes, and is more important than previously thought, comprising ~ 75% of N inputs to one lake. Benthic N fixation is lower than has been reported for other oligotrophic systems, and is roughly equivalent to N inputs from atmospheric deposition on an areal basis (~25 mg N m-2 year-1). On the landscape scale, N fixation in lakes roughly equal that in terrestrial ecosystems in this Arctic region. Benthic N fixation generally appears to have a saturating response to light availability within individual lakes, but light does not explain variation in benthic N fixation across lakes or years. Whole-lake fertilization

and laboratory experiments indicate that P input stimulates benthic N fixation while N input suppresses N fixation when N is added either alone or in conjunction with P in Redfield proportion. Snails at ambient density cause a small decline in benthic N fixation (0.85 ? 1.8% reduction over the summer). These patterns are corroborated in the landscape: lakes on younger surfaces have higher P, more snails, and higher rates of N-fixation than lakes on older surfaces.

url: http://hdl.handle.net/1813/3423
date: 2006-08-03
creator: Hanawa, Yukiko
viewed: 1629
title: As for the Future: Contingent Subjects and Feminist Practice of Writing Women into History
abstract: This dissertation explores the practice of writing women into history in the post-1945 period. My immediate area of study is with the large number of writers who adopted narratives as a subject-constitutive method in placing women in history. Marked as an "urgent" task, writing new history occupied a privileged position in a teleological narrative of emergent democratic development. Women were particularly important at the outset because of the relatively few works of history produced. In practice, writing the subject "women" into teleological narrative often meant, writing women?s history as Bildungsroman. In particular, I consider the ways in which prostitution, modernity, discourses of nationalism, and the (emerging) political subjectivity of women grounded the practice. I take, as a point of departure, the figure of native women, imagined to have hailed from the countryside and marked as embodying an un-modernized subjectivity. These women migrated to the urban centers and occupied an important place in the emergent discourse of Japanese feminism as sexually marginal and aberrant subjects (not true feminist subject) and as sexual victims of imperialism (proper subject of feminism.) Marked by the national and occupation discourses, the power of "women as subject" relied, precisely in part, on "women as simulacrum of democratic being." This framing, rather than opening up possibilities for assemblages and previously unknown alignments, occlude the history of uneven development. My reading of this material invites a direction towards a history practice of non-containment. The large volume of texts provide a rich field in which to question what it would mean to avoid making sense of the past and to tease out a practice of fragmented and incomplete history towards an indeterminate future.

url: http://hdl.handle.net/1813/3424
date: 2006-08-03
creator: Barazangi, Nimat Hafez
viewed: 1832
title: A Bilingual Primer in Deploying and Evaluating Action Research:
abstract: This document is mainly in English. However, some items are also added in Arabic.
Eventually, an Arabic version of the primer will be posted on the same siteA Primer in Deploying and Evaluating Action Research.
The following pages/slides (images) focus on introducing the State-of-the-art in theoretical and methodological foundations of action research (AR) in the form of a primer in deploying and evaluating AR. This primer is designed to be relatively simple, but mainly interactive. We searched both printed references and Internet sites looking for such a comprehensive document, but without any success. Of course, we did find publications that discuss different approaches to action research and different ways of instructing in AR. We have used different elements from these available publications while developing our own system (see references). This document represents an interactive action research framework that is also context- and client-based. That is, we discuss the different components of an action research program based on how relevant a particular component was thought to be for the intended context and as a result of the intended process for the clients. Needless to say, this document will be revised and updated as we receive comments and suggestions from

the readers/participants.Please send your comments and suggestions to Dr. Nimat Hafez BARAZANGI2005-2006 Senior Fulbright Scholarship to Syria.
I would also like to thank Carrie Brindisi for her technical support in cerating this DSpace

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date: 2006-08-03
creator: Barazangi, Nimat Hafez
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url: http://hdl.handle.net/1813/3425
date: 2006-08-03
creator: Barazangi, Nimat Hafez
viewed: 1575
title: Arabic-Self Learning Curriculum
abstract: Computerized Curriculum in the Arabic Environement in two Modules:
1. Arabic for non-native speakers
2. Arabic for native non-specialistsThis program, available in a prototype, uses the spatial and thematic metaphor of a home in Damascus, Syria, and a classroom at Damascus University to access the learner to myriad learning experiences in a contextually-based Arabic language learning situations.
Learners will be exposed to interactions, characters, and scenarios, utilizing available text, sound and video to understand the two stories in the prototype, and eventually develop their own story (s) using the same Arabic structures and vocabulary.Sponsored by:
1. The Consortium for Language Teaching and Learning.
2. 1995-1997 Fulbright Scholarship (Serial Grant) to Syria
Author: Dr. Nimat Hafez Barazangi, Feminist, Gender, and Sexuality Studies (Previousely, Women's Studies Program), Principal Curriculum and Research Investigator.
Mr. Stephen Masiclat, Ex-Director, The Noyes Lodge Language Learning Center.
Dr. Ghaida Rebdawi, Director of Software Division, Electronic Department, Higher Institute of Applied Sciences and Technology, Damascus, Syria
Mr. Daniel Robert Allen, Undergraduate Student, Electrical Engineering, Cornell.U
In Consultation with:

Dr. James P. Lantolf, Professor of Applied Linguistics, University of Pennsylvania (previousely Department of Modern Languages, Cornell University)
Dr. Munther A. Younes, Senior Lecturer of Arabic Language, Department of Near Eastern Studies.
Richard Feldman, Director of Language Resource Center at Cornell University

url: http://hdl.handle.net/1813/3426
date: 2006-08-03
creator: Barazangi, Nimat Hafez
viewed: 3594
title: Silent Revolution of a Muslim Arab American Scholar-Activist
abstract: Copyright 2003, Texas University Press. This is a pre-copyedited version of an article accepted for publication in the edited book Muslim Women Activists in North America, following peer review. The definitive publisher-authenticated version is available through the University of Texas Press. http://www.utexas.edu/utpress/excerpts/exbulmus.html. See also: http://www.eself-learning-arabic.cornell.edu/publications.htm#2After 35 years of living in the Unites States, every time I meet a new person, I am asked: Where are you from? My own personal, political and scholarly journey along with that of some of my cohorts engaged in search for answers to this and relevant questions have shaped my silent revolution. It is a revolution against the way Muslim-Arab girls have been raised unprepared to experience their identity autonomously; it is a revolution against the social systems that abuse and stereotype Muslim Arab women--be it the Muslim, the Arab or the American systems--chiefly because of their dress code. The goal of this revolution is to ignite the flames for social change, re-interpreting the Qur'an in order to retrieve its dynamics that originally intended to establish gender justice. Though the three and one half decades of my life in the US-- first as a foreign student, then as a permanent resident and a citizen--are marked by milestones distinctive dates and events, in my search for answers to different questions, I prefer to go back and forth between them.I would like to thank Carrie Brindisi for her support in creating this DSpace.

url: http://hdl.handle.net/1813/3426
date: 2006-08-03
creator: Barazangi, Nimat Hafez
viewed: 3594
title: Silent Revolution of a Muslim Arab American Scholar-Activist
abstract: Copyright 2003, Texas University Press. This is a pre-copyedited version of an article accepted for publication in the edited book Muslim Women Activists in North America, following peer review. The definitive publisher-authenticated version is available through the University of Texas Press. http://www.utexas.edu/utpress/excerpts/exbulmus.html. See also: http://www.eself-learning-arabic.cornell.edu/publications.htm#2After 35 years of living in the Unites States, every time I meet a new person, I am asked: Where are you from? My own personal, political and scholarly journey along with that of some of my cohorts engaged in search for answers to this and relevant questions have shaped my silent revolution. It is a revolution against the way Muslim-Arab girls have been raised unprepared to experience their identity autonomously; it is a revolution against the social systems that abuse and stereotype Muslim Arab women--be it the Muslim, the Arab or the American systems--chiefly because of their dress code. The goal of this revolution is to ignite the flames for social change, re-interpreting the Qur'an in order to retrieve its dynamics that originally intended to establish gender justice. Though the three and one half decades of my life in the US-- first as a foreign student, then as a permanent resident and a citizen--are marked by milestones distinctive dates and events, in my search for answers to different questions, I prefer to go back and forth between them.I would like to thank Carrie Brindisi for her support in creating this DSpace.

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url: http://hdl.handle.net/1813/3427
date: 2006-08-03
creator: Nolen, Patrick
viewed: 1868
title: UNEMPLOYMENT, IDENTITY, AND SELF-CONFIDENCE: THEORETICAL MODELS AND EXPERIMENTAL EVIDENCE
abstract: In the leading chapter of this dissertation, "Unemployment, Vulnerability and Poverty: A New Class

of Measures, Its Axiomatic Properties and Applications," we, Kaushik Basu and myself, derive a new class of measures for unemployment or poverty. Measures of unemployment and poverty have usually focused solely on those currently unemployed or below the poverty line, ignoring those who are vulnerable to becoming unemployed or falling into poverty. We fully characterize a class of measures that, unlike the standard measures of unemployment or poverty, account for the amount of vulnerability that exists in a society and apply those measures to the USA and South Africa.

In the second chapter of this dissertation, "Unemployment and Family-Values," I propose a new class of unemployment measures that incorporates the externalities one receives from living in a household with employed individuals. The standard measure of unemployment does not do this. A household with at least one employed person is more likely to have heating, water, and other household public goods than a household where everyone is unemployed. Given this, I axiomatize a class of unemployment measures that is sensitive to household unemployment levels. This is done by assuming that if unemployment is held constant, say at fifty percent, an economy where half of each household is employed is better than an economy where half of the households are fully unemployed and half are fully employed.

The third chapter of this dissertation, "Racial Identity, Performance and Self-Confidence: A South African Experiment," deals with the effects of racial identity in Post-Apartheid South Africa. Racial gaps across many measures of performance are well documented. Whether these gaps occur because of discrimination or are due to ex-ante differences between racial groups is still unanswered. Using experimental data from Cape Town, we, Erica Field and myself, examine how different environments and incentive schemes effect a student's performance and her level of self-confidence. We find that cuing a student to her racial identity has a significant affect on performance, self-confidence and where a student places herself within a distribution. These differences are statistically significant even if the groups are ex-ante similar.

url: http://hdl.handle.net/1813/3428
date: 2006-08-03
creator: Park, Mia
viewed: 1867
title: Plant and insect-mediated invasiveness of Phragmites australis and the litter dynamics and biodiversity of six freshwater macrophytes
abstract: My thesis involves two distinct projects related to wetland plants. The first evaluates plant traits for their contribution to the success of invasive Phragmites australis in North America and their interaction with herbivores. The second investigates the relative effects of six plant species, with different growth forms, status (native v. nonnative) and tissue quality, on litter dynamics and invertebrate diversity in a New York freshwater wetland.

Prevention is the most cost-effective and successful means of managing invasive plants. Predicting future invasions depends on identifying plant traits that facilitate invasive success. We investigated the influence of above-ground growth phenology and increased stem height on the success of invasive Phragmites australis in North America, using a phylogenetically-controlled comparison with a native, non-weedy P. australis subspecies. We also measured the effects of specialist stem-galling Lipara flies and a generalist aphid (Hyalopterus pruni), both nonnatives to North America, on these above-ground traits. Comparisons were made in 1) a common garden at Cornell University, Ithaca, NY, in 2003 and 2004, and 2) a field site at Montezuma National Wildlife Refuge, Seneca Falls, NY in 2003. In the garden, but not the field, nonnative P. australis leaves remained green for about a month longer (native v. nonnative: 2003 = 59.93 v. 85.5 days, P = 0.0002; 2004 = 52.29 v. 87.39 days, P = 0.02). For nonnative P. australis, leaves of the upper canopy consistently lived longer while leaf lifespan in the lower canopy was shorter or the same. Greater investment in high canopy leaves may increase carbon gain efficiency of nonnative P. australis. Nonnative P. australis grew taller in the field but this was mediated by disproportionate Lipara attack rather than plant status (native or nonnative). Lipara attack reduced stem height of all stems but only increased the lifespan of nonnative P.

australis? low canopy leaves. Aphids had no significant effect on measured plant traits. Through increased carbon gain, leaf phenology may contribute to P. australis? competitive superiority over its native conspecific. Higher susceptibility of native P. australis to nonnative herbivores may also facilitate nonnative P. australis? competitive superiority.

Senesced plant litter from emergent macrophytes fuels freshwater wetland productivity and nutrient cycling. Litter nitrogen content generally has a direct, positive effect on quantity and rate of resource availability to wetland biota. Since plants vary in their nitrogen content, shifts in plant community composition may alter important wetland functions. To study the consequences of changing plant dominance, we compared litter mass loss and invertebrate richness and abundance of six common macrophytes in a central New York freshwater wetland. Plants studied include Typha latifolia L. (broad leafed cattail, Typhacea), T. angustifolia L. (narrow leafed cattail), Phragmites australis (cav.) Trin ex. Steudel (common reed, Poaceae), P. australis subspecies americanus Saltonstall, P.M. Peterson & Soreng, Lythrum salicaria L. (purple loosestrife, Lythraceae), and Phalaris arundinacea L. (reed canarygrass, Poaceae). After nine months, mass loss of most plant species diverged significantly. Plant effect on invertebrate colonization was season and species-specific, with P. arundinacea almost consistently supporting higher invertebrate densities. Although %N differed among some plant species, it was not a good predictor of mass loss or invertebrate abundance and richness. Including plastic drinking straws as a treatment revealed that several invertebrates used litter for substrate rather than food. We conclude that shifts in plant dominance among the six wetland macrophytes investigated could potentially alter wetland function, by changing decomposition rates and the invertebrate community. Net quality of litter resources, which depends on the combined influence of morphology, chemical quality of specific plant organs, and feeding ecology of specific taxa, may be a better predictor of species effects on decomposition and diversity.

url: http://hdl.handle.net/1813/3429
date: 2006-08-03
creator: Duperon, Matthew
viewed: 3569
title: The Contemplative Idiom in Chan Buddhist Rhetoric and Indian and Chinese Alchemy
abstract: Daniel Boucher, Daniel GoldThe first chapter is an analysis of the rhetorical and transformative functions of language in Chan Buddhist rhetoric. It begins with a critique of the traditional category of "mysticism" as used to describe religious traditions defined by a focus upon "mystical experience" as an extraordinary psychological state that is phenomenologically similar across traditions. It proposes a different typology for identifying these types of traditions that refers to their similar rhetorical idiom of contemplation and transformation of consciousness. The case of Chan Buddhism is examined to illustrate how this contemplative idiom functions rhetorically to create and contest authority, and how it works to frame an alternate conception of reality and lead the practitioner to instantiate that conception by transforming his apprehension of reality.

The second chapter is an exposition and examination of the religious phenomenon of alchemy, specifically as manifested in the traditions of India and China. It argues that alchemy is not a single, continuous global phenomenon, but rather a peculiar set of instances of contemplative language applied to certain commonly observed material processes. It concludes that each case of alchemy is an independent use of a peculiar idiom to express specific cultural values, but that the parallel material processes involved necessarily produce certain similarities in each instance.

url: http://hdl.handle.net/1813/3430
date: 2006-08-03
creator: Soukamneuth, Bounlonh
viewed: 3897

title: The Political Economy of Transition in Laos: from Peripheral Socialism to the Margins of Global Capital
abstract: Remarkably, in the view of some observers, a poor and relatively weak government in Laos survives as a one-party state, even as it transforms the country?s political economy in response to declining communist fortunes in the early 1990s and the onslaught of economic globalization. How has the Lao government managed the socialist transformation and capitalist incorporation, while maintaining some semblance of external sovereignty and internal legitimacy? Through the broad lens of political economy and sociology, my research addresses this question, in exploring three areas of Lao state capacity: (1) political structure, (2) public administration, and (3) fiscal management.

I rely on several sources: a set of observations during my time on research assignment in Laos (May 2004-April 2005); an examination of governance-related, donor-funded development projects; an exhaustive survey of government laws, regulations, and documents since the reform period; and a review of literature on the political economy of development, market transition, and globalization. To assess different points of view on contemporary Laos, I conducted open-ended interviews with selected Lao officials, townspeople, expatriates, international consultants, and members of the diplomatic and donor communities.

From my research, evidence suggests that the Lao government actively promotes political, administrative, and economic centralization over regionally dispersed and fiscally independent provinces. In the transition process, a strong central government capable of regulating and enforcing economic governance has gradually eroded traditional autonomy of Lao provincial authority. The recent history reveals a party apparatus pragmatically adjusting to economic constraints, while consolidating its power base, unifying the country, and exerting its centralizing influence on an ideologically indifferent countryside.

Laos is not an isolated case. For many developing countries struggling to build a unitary state and a national economic space of private exchange, centralized control over regionally autonomous regions constitutes one of the major governance challenges of nationally guided development. Contrary to the general global trend of public decentralization in the transition process, Laos provides a stark contrast, offering a valuable insight into the important role of governments in structuring economic relations.

url: http://hdl.handle.net/1813/3431
date: 2006-08-03
creator: Favata, Marc
viewed: 1087
title: Kicking Black Holes, Crushing Neutron Stars, and the Validity of the Adiabatic Approximation for Extreme-Mass-Ratio Inspirals
abstract: Current experiments hope to detect gravitational waves--oscillations of space and time predicted by Einstein. The strongest sources of gravitational waves are compact object binaries--orbiting neutron stars or black holes. Gravitational waves carry away energy, linear momentum, and angular momentum until the binary merges to form a single black hole. This thesis concerns three distinct projects regarding binary coalescence.

The linear momentum radiated when binaries merge imparts a recoil or “kick” to the final black hole. Black hole recoils have important astrophysical consequences: black holes can be displaced or ejected from their host galaxies or globular clusters, affecting black hole growth, quasar activity, and the density structure of galaxies. We compute the kick velocity using black hole perturbation theory, treating the binary as a small mass spiraling into a massive, spinning black hole. We find that the recoil can easily reach ~100-200 km/s but probably does not exceed 500 km/s.

Binary neutron stars are another important source of gravitational waves. Understanding the final coalescence phase of the gravitational wave signal requires computer simulations. Some numerical simulations have shown that the neutron stars are subject to a crushing force late in the inspiral. This crushing effect has had no explanation and is disputed. We show that a compressive force arises due to a coupling of gravitomagnetic

tidal fields to the current-quadrupole moment of the neutron star. However, except in special circumstances, this gravitomagnetic crushing effect is overwhelmed by stabilizing Newtonian tidal interactions.
A small compact object orbiting a massive black hole will be a strong source for space-based gravitational wave detectors. Accurate waveforms for these systems will require computing the self-force on the compact object. The tools to do this do not yet exist. But when the inspiral time is much longer than the orbital period (the adiabatic approximation), approximate waveforms for generic orbits can be computed. We estimate the error in the adiabatic approximation by computing the gravitational wave phase using post-Newtonian theory. We find that, for orbits with small eccentricity, the adiabatic waveforms will be good enough for detection but not for parameter extraction.

url: http://hdl.handle.net/1813/3432
date: 2006-08-03
creator: Fugett, Eric
viewed: 2079
title: Development of molecular subtyping databases to improve control of Listeria monocytogenes
abstract: Listeria monocytogenes is a foodborne pathogen that can cause a serious foodborne disease, listeriosis, which may result in abortion, meningitis, and septicemia. The high hospitalization and mortality rates of listeriosis warrant continued research efforts to reduce the transmission of L. monocytogenes to humans. Molecular subtyping techniques, which can be used to differentiate bacteria beyond the species level, facilitate the identification and tracking of L. monocytogenes subtypes throughout the food chain. Pulsed-field gel electrophoresis is a rapid and highly discriminatory molecular subtyping method currently used by public health and regulatory agencies to identify and track outbreaks of foodborne disease and link outbreak related cases to suspected vehicles. Although PFGE facilitated outbreak recognition and response has been successful in reducing the number of listeriosis associated fatalities, additional large-scale analysis of subtype data is needed to develop a better understanding of L. monocytogenes ecology and further reduce the incidence of foodborne listeriosis. To this end, we subtyped 495 L. monocytogenes isolates from human clinical cases, foods, ruminant farms, and urban and natural environments using two-enzyme (AscI and ApaI) PFGE to better understand L. monocytogenes PFGE type diversity and distribution. We found that while L. monocytogenes is a genetically diverse organism, nine PFGE types were significantly associated with certain sources, and two PFGE types were specific to a single processing facility each. Conversely, nine PFGE types were geographically widespread and isolated from multiple sources, indicating that large molecular subtyping databases are necessary to facilitate epidemiological investigations by identifying the distribution patterns of PFGE types that cause outbreaks.
To meet this need, we developed PathogenTracker, a publicly available molecular subtyping database that will facilitate storage and large-scale analysis of different L. monocytogenes subtype data. Data in PathogenTracker can be queried through a variety of options, including DNA sequence and banding pattern-based searches (e.g., ribotype, PFGE type). This database also allows for the creation of individualized summary tables and permits simple statistical analysis of summary table data. Currently populated with subtype data for over 6,000 L. monocytogenes isolates, PathogenTracker will facilitate more rapid listeriosis outbreak detection and source tracking, development of a better understanding of L. monocytogenes transmission and ecology, and definition of specific characteristics for L. monocytogenes subtypes isolated from different sources populations.
We also developed a freely available standard L. monocytogenes reference strain collection, organized into a diversity set (25 isolates representing 25 PFGE types) and an outbreak set (21 isolates representing nine listeriosis outbreaks), which has not been previously available. In combination with inclusion of these isolates in PathogenTracker, which includes continuously updated information on strain characteristics and peer-reviewed references that utilized specific isolates, this strain collection provides a unique resource that will aid efforts to further improve our ability to reduce human foodborne listeriosis through development

of improved diagnostic procedures and intervention strategies. In addition, this strain collection provides a unique resource for basic and applied studies on the physiology, ecology, evolution, and pathogenesis of L. monocytogenes.

url: http://hdl.handle.net/1813/3433
date: 2006-08-04
creator: Rovba, Ludmila
viewed: 927
title: THREE ESSAYS ON THE EMPLOYMENT AND ECONOMIC WELL-BEING OF VULNERABLE POPULATIONS
abstract: Using data from the Canadian Survey of Labour and Income Dynamics (1993 through 2001), the first essay examines how wage differences between working age people with and without disabilities changed over time. Using Oaxaca-Blinder and Juhn, Murphy, and Pierce techniques to measure the share of the wage gap that remains unexplained after controlling for differences in observed wage-determining characteristics, the essay finds a substantial and growing wage gap between persons with and without disabilities that varies significantly throughout the distribution. Low skilled/low wage disabled workers are less seriously impacted by wage discrimination than their higher skilled/higher wage counterparts.
Using retrospective data from the 1990 Panel of the Survey of Income and Program Participation, the second essay exploits state-level variation in legislation prohibiting disability discrimination prior to the passage of the Americans with Disabilities Act of the 1990 to test the effect of such laws on the timing of Social Security Disability Insurance (DI) application following the onset of a health condition. Using hazard models, the essay finds that workers who lived in states that had traditional disability discrimination prohibitions or such prohibitions plus a reasonable accommodation requirement were significantly slower in applying for DI benefits than were workers in states with no such prohibitions. Increasing the likelihood of acceptance onto the program increases the speed of application.
Using data from the United States Current Population Survey, the British Household Panel Study, the German Socio-Economic Panel and the Japanese Survey of Income Redistribution, the third essay uses kernel density estimation to show how the income distribution changed between the peak years of the 1990s business cycle in these four major OECD countries. The entire after-tax household size-adjusted income distribution moved to the right in the United States and Great Britain. Germany and Japan experienced a decline in the middle mass of their income distributions that spread mostly to the right. In the United States and Japan, younger persons fared better than older persons, while the opposite was the case in Great Britain and Germany. Income inequality fell in all four countries among the older population.Tom Symons Dissertation Research Fellowship (Statistics Canada, Ottawa, Canada) National Institute on Disability and Rehabilitation Research (NIDRR) grant #H133B9800038 grant from the U.S. Social Security Administration (SSA) to the Michigan Retirement Research Center (MRRC) through the MRRC?s Steven H. Sandell Grant Program for Junior Scholars in Retirement Research

url: http://hdl.handle.net/1813/3434
date: 2006-08-04
creator: Compton, Jeannette
viewed: 2856
title: An Examination of Green Roof Plant Selection and Design to Optimize for Evapotranspiration
abstract: Thomas H. Whitlow, Louis Albright, Nina BassukGreen roofs are a new and growing field in North America. Along with the need for innovation in design, research on green roof systems and performance is necessary to capture and improve the way in which green roofs function. Green roof performance and benefits have traditionally been measured by their ability to capture storm water, cool the building below it by means of shading and evaporative cooling, and their ability to successfully support plant life. Currently,

green roofs design is dominated by shallow, light weight substrates and extremely drought tolerant plants, often from the Crassulaceae. This design predilection is based upon the limiting factors of building loading limits and installation costs. However, this design negates most of the benefits green roofs are expected to provide. Water holding capacity, and thus the green roof?s ability to retain significant volumes of storm water, is contingent on the depth of the substrate. By selecting plant species which are highly drought tolerant, the evapotranspiration rates are reduced. Additionally, many members of the Crassulaceae have an inverted stomatal rhythm wherein stomates are open at night to permit gas exchange with the atmosphere when transpirational demand is low and when cooling of the building is less needed. Therefore, a shift in focus is necessary, in which the design of green roofs is based on optimizing the performance of desired benefits. While limitations in cost and loading must be accounted for, they should not be the driving force of green roof design.

In response to this issue, this thesis examines an alternative approach to conceptualizing and designing green roofs. The following research presents a green roof system that held all storm water to the point of full saturation. Additionally, plant species capable of withstanding both drought and flooding were placed in a green roof setting. Evapotranspiration rates were recorded for Solidago canadensis and Spartina alterniflora during the summer of 2005, applying measured volumes of water to test the system?s ability to hold large volumes of water as well as the rate at which this water could be used by the plants. Full capacity of the substrate averaged approximately a 2-year return frequency storm for New York City, at 3 inches of water over a 24 hour period. Both plant species were capable of consuming enough water to shift from saturation to no levels of standing water within 4 days, suggesting the system?s ability to withstand several rain events in succession. The rates of evapotranspiration slowed as less water was present in the substrate, suggesting that the plant species could survive a prolonged period of drought by adjusting water usage. By storing greater volumes of water within the substrate, larger volumes of water were made available to the plant, reducing the need for more frequent rainfalls. Ultimately, this system exhibits a tolerance of drought and flooding and provides greater opportunity for plant survival, as compared to a freely draining, more drought-prone green roof design approach. While the studies conducted were for small units embedded within a larger green roof, and data was collected for a short period, the results suggest that this approach has immense potential in improving green roof benefits, and warrants further study.Edna Bailey Sussman Award

url: http://hdl.handle.net/1813/3435
date: 2006-08-04
creator: Byma, Justin
viewed: 3087
title: Efficiency of New York Dairy Farms: Exploring the Role of Managerial Ability
abstract: This paper explores the role of management ability in explaining efficiency on New York dairy farms using both Data Envelopment Analysis (DEA) and stochastic frontier estimation. First, we test whether computed technical, cost, and revenue efficiencies under DEA are due to a missing input, which we argue may be the management input. Using an unbalanced panel of individual farm data from the Cornell University?s Dairy Farm Business Summary (DFBS) from 1993 - 2004 we define 6 inputs, including operator labor, hired labor, purchased feed, livestock, capital, and crop inputs, and two outputs, including milk output and all other outputs. We define the management input in two ways. First, the DFBS asks farmers to estimate their own values of labor and management. Second, the panel nature of the data set allows us to use the previous year?s net farm income as a measure of farmer management ability. Using the lagged data prevents any contemporaneous bias in efficiency measurement and is consistent with Stigler's conjecture that differences in management ability should be captured in profits.

To test for the effects of the missing management input we first calculate DEA efficiency scores using the original six inputs and two outputs. These efficiencies are recalculated first using operators? values of labor and management, and then using lagged net farm income, in place of the operator labor input. The resulting

efficiency scores are compared. We find weak evidence of the missing management input using our two measures, and that change in computed efficiencies resulting from including the management input depends on whether one uses an input or output orientation. The change in efficiencies using operators? values of labor and management are small, often less than 1 percent. Using lagged net farm income as the management input increases computed input-oriented technical efficiency by an average of 1 percent and cost efficiency by 1.2 percent. Output oriented technical efficiency increases by 1.7 percent and revenue efficiency increases by nearly 2 percent. The impact of this measure of the management input on the allocative components of cost and revenue efficiencies was negligible, indicating that this measure of management ability serves more to explain differences in technology choice than allocative abilities.

We also estimate input- and output-oriented technical efficiencies, cost efficiencies and revenue efficiencies using stochastic frontier functions. The technical efficiencies are estimated using distance function methodologies. We transform our management input variables to a per cow basis and include them as efficiency effects variables along with operator age, education, farm size, and years of participation in the DFBS. This allows us to measure the impacts of management ability on farm efficiency while controlling for other factors that may also affect efficiency. We estimate conditional mean and heteroscedastic efficiency term specifications for each frontier model. We again find that using lagged net farm income per cow may be a preferred measure of management ability than farmers? own estimates of the value of their labor and management per cow. We find that, at the margin, this measure of management ability increases input-oriented technical efficiency by 1.4 ? 1.5 percent and cost efficiency by between 1.7 ? 2.9 percent, depending on specification. Output oriented technical efficiency and revenue efficiency increase at the margin by 1.8 ? 3.0 percent and by 2.4 ? 4.2 percent respectively. We also find increasing efficiency with operator education, farm size, and extended DFBS participation and decreasing efficiency with operator age.

Finally, we present a discussion of whether an input or output orientation is more appropriate for the farms in our sample and compare the dairy farm efficiencies predicted by DEA and the stochastic frontiers. We find that, for our data set, the distributions of farm efficiencies are very similar under DEA and stochastic frontier estimations, but individual farm rankings are quite different between the two.

url: http://hdl.handle.net/1813/3436
date: 2006-08-04
creator: Davison, Maria

title: Life in an altered landscape: Reproductive success and foraging efficiency of Florida Scrub-Jays (Aphelocoma coerulescens) in regenerating pasture
abstract: The challenge of protecting habitat for imperiled species amidst continuing, excessive habitat alteration constrains our conventional definition of ?suitable? habitat. Certain endangered species are known to persist on modified habitat, especially where their native habitat is largely destroyed. I examined reproductive success and foraging efficiency of Florida Scrub-Jays (Aphelocoma coerulescens) in a human modified habitat ? regenerating pasture ? along a pasture-native scrub interface. From 1985 to 2003, Florida Scrub-Jays were equally successful at producing young in regenerating pasture and native scrub. Production of eggs, nestlings, fledglings, independent young, and yearlings per nest were not statistically different between pasture and scrub, but consistently trended higher in the former. Nest success in pasture was significantly higher among pairs lacking nonbreeding helpers compared to pairs with helpers. Breeding males preferred pasture for their overall daily activities, and foraged equally frequently in pasture and scrub. Foraging efficiency of breeding males was significantly higher for small prey items, but significantly lower for medium and large prey items when they foraged in pasture compared to when they foraged in scrub. Availability of small prey items was significantly higher in pasture than in scrub; the availability of medium and large prey items were not significantly different between habitat types. These results suggest that regenerating pasture can provide suitable habitat for Florida Scrub-Jays when in close proximity to native scrub. The definition

of suitable habitat for this habitat-limited species should be expanded to include areas of pasture containing regenerating oak shrubs.

url: http://hdl.handle.net/1813/3437
date: 2006-08-04
creator: Jamison, Hill
viewed: 2614
title: Dynamic Modeling Of Tree Growth And Energy Use In A Nursery Greenhouse Using Matlab And Simulink
abstract: The purpose of this project was to create a process-based model of a tree seedling nursery as an aid to greenhouse operators concerned about energy management. This model termed GUESS, Greenhouse Use of Energy & Seedling Simulator, integrates a lumped parameter heat&mass transfer model of the greenhouse envelope with a process based model of the crop canopy, allowing the user to simultaneously assess the cost of production decisions alongside the impacts upon the health and growth of the crop.

url: http://hdl.handle.net/1813/3438
date: 2006-08-04
creator: King, Alexandra
viewed: 2453
title: Field Measurements of Bulk Flow and Transport through a Small Coastal Embayment Having Variable Distributions of Aquatic Vegetation
abstract: This thesis is largely the documentation of two passive tracer release studies performed in Sterling Pond (SP), a small embayment on the southern coast of Lake Ontario (LO). SP has a large watershed and is strongly connected to LO by a long and narrow channel. The experiments were designed to decipher the effects of aquatic vegetation (macrophytes) on flow and transport through SP and through shallow embayments dominated by macrophytes in general. Towards this objective, the studies captured the residence time distribution (RTD) of water entering SP from its watershed under two different spatial distributions of macrophytes, and they were conducted in synchrony with extensive surveys of macrophyte density, height, and species composition. Variables relevant to the dynamics of SP were continuously monitored at its boundaries, including meteorological conditions, water surface elevation, flow, and temperature (temperature was continuously monitored within SP as well); bathymetric data was collected once. The first study took place when watershed flow was high and macrophytes were sparse -- mean residence time was measured to be 0.6days. The second took place under moderate barotropic forcing from LO when watershed flow was low and macrophytes were dense and uniform across SP -- mean residence time was measured to be 20days. As the studies were conducted under fairly extreme environmental conditions, the measured RTD's roughly capture the range of residence time scales of water entering SP from its watershed. The tracer experiments, macrophyte surveys, and auxiliary data comprise a benchmark data set that may be used for development and validation of numerical models of flow through flexible vegetation.

url: http://hdl.handle.net/1813/3440
date: 2006-08-04
creator: Mirabello, Stephen
viewed: 2269
title: INFLUENCE OF SIDEROPHORE PRODUCING BACTERIA AND ORGANIC LIGANDS ON PHASE DISTRIBUTION OF CADMIUM AND ITS UPTAKE BY BRASSICA NAPUS IN THE PRESENCE OF GOETHITE
abstract: MS ThesisCadmium is a non essential trace element, which is toxic at very low concentrations. While Cd can occur at high concentrations as a result of the weathering of Cd-rich minerals, most high

concentrations are of human origin. Brassica have been shown to be hyper-accumulators of cadmium and are therefore good candidates for the application of phytoremediation to remediate soils with Cd contamination. The processes leading to successful phytoremediation are not fully understood, and may be dependant upon the bacterial community present in the rhizosphere. Bacteria in the vicinity of plant roots may degrade plant root exudates that would otherwise act to bind metals and bacteria can produce metal binding ligands such as siderophores. This study was conducted to determine if the presence of siderophore producing bacteria will affect cadmium uptake by Brassica napus (canola) in a model system. An apparatus was designed that included the dominant components of a phytoextraction system, a solid phase (modeled using ?-FeOOH, goethite), a liquid matrix (chemically defined MMS-2 medium in which metal speciation may be calculated), a plant (B. napus) and a siderophore producing bacterium (Burkholderia cepacia). Physical separation of the plant from the Fe was needed to discern plant uptake of Cd and was accomplished by utilization of dialysis membranes. Components of the system were studied independently before combining for short term plant uptake experiments. The system was kept at a pH of 6.4 to model a typical soil pH. Studies of Cd adsorption on ?-FeOOH in MMS-2 revealed that adsorption was fast, and that desorption was biphasic and incomplete within the time frame of the experiment. A linear equilibrium adsorption isotherm for Cd on ?-FeOOH was developed with a sorption constant, Kd, of 2600 mL/g. A linear sorption relationship was also developed for Cd sorption by the walls of the glass reactor vessel, with a volumetric sorption constant, Kg (unitless), which is proportional to the surface area to volume ratio at a given volume.

Bacterial growth was measured at two initial substrate concentrations, 68 and 272 mg/L dextrose added to the MMS-2 media. Stationary phase was achieved in approximately 40 hours after inoculation. Siderophore production by B. cepacia was measured by the Chrome Azurol Sulfonate (CAS) technique, and yielded a maximum concentration of 39 ?M for the experiments.

Cd speciation, phase distribution, and uptake by B. napus were perturbed in the experimental system by the addition of salicylate, citrate, ethylenediamine tetraacetic acid (EDTA), a suspension of B. cepacia and its associated siderophore, or the supernatant containing the B. cepacia siderophore. Changes in phase distribution of Cd upon addition of ligands with defined Cd binding constants were not consistent with the values predicted by MINEQL+, where CdEDTA>CdCitrate>CdSailcylate. Salicylate desorbed more Cd than citrate, and was chosen along with EDTA for plant uptake experiments. Cell suspensions and siderophore containing supernatant were shown to enhance the adsorption of Cd under the experimental conditions.

Addition of plant roots to a ?-FeOOH suspension resulted in a rapid capture of goethite onto the roots, as a result it was impossible to distinguish Cd in the plant root from Cd sorbed to the FeOOH. A dialysis membrane was utilized to separate roots from the Fe solid phase. The presence of the dialysis membrane did not create a detectable change in adsorption of Cd.

Plant uptake experiments were conducted over a short time scale. An eight hour equilibration step was utilized after perturbations of Cd-?FeOOH adsorption equilibrium (by addition of ligand) and followed by six hours of plant uptake. Both salicylate and EDTA were effective in increasing the phytotextraction of Cd. Salicylate may have more potential of these two ligands for field application because of the concerns associated with toxicity of and the mobilization of the Cd-EDTA complex. B. cepacia and its supernatant with dissolved siderophores did not improve uptake of Cd by canola, but did desorb more Cd.CEE School

url: http://hdl.handle.net/1813/3441
date: 2006-08-04
creator: Mude, Andrew
viewed: 3995
title: Catalyst of Constraint? On the Complex Role of Social Capital in Transitioning Rural Economies
abstract: This dissertation concerns itself with poverty amongst the rural poor, and specifically with contributing to the set of tools and policies that can effectively improve their economic wellbeing. Rural communities in developing countries play host to the majority of the world?s poor. Widespread and

persistent poverty has led to a growing appreciation of the unique set of obstacles limiting economic growth and progress in rural communities. It is now widely accepted that economic behavior, especially in more traditional communities, is imbedded within a socio-cultural system that circumscribes the space of economic possibilities and outcomes. The dominant view has it that the highly personalized nature of social interaction common to rural communities can be harnessed as productive "social capital" to support economic interaction in the absence of formal market institutions.

The three papers of this dissertation aim to contribute to the existing literature on the social economics of development that goes beyond the myopic view of social capital as a productive input to economic endeavor. They each emphasize the importance of a nuanced, context-specific understanding of how the set of shared norms, behaviors and expectations characteristic of rural environments interact and co-evolve with an emerging market economy. In three different settings I demonstrate how the na?ve and generalized application of social capital as a productive resource limits welfare growth, supports ineffective institutions and promotes faulty policy instruments.

The first paper shows how spatially-varied returns to human capital that fuel migration may diminish the capacity of social capital to support informal contract enforcement. The second paper demonstrates how microfinance institutions whose design relies on an inadequate characterization of social capital may actually erode the very social forces it hopes to exploit. Finally, the third paper highlights how increasing material incentives coupled with a dysfunctional mix of informal institutions and formal regulations can breed rent-seeking that adversely affects the welfare and productivity of the majority of members in a producer organization.

The contribution of this dissertation is to cast a spotlight on how specific features of the socioeconomic landscape interact to jointly determine the space of economic outcomes and the trajectory of social change. In doing so, it informs the design of appropriate policies and institutions that provides the rural poor with a level-playing field and promotes the set of incentives crucial for effective economic transacting.

url: http://hdl.handle.net/1813/3442
date: 2006-08-04
creator: Phillips, Sanford
viewed: 2673
title: INVERSE IDENTIFICATION OF TRANSIENT THERMAL PROPERTIES AND HEAT SOURCES USING GENETIC ALGORITHMS
abstract: This work investigates the solution to inverse problems in heat transfer using genetic algorithms. Genetic algorithms are robust, stochastic search techniques which also admit the ability to search highly nonlinear problems. In this work, computational techniques are developed for the simultaneous inverse identification the internal heat generation and the thermal diffusivity of early age concrete as functions of time, as well as constant convective coefficients. Through the use of several numerical examples it is shown that this methodology yields accurate results for the inverse heat transfer problem in finding several unknown conditions simultaneously.

url: http://hdl.handle.net/1813/3443
date: 2006-08-08
creator: Fogle, Homer William Jr
viewed: 2568
title: DX of DKE Special Study #05: Memorial Stained Glass Windows
abstract: 18 p; ill.; footnotes; appendices; 28 cm. Electronic reproduction.
Original of 1993, revised and reformatted, 7 August 2006.The author describes the eight opalescent stained glass windows found within the lodge of the Delta Chi Chapter of the Delta Kappa Epsilon Fraternity at Cornell University. The two 1907 Memorial Windows are attributed to the studio of Frederick Stymetz Lamb.

url: http://hdl.handle.net/1813/3444
date: 2006-08-08
creator: yi, yoon sun
viewed: 2292
title: Gender Construction and Korean Mordernity
abstract: Novels Mujong, Hwanhui, and Kim Yonsil ch'on can be read as a commentary on Korean modernity in their portrayal of women during a specific time in Korean history that is characterized by an abrupt transition from feudal society to modern society. When the enlightenment thinkers in the 1890s first promoted civilization, nationalism and social reform, they targeted the traditions and perspectives defining women's role in society. Kenneth Wells says in his discussion "Women and the Kunuhoe Movement," "Korean society historically presents an almost prima facie case for using gender as an interpretive framework. The metaphysics, mores, human functions, architectural designs, spatial divisions, and state ideology of the Choson dynasty were so consciously organized with reference to gender principles that instead of a social construction of gender one might justifiably speak of gendered construction of Korean society." I examine this "gendered construction" in modernity and explore its function, its limits, its manifestations and its purported mission.

1894 marked a violent and chaotic turning point in Korean history, which made it clear that the structures of Choson dynasty were no longer able to sustain the internal and external pressures suffocating Korea. 1894 also revealed Korea's failure to process modernity according to its own agendas. In this context civilization, nationalism and social reconstruction did not mean addressing "real" and urgent Korean problems arising from the breakdown of feudal order, economic disparity, social injustices and political chaos, instead it meant privileging and forcing a modern structure that seemed powerful, dazzling and foreign. Yi Kwangsu repeatedly says, "the only way for Koreans to survive would be to bring the Korean people to the same level of civilization as that of all the most civilized peoples in the world, that is, the same level of civilization as that of the Japanese people." (Mujong, 130) I am not strictly adhering to the idea that Korean modernization merely imitated Japanese and European modernization. I want to examine through Mujong how this foreign modernization process, expressed through the new woman and love construct, was internalized. I want to address questions such as what was the significance of love as an ideology during the colonial period? What did it help accomplish and where did it fail? Yi Kwangsu laid the foundation of love as a hegemonic ideological construct in which the new woman becomes the harbinger of society bringing with her the ideas of nuclear family, free marriage and divorce, romance and education. She is the ideal mother who possesses modern refinement and individuality, a symbol of Korea's modern consciousness and progress.

Threat of imperialism, which eventually became a reality with the colonization of Korea unleashed several other evils adding to the angst and hopelessness of Korea's already deteriorated state. In part two, I look at the "gendered construction" at this stage in Korean history through Hwanhui (Na Tohyang) and Kim Yonsil ch'eon (Kim Tongin). Each of these novels reveals a different "evil" of modernization under colonialism and provides insight into the limits and manifestation of the modern structures envisioned by the enlightenment thinkers of 1890s.

The gender reconstruction in Korean modernity sheds light on Korea's desire for its sovereignty and liberation. It was a social movement that revealed the psychological activities of society at the turn of the century and during its colonization. Set against the political and economical chaos, the reconstruction of gender relationships defined Korea's process through its modernization, but failed in the end to give sovereignty and liberation to its people.

url: http://hdl.handle.net/1813/3445
date: 2006-08-10
creator: DiSabella, Ryan

viewed: 2237
title: Applications of Twist Bonding
abstract: Two processes have been developed by which twist boundaries may have useful application. The first of these, the compliant universal substrate, attempts to utilize a twist boundary to allow the growth of large lattice mismatch, low defect density heteroepitaxial layers. The second, the periodic template, attempts to use the periodic stress fields inherent in a twist boundary to produce two-dimensional surface topography with a very fine, and controllable, periodicity.
One sample of germanium grown on a silicon compliant substrate was analyzed in a JEOL 1200EX transmission electron microscope. The analysis showed that the twist boundary was not present in all regions of the Si-Ge interface. In those regions where the twist-bonded layer was observed, it was established that the Ge crystal was rotated approximately 45 degrees from the underlying bulk Si wafer. In those regions where the layer was not present, no such rotation was observed. Due to the small size of the domains in which the compliant layer was present or absent, strong conclusions with respect to its effect on defect densities can not be drawn. High magnification investigations of the twist bonded layer showed that it does exhibit a roughly periodic internal structure.
Attempts were made to fabricate periodic templates with silicon, gallium arsenide, and gold bicrystals. Twist bonding of gold proved to be the most successful of the three materials. Gold films were sputtered epitaxially onto sodium chloride crystals at 450 degrees C and subsequently annealed for one hour at 600 degrees C. Two films, one approximately 500 nm thick and one approximately 20 nm thick, were bonded together in a hot press at ~1.0 MPa at 300 degrees C for 1.2 hours. The misorientation angles of these bicrystals were kept below 5 degrees to maintain a reasonable dislocation spacing. The bicrystals were then characterized using the JEOL 1200EX TEM and a Nanoscope III atomic force microscope. Small amplitude surface modulations whose periodicity matched that of the underlying dislocation structure were observed.

url: http://hdl.handle.net/1813/3447
date: 2006-08-14
creator: Fogle, Homer William Jr
viewed: 2365
title: DX of DKE Special Study #13: The Cornell Deke House -A History of the 1893 Lodge
abstract: 62 p; ill.; footnotes; appendices; 28 cm. Electronic reproduction. Adapted from Fogle, The Cornell Deke House -A History of the 1893 Lodge (Ithaca NY: The Delta Chi Association, 1993). Revised and expanded, 13 August 2006.The author recounts the design, funding, erection and significance of the lodge as represented in material previously published in petitions to list the building on the National Register of Historic Places, on the New York State Register of Historic Places, and as a City of Ithaca Local Landmark.

url: http://hdl.handle.net/1813/3448
date: 2006-08-15
creator: Marcham, John;Marcham, Frederick G.
viewed: 2532
title: Compressed versions of the Books by and about Prof. Frederick G. Marcham
abstract: This is a collection of Compressed files which will expand to on either a PC or a MAC into the complete set of Books concerning Prof. Frederick G. Marcham. Once downloaded and uncompressed on your computer, Adobe Catalog and Index functions will be available to the user to search these materials offline. An example of the Uncompressed file structure is available for download as well as the compressed Books and their indexes.

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url: http://hdl.handle.net/1813/3449
date: 2006-08-15
creator: Emelett, Stephen
viewed: 1116
title: Structural and dynamic investigations and temporal optimization of the optical and electrical properties of the microring modulator
abstract: Four different circumstances were investigated to discover what considerations must be assessed in order to generate the most rapid PIN optical modulator response. Beginning with the placement of the contacts in relation to each other, it was found that they logically influence the performance of the device with a direct linear relationship. Second, the lifetime dependency versus the concentration of the doped i region and select placement of electrical recombination centers were found to be inversely dependent, and ineffective over a larger range of concentrations, respectively. Tertiary discussions focus on the type of doping that exists in the i-region by considering analytic and simulated solutions, which demonstrated that the p-type region operates at more expedient rates due to the reversal of the limiting carrier selection by way of space-charge arguments. We present n-type to p-type ratios approaching 2 for index-switching concentrations. Finally, the fourth review deals with the amalgamation of what was learned from the previous inquiries to create, not an optimized PIN structure, but rather a design capable of lifetime ratios over 4, although the results are only preliminary. Inquiries into several other concepts are also conducted to find other points of interest.

url: http://hdl.handle.net/1813/3450
date: 2006-08-15
creator: Chronicle, Cornell
viewed: 2679
title: Obituary of Prof. Frederick G. Marcham
abstract: A Zipped version of all of the Books and articles concerning Frederick G. Marcham can be found at http://hdl.handle.net/1813/3448The life and career of Prof. Marcham (1898-1992): teacher, trustee, department chairman at Cornell University, coach, author, photographer, mayor of Cayuga Heights village 32 years.

url: http://hdl.handle.net/1813/3450
date: 2006-08-15
creator: Chronicle, Cornell
viewed: 2679
title: Obituary of Prof. Frederick G. Marcham
abstract: A Zipped version of all of the Books and articles concerning Frederick G. Marcham can be found at http://hdl.handle.net/1813/3448The life and career of Prof. Marcham (1898-1992): teacher, trustee, department chairman at Cornell University, coach, author, photographer, mayor of Cayuga Heights village 32 years.

url: http://hdl.handle.net/1813/3451
date: 2006-08-15

creator: Wolters, Oliver W.;LaFeber, Walter F.;Gates, Paul W.
viewed: 2299
title: Frederick George Marcham (1992-1993 Memorial Statements of the University Faculty)
abstract: A Zipped version of all of the Books and articles concerning Frederick G. Marcham can be found at http://hdl.handle.net/1813/3448An Obituary of Professor Frederick G. Marcham.

url: http://hdl.handle.net/1813/3451
date: 2006-08-15
creator: Wolters, Oliver W.;LaFeber, Walter F.;Gates, Paul W.
viewed: 2299
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abstract: A Zipped version of all of the Books and articles concerning Frederick G. Marcham can be found at http://hdl.handle.net/1813/3448An Obituary of Professor Frederick G. Marcham.

url: http://hdl.handle.net/1813/3452
date: 2006-08-15
creator: Marcham, Frederick G.
viewed: 1680
title: On Teaching
abstract: The Internet-First University Press (DVD and perfect bound copies also are available via e-mail: digital@cornell.edu).
A Zipped version of all of the Books and articles concerning Frederick G. Marcham can be found at http://hdl.handle.net/1813/3448On Teaching contains a number of essays and reflections by F. G. Marcham on the roles of teacher and student. The bulk of these are articles were written in the latter part of his seven decades as a teacher at Cornell. It contains examples of teaching techniques and materials from Prof. Marcham's 69 years of teaching at Cornell University.

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date: 2006-08-15
creator: Marcham, Frederick G.
viewed: 1680
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url: http://hdl.handle.net/1813/3453
date: 2006-08-15
creator: Marcham, Frederick G.
viewed: 2978
title: Cornell Notes: 1898 to World War II
abstract: The Internet-First University Press (DVD and perfect bound copies also are available via e-mail: digital@cornell.edu). A Zipped version of all of the Books and articles concerning Frederick G. Marcham can be found at http://hdl.handle.net/1813/3448The Cornell Notes in particular are very frank descriptions of the

struggles among professors, departments, college deans, and central administrators to govern a university. They cover the period of Prof. Marcham's childhood, study, British Army service, graduate study and first two decades of teaching at Cornell.

url: http://hdl.handle.net/1813/3453
date: 2006-08-15
creator: Marcham, Frederick G.
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url: http://hdl.handle.net/1813/3454
date: 2006-08-15
creator: Marcham, Frederick G.
viewed: 982
title: Cornell Notes: World War II to 1968
abstract: The Internet-First University Press (DVD and perfect bound copies also are available via e-mail: digital@cornell.edu).
A Zipped version of all of the Books and articles concerning Frederick G. Marcham can be found at http://hdl.handle.net/1813/3448The Cornell Notes in particular are very frank descriptions of the struggles among professors, departments, college deans, and central administrators to govern a university. Why so frank? I asked a close colleague of my father's. "He wanted to leave his view of the story." This book deals with Prof. Marcham as a Cornell University teacher and trustee, coach, faculty advocate, and village mayor in America.

url: http://hdl.handle.net/1813/3454
date: 2006-08-15
creator: Marcham, Frederick G.
viewed: 982
title: Cornell Notes: World War II to 1968
abstract: The Internet-First University Press (DVD and perfect bound copies also are available via e-mail: digital@cornell.edu).
A Zipped version of all of the Books and articles concerning Frederick G. Marcham can be found at http://hdl.handle.net/1813/3448The Cornell Notes in particular are very frank descriptions of the struggles among professors, departments, college deans, and central administrators to govern a university. Why so frank? I asked a close colleague of my father's. "He wanted to leave his view of the story." This book deals with Prof. Marcham as a Cornell University teacher and trustee, coach, faculty advocate, and village mayor in America.

url: http://hdl.handle.net/1813/3455
date: 2006-08-15
creator: Marcham, Frederick G.
viewed: 1685

title: Britons and Cornellians
abstract: The Internet-First University Press (DVD and perfect bound copies also are available via e-mail: digital@cornell.edu).
A Zipped version of all of the Books and articles concerning Frederick G. Marcham can be found at http://hdl.handle.net/1813/3448Among many essays written by F. G. Marcham were a number about individuals. One grew out of his publication of a book on the Cornellian bird artist Louis Agassiz Fuertes. Several are memorial tributes to and biographies of composers, poets, naturalists, historians, students, and alumna.

url: http://hdl.handle.net/1813/3455
date: 2006-08-15
creator: Marcham, Frederick G.
viewed: 1685
title: Britons and Cornellians
abstract: The Internet-First University Press (DVD and perfect bound copies also are available via e-mail: digital@cornell.edu).
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url: http://hdl.handle.net/1813/3456
date: 2006-08-15
creator: Marcham, Frederick G.
viewed: 3066
title: Cornell: Athletics, Wartime, and Summing Up
abstract: The Internet-First University Press (DVD and perfect bound copies also are available via e-mail: digital@cornell.edu).
A Zipped version of all of the Books and articles concerning Frederick G. Marcham can be found at http://hdl.handle.net/1813/3448This book contains a number of the writings of F. G. Marcham on aspects of Cornell University: athletics, the campus during wartime, and his view of its operation and a general essay for use in a university book. It deals with Cornell University athletics, in World War II, and changes from 1923-1979. It also deals with Prof. Marcham as an athlete, coach, and adviser to athletes, his letters to servicemen in WWII, and how the university changed over 5 1/2 decades.

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url: http://hdl.handle.net/1813/3457
date: 2006-08-15
creator: Marcham, Frederick G.
viewed: 3128
title: Beliefs: Eight Essays and Nine Rules to Live By
abstract: The Internet-First University Press (DVD and perfect bound copies also are available via e-mail: digital@cornell.edu).
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url: http://hdl.handle.net/1813/3458
date: 2006-08-15
creator: Marcham, John
viewed: 1617
title: The Photographs of Frederick G. Marcham
abstract: Bound copies are available only from the DeWitt Historical Society. A Zipped version of all of the Books and articles concerning Frederick G. Marcham can be found at http://hdl.handle.net/1813/3448Frederick George Marcham is remembered in Ithaca, New York, as a professor, teacher, and public official, hardly at all as a photographer. Some colleagues at Cornell University knew he collected prints and that in 1970 he brought out a handsome book of paintings by the Ithaca naturalist Louis Agassiz Fuertes, but ? except for one notable picture ? only his family and a few close friends saw his photographs. This collection includes a hundred of Prof. Marcham's photographs of England in the 1920s and 1951, Cornell University athletics, relatives, friends, farmland near Ithaca, New York with text by his son John.

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creator: Marcham, John
viewed: 1617
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url: http://hdl.handle.net/1813/3459
date: 2006-08-15
creator: King, Kenneth M.;Cooke, J. Robert
viewed: 3377
title: Compressed version of the Final Project Report to Atlantic Philanthropies
abstract: This is a Compressed version of the Final Project Report to Atlantic Philanthropies: Creating an Open Access Paradigm for Scholarly Publishing. Once downloaded and uncompressed on your computer, there will be Adobe Catalog and searching functions which can be used off-line against the materials.

url: http://hdl.handle.net/1813/3460
date: 2006-08-15
creator: King, Kenneth M.;Cooke, J. Robert
viewed: 3044
title: Final Project Report to Atlantic Philanthropies: Creating an Open Access Paradigm for Scholarly Publishing
abstract: The Internet-First University Press (DVD and perfect bound copies also are available via e-mail: digital@cornell.edu).
A Zipped version of all of the files related to this report can be found at http://hdl.handle.net/1813/3459This is the final report for the Atlantic Philanthropies funded study, "Creating an Open Access Paradigm for Scholarly Publishing" (October 2002 thru June 2006). The DSpace digital repository, created at the MIT library, was implemented at Cornell University as one of the initial DSpace sites. We explored its usage as a repository and as a publishing distribution platform for low-cost (royalty-free) open access publishing that encompasses all disciplines and is openly accessible worldwide. We were especially interested in exploring how the Internet might be used to fundamentally improve communication among universities and with the rest of society. We commissioned some financial studies and held some workshops. We describe some models for lowering costs for university presses, libraries, and the universities that exploit attributes of online publishing that were not feasible with a paper-based model. In particular, we urge a fresh look at the system, not individual campus, level for potential savings.
We explored ways to encourage a shift in the faculty's willingness to effectively utilize this digital repository -- including a shift in emphasis from archiving to include online publishing. We published traditional materials, but also gave strong emphasis to multimedia materials as an alternative to print volumes that are expensive for publishing limited audience content. Video, until quite recently, has been very expensive, but that barrier can now be easily overcome. To encourage faculty participation we provided print-on-demand perfect binding and DVDs as a higher resolution (but more expensive and requiring a user fee) service. Eventually, we think, there will be a growing acceptance by faculty for online searching and browsing, with a need only for paying a user fee only for intensively used materials or otherwise for higher resolution presentations. Our content can be found at:
http://dspace.library.cornell.edu/index.jsp
http://dspace.library.cornell.edu/handle/1813/62

http://ifup.cit.cornell.edu

url: http://hdl.handle.net/1813/3461
date: 2006-08-16
creator: Producer: Fly on the Wall Productions;Handler, Maddy;Handler, Philip
viewed: 3225
title: Journey from Sibley: Jill Lerner '75
abstract: Journey to Sibley is also available at http://ifup.cit.cornell.edu/lerner/This video features Cornell-educated architect and University Trustee Jill Lerner '75, B Arch '76, a Principal at the architectural firm, Kohn Pedersen Fox Architects (KPF.) Created in honor of her 30th Reunion in June 2005, the video is illustrated with vintage photos of Jill's days on the hill, her friends in college, and her dance performances. Jill is heard describing why she selected Cornell, telling about her years as an architecture student as well as an serious dance student and performer, and explaining her work at KPF. Her story is interspersed with brief commentary from Cornell classmates and friends, her family, and from founding KPF Principals, Gene Kohn and Bill Pedersen. Additionally, Jill describes why her Alma Mater has come to play such a significant role in her life in recent years and her election to the Cornell Board of Trustees for a four year term starting in July 2005.

url: http://hdl.handle.net/1813/3462
date: 2006-08-16
creator: Producer: Fly on the Wall Productions;Handler, Maddy;Handler, Philip
viewed: 1802
title: True Big Red: Professor Don Greenberg '55
abstract: Producer: Fly on the Wall ProductionsThis video featuring Don Greenberg '55, Cornell's Jacob Gould Schurman Professor and creator and Director of the Program of Computer Graphics, was produced in honor of his 50th Reunion. Don's True Big Red story unfolds with his narration about his Cornell legacy; his years as an undergraduate; his forty years of Cornell teaching in Architecture, Art, and Planning, the Johnson School, and the Engineering College; his athletic prowess which continues in his 70's; his love for the life he leads overlooking Lake Cayuga. Using vintage photos, as well as comments from family, friends, classmates, colleagues, and former Cornell Presidents Corson and Rhodes, this video explains why Don Greenberg deserves to be known as a Cornell "legend."

url: http://hdl.handle.net/1813/3465
date: 2006-08-16
creator: Thies, Janice;Lehmann, Johannes;Liang, Biqing;Solomon, Dawit;Garcia, Carlos Eduardo;Gomes, Jose Elias;Tsai, S.M.;Grossman, Julie;O'Neill, Brendan
viewed: 2360
title: Isolating Unique Bacteria from Terra Preta Systems: Using Culturing and Molecular Tools for Characterizing Microbial Life in Terra Preta
abstract: Poster presentation from the 2006 World Congress of Soil Science in Philadelphia, PAThe greater fertility of Terra Preta (TP) soils is thought to be due to their high black carbon (BC) content, which contributes to increased nutrient and moisture retention, and increased pH. It is likely that the unique chemistry of BC results in distinct microbial communities involved in nutrient cycling and organic matter turnover. TP soils offer an excellent model system for studying soils containing elevated and stable BC fractions in comparison to adjacent soils, because state factors, such as mineralogy, precipitation and climate, are the same between soils at a given site. Given this we compared the microbial communities in background soils adjacent to TP sites at four locations in the Brazilian Amazon. We used a combination of culture-based and molecular techniques to characterize and identify the key members of the bacterial communities in these

soils. We found that culturable bacteria were more numerous in TP soils than in adjacent background soils. Bacteria were grown on soil extract agar prepared from TP and adjacent soils and, by cross-cultivation, bacteria uniquely suited to growth on TP soil substrates were isolated. All isolates were screened by use of RFLP fingerprinting and then the 16S rDNA of unique isolates was sequenced. Clustering analysis of RFLP fingerprints indicated that isolates obtained from TP soils were more closely associated with each other than with bacterial isolates from adjacent soils within the same site. We hypothesized that TP would contain microbes that are uniquely associated with soils high in BC as compared to adjacent soils and that these organisms would have more phylogentic simlarity to each other across TP sites than in comparison to their corresponding adjacent soils. Of sequenced organisms most fell within the groupings Firmicutes, High G+C actinimyces, alpha-proteobacteria and gamma-proteobacteria, but only 18% had matches in the database above 97% and only 4% of sequences above 99% similarity. Finally we compared phylogenies of sequences obtained from individual soil isolates with those obtained from cloning and sequencing DNA from PCR-DGGE gels. Results from both approaches show a greater homology between sequences obtained from the four TP sites than between sequences obtained from adjacent and TP soils from the same site. By combining culture-based and culture-independent molecular techniques we obtained a more complete analysis of the suites of organisms unique suited to soils rich in BC.

Black carbon is widespread in the environment and, once created, persists over long time scales. Knowledge of the ecology of TP soils may contribute to a broader understanding of the behavior of BC in natural environments and its possible use in agricultural systems to improve soil fertility.

url: http://hdl.handle.net/1813/3466
date: 2006-08-18
creator: van Adelsberg, Matthew
viewed: 1558
title: Thermal Radiation from Isolated Neutron Stars: Spectra and Polarizations
abstract: Recent observations of surface emission from isolated neutron stars (NSs) provide unique challenges to theoretical modeling of thermal radiative processes. We construct models of thermal emission from strongly magnetized NSs in which the outermost layer of the NS is in a condensed liquid or solid form, or is an ionized H or He atmosphere.

We calculate the emission properties (spectrum and polarization) of NSs with condensed Fe and H surfaces using a generalized form of Kirchhoff's Law, in the regimes where condensation may be possible. For smooth condensed surfaces, the overall emission is reduced from blackbody by less than a factor of two. The spectrum exhibits modest deviation from blackbody across a wide energy range, and shows mild absorption features associated with the electron plasma and ion cyclotron frequencies in the condensed matter. The roughness of the solid Fe condensate decreases the reflectivity of the surface, making the emission spectrum even closer to blackbody.

We provide an accurate treatment of vacuum polarization effects in magnetized NS atmosphere models. We treat the conversion of photon modes (due to ``vacuum resonance'' between plasma and vacuum polarizations), employing both the modal radiative transfer equations (coupled with an accurate mode conversion probability at the vacuum resonance) and the full radiative transfer equations for the photon Stokes parameters. We are able to quantitatively calculate the atmosphere structure, emission spectra, beam patterns, and polarizations for the range of magnetic field strengths $B=10^{12}-10^{15}$ G. In agreement with previous studies, we find that for NSs with magnetic field strengths $B/2 \ga B_l\simeq 7\times 10^{13}$ G, vacuum polarization reduces the widths of spectral features and softens the hard tail of magnetized atmosphere models. For $B\la B_l/2$, vacuum polarization does not change the emission spectra, but can affect the polarization signals.

We investigate the propagation of photon polarization in NS magnetospheres, and show that vacuum polarization induces a unique energy-dependent linear polarization signature, and can generate circular polarization in the magnetospheres of rapidly rotating NSs. We discuss the implications of our results for

observations of thermally emitting isolated NSs and magnetars, and the prospects for future spectral and polarization studies.

url: http://hdl.handle.net/1813/3470
date: 2006-08-21
creator: Snapp, Sieglinde;Drinkwater, Laurie
viewed: 1518
title: Understanding and managing the rhizosphere in agroecosystems
abstract: Agricultural systems represent the major form of land management, covering 5 billion hectares of the global terrestrial land area. The unintended consequences of agriculture extend well beyond agricultural landscapes and include environmental degradation and social displacement (Hambridge 1938; Vitousek et al. 1997; Friedland et al. 1991). Many have advocated the adoption of an ecosystem-based approach that would incorporate multifunctionality as an agricultural goal and entail broad application of fundamental ecological principles to food production (Dale et al. 2000; Drinkwater and Snapp 2005). This approach would aim to reduce external inputs and environmental degradation by increasing the capacity for internal, ecological processes to support crop production while contributing to other ecosystem services (Dale et al 2000).
Most efforts devoted to managing the rhizosphere in agricultural systems have emphasized processes that contribute directly to maximizing yield within the context of resource-intensive cropping systems. Several excellent reviews are available covering the role of rhizosphere biology in promoting crop growth under the nutrient rich conditions of high input agriculture (cf. Pinton et al. 2001; Lynch 1990). In particular, the biology of important root pathogens and plant-microbial N-fixing symbioses have been extensively studied within this context (Spaink et al. 1998; Whipps 2001). A smaller amount of rhizosphere research has focused on achieving modest improvements in yields under severe nutrient or water limitations that are commonly found in low-input, subsistence agroecosystems of the developing countries where farmers do not have access to purchased fertilizers and pesticides (Lynch 1990).
In this chapter we will assess the current ecological understanding of the rhizosphere in agroecosystems and broaden the scope of rhizosphere contributions to encompass a variety of ecosystem functions beyond those directly related to maximizing crop growth and yields. Our aim is to examine the potential for rhizosphere processes and plant-microbial interactions to restore agroecosystem functions to reduce input dependancy and environmental degradation. We begin with an inventory of how conventional, high input management has altered the soil environment and biota in agroecosystems with particular emphasis on the consequences for the rhizosphere habitat. We then survey a range of rhizosphere processes and examine how current management practices enhance or hinder the process and evaluate the potential for improved functionality. Finally, we look ahead and discuss how management of the rhizosphere and plant-microbial interactions could be approached within multifunctional, ecologically-sound agricultural systems of the future.

url: http://hdl.handle.net/1813/3471
date: 2006-08-22
creator: Gillespie, Tarleton
viewed: 2406
title: Designed to 'Effectively Frustrate': Copyright, Technology, and the Agency of Users
abstract: Recently, the major U.S. music and movie companies have pursued a dramatic renovation in their approach to copyright enforcement. This shift, from the ?code? of law to the ?code? of software, looks to technologies themselves to regulate or make unavailable those uses of content traditionally handled through law. Critics worry about the ?compliance? rules built into such systems: design mandates for manufacturers indicating what users can and cannot do under particular conditions. But these are accompanied by a second set of limitations: ?robustness? rules. Robustness rules obligate manufacturers to build devices such that they prevent tinkering -- not only must the technology regulate its users, it must be inscrutable to them. I

examine this aspect of technical copyright regulation, looking particularly at the CSS encryption system for DVDs and the recent ?broadcast flag? proposed for digital television. In the name of preventing piracy, these arrangements threaten to undermine users? sense of agency with their own technologies.This research was assisted by a grant from the Digital Cultural Institutions Project of the Social Science Research Council, with funds provided by the Rockefeller Foundation.

url: http://hdl.handle.net/1813/3472
date: 2006-08-22
creator: Gillespie, Tarleton
viewed: 2288
title: Engineering a Principle: 'End-to-End' in the Design of the Internet
abstract: The term 'end-to-end' has become a familiar characterization of the architecture of the Internet, not only in engineering discourse, but in contexts as varied as political manifestos, commercial promotions, and legal arguments. Its ubiquity and opacity cloaks the complexity of the technology it describes, and stands in for a richer controversy about the details of network design.
This essay considers the appearance, in the 1970s, of the term 'end-to-end' in computer science discourse, and how the term became a point of contention within disputes about how to build a packet-switched network. I argue that the resolution of some of those disputes depended on the transformation of the term from descriptor to 'principle'. This transformation attempted to close specific design debates, and, in the process, made the term dramatically more useful in those discourses beyond engineering that eventually took a keen interest in the design of digital communication networks.
The term, drawn from common parlance and given not only meaning but conviction, was shaped and polished so as to be mobile. As such, it actively managed and aligned disparate structural agendas, and has had subtle consequences for how the Internet has been understood, sold, legislated, and even re-designed.

url: http://hdl.handle.net/1813/3473
date: 2006-08-22
creator: Gillespie, Tarleton
viewed: 3562
title: Copyright and Commerce: The DMCA, Trusted Systems, and the Stabilization of Distribution
abstract: The Digital Millennium Copyright Act has been criticized for granting too much power to copyright holders, offering them new technological controls that may harm the public interest. But, by considering this exclusively as a copyright issue, we overlook how the DMCA anticipates a technological and commercial infrastructure for regulating not only copying, but every facet of the purchase and use of cultural goods. In upholding the law in Universal v. Reimerdes, the courts not only stabilized these market-friendly arrangements in cultural distribution; they extended these arrangements into realms as diverse as encryption research and journalism, with consequences for the very production of knowledge.

url: http://hdl.handle.net/1813/3474
date: 2006-08-23
creator: Shannon, Rachel
viewed: 2360
title: Using alteration halos to determine the mass of volatiles expelled and the rate of expulsion in a magmatic porphyry system with application to the porphyry copper system at Butte, Montana
abstract: The rate of volatile expulsion, the duration of venting, the total volume of volatiles expelled, and the size of intrusion required to supply them are key parameters in the formation of any magmatic-hydrothermal ore deposit that can be estimated from the morphology of the hydrothermally altered rock. The radius of pervasively altered rock around the fluid source and the taper of alteration halo with distance from the

pervasively altered zone constrain the duration and rate of volatile expulsion. The volume of altered rock records the total mass of volatiles expelled. An analysis of the Pittsmont Dome at the porphyry copper system at Butte, Montana provides an example. The moles of hydrogen ion consumed during alteration are calculated from the mineralogy of unaltered and altered rock. Published composition estimates are used to determine the concentration of reactable hydrogen ion in the magmatic fluid. Diffusion from the vein to a reaction front at the edge of the halo surrounding it constrains the rate of hydrogen ion loss from the vein. Semi-analytic and finite difference simulations of alteration halo formation show how the radius of the pervasively altered zone and the steepness of the taper beyond that zone depend on the rate of volatile expulsion; the faster the fluid velocity, the less steep the taper. Data from the Pittsmont Dome suggest 23 to 30 billion tons of magmatic fluid was expelled over a period of less than 20 years. Assuming 5 wt% magmatic water in the porphyry intrusion, a spherical intrusion ~7 km in diameter is needed to supply the volatiles for just this part of the Butte mineralization system.

url: http://hdl.handle.net/1813/3475
date: 2006-08-27
creator: Fogle, Homer William Jr
viewed: 1557
title: DX of DKE Special Study #19: Pledge Class Research Tasks, 1987-88
abstract: 75 p; editorial annotations; 28 cm.
Electronic reproduction.
Original, 27 August 2006.The author presents transcriptions of the Delta Chi Chapter of Delta Kappa Epsilon Pledge Program Research Tasks for 1987 (thirty-seven tasks) and 1988 (twenty tasks), all directed towards investigations of the chapter's history since founding in 1870. Subjects include source material inventories, activities of the brotherhood, architectural studies, searches for lost memorials, and alumni issues.

url: http://hdl.handle.net/1813/3476
date: 2006-08-28
creator: Tantinipankul, Worrasit
viewed: 1707
title: MODERNIZATION AND URBAN MONASTIC SPACE IN RATTANAKOSIN CITY: COMPARATIVE STUDY OF THREE ROYAL WATS
abstract: MODERNIZATION AND URBAN MONASTIC SPACE IN RATTANAKOSIN CITY: COMPARATIVE STUDY OF THREE ROYAL WATS
Worrasit Tantinipankul, Ph.D. Cornell University 2007 This dissertation is about the changing physical conditions and social meanings of royal Buddhist monastic complexes (wat) in the Rattanakosin Historic District from the beginning of the Bangkok period to the 1997 economic crisis. In the pre-modern period, the royal wat was the key site for the ruler to consolidate his power and establish his legitimacy as a righteous Buddhist monarch. In this traditional context, these Buddhist monastic complexes became the centers for accumulating and redistributing wealth surplus in various forms of public facilities. With the advent of the modern era, the royal monastic complexes acquired new meanings and functions associated with the process of nation-building, becoming at once symbols of national heritage, loci for modern education, and models of development. And yet, paradoxically, because of the Thai state?s adoption of the Western philosophy of the separation of church and state, the royal monastic complexes which previously functioned as public facilities became more private and centralized under the power of the ecclesiastical authority. Moreover, the monastic land ownership and their space have largely been neglected in Bangkok's urban planning. Monastic communities are not only invisible in the plans for Bangkok's urban development, but they are also responsible for generating their own revenue and for the management of their monastic properties.
Comparing three case studies of royal monastic complexes, I show how changes associated with the making

of the modern nation-state, including government policies in the affairs of Buddhist religion, transformations in the political economy, and the urbanization of Bangkok, have affected the form and meaning of Buddhist wats. A central aim of this comparative approach is to demonstrate that these changes have not had uniform effects. Rather, as my case studies show, each of these three royal monastic complexes has responded differently to modernization and nation-building depending on the location and size of the monastic donated land, the scale of its major structures, the degree of architectural elaboration, and its social network. In conclusion, the study of problems and historical changes in each royal wat serves to pinpoint what is overlooked in current planning and preservation practice.

url: http://hdl.handle.net/1813/3477
date: 2006-08-28
creator: Houle, Paul A
viewed: 1171
title: The Global Performing Arts Database
abstract: 27 slide presentation in Microsoft Powerpoint. The Global Performing Arts Database, a project of the Global Performing Arts Consortium brings together multimedia content from university departments, individuals, museums and performing arts organizations. This presentation describes the architecture, software and software engineering practices used in the development of GloPAD.

url: http://hdl.handle.net/1813/3478
date: 2006-08-28
creator: houle, paul a
viewed: 3253
title: arxiv.org: research and development directions
abstract: 16 slide presentation, Microsoft powerpoint, given at a November 2003 Information Science Open House. This presentation describes the arXiv.org collection and users, development on authentication and access control as well as research projects in text classification and time series analysis.

url: http://hdl.handle.net/1813/3480
date: 2006-08-28
creator: Ritchey, K. Dale;Bouldin, David R.;Ochs, Mary A.;Naderman, George
viewed: 3765
title: Ready Insights for the Future: Digital Dissemination of Agronomic and Environmental Knowledge Involved in the Agricultural Development of Central Brazil
abstract: Long-term agricultural development of a major region usually involves supportive national policy, infrastructure development, financial investment and favorable market factors. The remarkable growth of food production in the Savannah region of central Brazil, however, also reflects significant contributions from new technology developed in the area. Some of the early research under-girding the development of this region, locally known as the "cerrado," was conducted at a Brazilian research facility, now known as the CPAC (Agricultural Research Center for the Cerrado). Collaborative work was done there by local researchers and several US institutions, with the sustained and effective support of US government programs aimed at improving long-term world food production.
Information about this unusual success story can be found scattered among the libraries of various institutions and agencies in differing languages and countries. Original objectives, methodology, findings and some of the anecdotal experiences of individuals involved may reside in research theses as well as in scientific journals and extension bulletins. Because this story began some four decades ago, some of it is found as personal remembrances and collected wisdom within the minds, and perhaps in the file cabinets, of now-retired persons.

Current digital technological developments appear to offer unprecedented opportunities to organize and store such information in readily and widely accessible forms. Described as "subject-based digital repositories," these offer a means of collecting material and offering it world wide in a cost-efficient manner. Searchers with diverse interests ranging, as examples, from soil, agronomic and environmental sciences to international economics, policy or history would all have access to knowledge that could contribute to new insights about designs for long-term experiments or strategies for resource development. Research findings and raw data from this specific agricultural ecosystem may apply to similar regions under differing political jurisdictions to meet new challenges as the future unfolds. Such areas and topics could be well served by this repository of knowledge.

We describe such a repository, currently being developed by Mann Agricultural Library at Cornell University in Ithaca, New York. It would focus on programs conducted by the Brazil Cerrados Agricultural Research Center/Cornell University/North Carolina State University cooperative research project during the 1970?s and 1980?s. This was a multi-university collaboration with EMBRAPA, a Brazilian public enterprise. This mutually beneficial project involved several institutions and dozens of researchers, and it contributed significantly to development of the productivity and influence of today's agriculture in the Brazilian Cerrados.

Materials offered in this ?Brazil Cerrados digital repository? would include non-copyrighted text, citations to published documents, personal reflections about key methods and experiences, context photography with explanatory captions and specially-authored analyses or interpretations. Depending upon interests, even interactive virtual discussions could occur.

This digital material will exist as a collection within Cornell University's Open Access Archive (http://dspace.library.cornell.edu/), which is powered by DSpace. A DSpace "community" will be created for Cerrados with "collections" added for organizing the material. Basic indexing (or metadata) will be created for each item deposited. The material may then be accessed via a direct URL or by searching within DSpace or the Cerrados "community" by author, title, or keyword. Browsing by author, title, and date is also allowed. The materials added to DSpace are also searchable via popular search engines such as Google, which will permit the information to be easily located and used by people around the world.

url: http://hdl.handle.net/1813/3481
date: 2006-08-29
creator: Adam, Nadia Erin
viewed: 2117
title: A STUDY OF EXCLUSIVE SEMILEPTONIC D DECAYS TO PSEUDOSCALAR PION AND KAON FINAL STATES WITH THE CLEO-C DETECTOR.
abstract: Using a sample of 1.85 million $D\bar{D}$ mesons collected at the $\Psi(3770)$ with the CLEO-c detector, and a reconstruction method based on the full event hermeticity, we measure branching fractions and branching fraction ratios for the four exclusive semileptonic decay modes $D^0 \to \pi^- e^+ \nu$, $D^0 \to K^- e^+ \nu$, $D^{+} \to \pi^0 e^+ \nu$ and, $D^{+} \to \bar{K}^0 e^+ \nu$. For the branching fractions we find ${\cal B}(D^0 \to \pi^- e^+ \nu) = 0.299 \pm 0.011 \pm 0.008 \;\%$, ${\cal B}(D^0 \to K^- e^+ \nu) = 3.55 \pm 0.03 \pm 0.08 \;\%$, ${\cal B}(D^+ \to \pi^0 e^+ \nu) = 0.371 \pm 0.022 \pm 0.013 \;\%$ and ${\cal B}(D^+ \to \bar{K}^0 e^+ \nu) = 8.53 \pm 0.13 \pm 0.22 \;\%$. The ratios are found to be ${\cal B}(D^0 \to \pi^- e^+ \nu) \slash {\cal B}(D^0 \to K^- e^+ \nu) = 0.084 \pm 0.003 \pm 0.001$, ${\cal B}(D^+ \to \pi^0 e^+ \nu) \slash {\cal B}(D^+ \to \bar{K}^0 e^+ \nu) = 0.044 \pm 0.003 \pm 0.001$, $\Gamma(D^0 \to \pi^- e^+ \nu) \slash \Gamma(D^+ \to \pi^0 e^+ \nu) = 2.04 \pm 0.14 \pm 0.08$ and $\Gamma(D^0 \to K^- e^+ \nu) \slash \Gamma(D^+ \to \bar{K}^0 e^+ \nu) = 1.06 \pm 0.02 \pm 0.03$. In addition, form factors are studied through fits to the partial branching fractions obtained in five q^2 ranges. Combining our results with recent unquenched lattice calculations we extract the CKM matrix elements $|V_{cs}|$ and $|V_{cd}|$. Averaging over isospin conjugate modes, we find $|V_{cs}| = 1.01 \pm 0.01 \pm 0.01 \pm 0.11$ and $|V_{cd}| = 0.217 \pm 0.010 \pm 0.004 \pm 0.023$.National Science Foundation U.S. Department of Energy Natural

Sciences and Engineering Research Council of Canada

url: http://hdl.handle.net/1813/3482
date: 2006-08-29
creator: Klein, Melinda Anne
viewed: 3069
title: Mechanisms of Zinc Tolerance in the Heavy Metal Hyperaccumulator Thlaspi caerulescens
abstract: The main objective of this dissertation was to identify and examine the mechanisms conferring zinc tolerance used by the zinc and cadmium (Zn/Cd) hyperaccumulator, Thlaspi caerulescens, a plant that has been extensively studied for its altered physiology leading to increased metal tolerance and shoot metal accumulation. Three projects were carried out to address the question of extreme metal tolerance that is one of the hallmarks of this species.
The first project, isolation and characterization of a putative vacuolar zinc transporter, MTP1, found higher expression of this gene in T. caerulescens compared with the related non-accumulator, T. arvense. Additionally MTP1 expression increased in response to increasing plant Zn status. When MTP1 was expressed in yeast, Zn accumulation increased; however, no strong phenotype was seen in transgenic Arabidopsis thaliana overexpressing the A. thaliana homolog of MTP1.
In the second project, a T. caerulescens cDNA library was screened for genes conferring Zn tolerance to yeast when grown on high zinc media. A number of genes with widely divergent potential functions were identified including signaling, metabolic and protein regulation genes. These genes, when expressed in yeast, conferred either increased or reduced Zn accumulation, and several were chosen for whole plant studies. One specific gene of interest was PKS4, a serine-threonine kinase, which was associated with increased zinc accumulation relative to wild type yeast strains. Since other members in this kinase family have already been implicated in plant abiotic stress responses, we examined the effect of altered PKS4 expression in planta on heavy metal tolerance.
Finally, T. caerulescens suspension cell lines were created and characterized for the same metal hyperaccumulation traits exhibited in the whole plant (Zn/Cd tolerance, transport and accumulation). From this work, the increased metal tolerance and altered regulation of metal tolerance genes seen in plants was observed, indicating these are traits expressed at the cellular level. We are now able to stably transform these cell lines, which opens up future work testing candidate hyperaccumulation genes using these suspension cells lines.

url: http://hdl.handle.net/1813/3484
date: 2006-08-30
creator: Basu, Kaushik
viewed: 3052
title: Gender and Say: A Model of Household Behaviour with Endogenously Determined Balance of Power
abstract: The evidence that the same income can lead to different household decisions, depending on who the earner is, has led to an effort to replace the standard household model with the

url: http://hdl.handle.net/1813/3485
date: 2006-08-30
creator: Basu, Kaushik
viewed: 1845
title: Consumer Cognition and Pricing in the Nines of Oligopolistic Markets
abstract: The paper fully characterizes the Bertrand equilibria of oligopolistic markets where consumers may ignore the last (i.e., the right-most) digits of prices. Consumers, in this model, do not do this reflexively or out of irrationality, but only when they expect the time cost of acquiring full cognizance of the exact price

to exceed the expected loss caused by the slightly erroneous amounts that are likely to be purchased or the slightly higher price that may be paid by virtue of ignoring the information concerning the last digits of prices. It is shown that in this setting there will always exist firms that set prices that end in nine though there may also be some (nonstrict) equilibria where a non-nine price ending occurs. It is shown that all firms earn positive profits even in Bertrand equilibria. The model helps us understand in what kinds of markets we are most likely to encounter pricing in the nines.

url: http://hdl.handle.net/1813/3486
date: 2006-08-30
creator: Morita, Hodaka;Basu, Kaushik
viewed: 887
title: International credit and welfare: A paradoxical theorem and its policy implications
abstract: This paper considers a developing nation that faces a foreign exchange shortage and hence its demand for foreign goods is limited both by its income and its foreign exchange balance. Availability of international credit relaxes the second constraint. We develop a simple model of strategic interaction between lending institutions and firms, and show that the availability of international credit at concessionary rates can leave the borrowing nation worse off than if it had to borrow money at higher market rates. This ?paradox of benevolence? is then used to motivate a discussion of policies pertaining to international lending and the Southern government?s method of rationing out foreign exchange to the importers.

url: http://hdl.handle.net/1813/3487
date: 2006-08-30
creator: Rice, Brian
viewed: 3801
title: Astronomy: It's Out of This World
abstract: Youngsters from 8 - 12 can walk through the solar system and search the night sky while learning about the basics of astronomy. 15 easy, but very informative, hands-on projects and experiments teach kids about stars, night vision, night activities, the moon, the solar system, telescopes, constellations and sundials. Astronomy periodicals, web sites, equipment vendors, observatories and planetariums, and astronomy clubs are listed with contact information so students and leaders alike may advance their knowledge even further.

url: http://hdl.handle.net/1813/3488
date: 2006-08-30
creator: Topoleski, Leonard D.
viewed: 2819
title: The Home Vegetable Garden
abstract: A popular and timeless how-to-guide for planning, preparing, and maintaining a productive garden. Planting schedules, recommended varieties, pest control, soil and climate considerations and equipment needs are all covered.

url: http://hdl.handle.net/1813/3489
date: 2006-08-30
creator: Bronevetsky, Grigory
viewed: 2072
title: Portable Checkpointing for Parallel Applications
abstract: High Performance Computing (HPC) systems represent the peak of modern computational capability. As ever-increasing demands for computational power have fuelled the demand for ever-larger

computing systems, modern HPC systems have grown to incorporate hundreds, thousands or as many as 130,000 processors. At these scales, the huge number of individual components in a single system makes the probability that a single component will fail quite high, with today's large HPC systems featuring mean times between failures on the order of hours or a few days. As many modern computational tasks require days or months to complete, fault tolerance becomes critical to HPC system design.

The past three decades have seen significant amounts of research on parallel system fault tolerance. However, as most of it has been either theoretical or has focused on low-level solutions that are embedded into a particular operating system or type of hardware, this work has had little impact on real HPC systems. This thesis attempts to address this lack of impact by describing a high-level approach for implementing checkpoint/restart functionality that decouples the fault tolerance solution from the details of the operating system, system libraries and the hardware and instead connects it to the APIs implemented by the above components. The resulting solution enables applications that use these APIs to become self-checkpointing and self-restarting regardless of the the software/hardware platform that may implement the APIs.

The particular focus of this thesis is on the problem of checkpoint/restart of parallel applications. It presents two theoretical checkpointing protocols, one for the message passing communication model and one for the shared memory model. The former is the first protocol to be compatible with application-level checkpointing of individual processes, while the latter is the first protocol that is compatible with arbitrary shared memory models, APIs, implementations and consistency protocols. These checkpointing protocols are used to implement checkpointing systems for applications that use the MPI and OpenMP parallel APIs, respectively, and are first in providing checkpoint/restart to arbitrary implementations of these popular APIs. Both checkpointing systems are extensively evaluated on multiple software/hardware platforms and are shown to feature low overheads.

url: http://hdl.handle.net/1813/3490
date: 2006-08-30
creator: Davis-Manigaulte, Jacqeline
viewed: 1113
title: Clothing Connections
abstract: Clothing Connections is a classic curriculum, specially designed and written for leaders and volunteers to assist and guide them in sharing a variety of clothing experiences with boys and girls 9 years of age and older. The booklet has been organized into eight different units, all of which provide creative ways for teaching about fabrics, clothing selection and care, dressing for cold and warm environments, sewing skills (without the use of sewing machines!), and recycling techniques. Each unit includes step-by-step directions and background information to help leaders prepare for and conduct the programs, regardless of whether their sewing experience is limited or considerable. Master copies of activity sheets may be duplicated to share with program participants. These handouts highlight the basic concept of each unit, and include directions and patterns for making different items, games, and puzzles. This curriculum is the outgrowth of a program developed by the New York City 4-H home economists for use in youth agency settings such as summer day camps, classrooms, community centers, and after-school programs. Many leaders and young people who have participated in this program have played a major role in determining and revising core projects. Projects can be modified for use with children younger than 9 years of age.

url: http://hdl.handle.net/1813/3491
date: 2006-08-31
creator: Song, Eric;Asahara, Keiko;Pervez, Farhan;Tsai, Yu-I (Colman)
viewed: 2542
title: Analysis and evaluation of loyalty programs measured on a set of variables for a leading credit card company

abstract: This project was divided into three parts. By storing a large data set in the database system, the data can be efficiently queried to analyze the customer base with reference to size and density, distribution, and vital statistics. First, the current customer portfolio was profiled in terms of demographics, net present value, and transactional behavior. Then the data mining techniques were applied to build empirical models. Here the main technique is the k-means, an algorithm of cluster analysis. Our goal was to find the group that made the most use of the reward programs and the group that was the most profitable for the company. After comparing the characteristics of these two groups, it was found that they were somewhat poorly matched. That means that the current reward program might have some problems, because the more profitable customers were not rewarded more. Second, the lagged regression analysis was used to explore the cause-effect relationship between spending and redemption. This information helped to some extent to judge ?the price of loyalty?. The results showed that there was some correlation between them, and it also provided estimated parameters in the regression models. Last, the current rewards scheme was evaluated and several possible schemes were also come up with. By making some reasonable assumptions and running the cost-benefit analysis, a modified scheme was recommended and it was showed to contribute better revenue for the company and to benefit customers as well.Grupo Uno

url: http://hdl.handle.net/1813/3492
date: 2006-08-31
creator: Ramasubramanian, Venugopalan
viewed: 2807
title: Cost-Aware Resource Management for Decentralized Internet Services
abstract: Decentralized network services, such as naming systems, content distribution networks, and publish-subscribe systems, play an increasingly critical role and are required to provide high performance, low latency service, achieve high availability in the presence of network and node failures, and handle a large volume of users. Judicious utilization of expensive system resources, such as memory space, network bandwidth, and number of machines, is fundamental to achieving the above properties. Yet, current network services typically rely on less-informed, heuristic-based techniques to manage scarce resources, and often fall short of expectations.

This thesis presents a principled approach for building high performance, robust, and scalable network services. The key contribution of this thesis is to show that resolving the fundamental cost-benefit tradeoff between resource consumption and performance through mathematical optimization is practical in large-scale distributed systems, and enables decentralized network services to meet efficiently system-wide performance goals. This thesis presents a practical approach for resource management in three stages: analytically model the cost-benefit tradeoff as a constrained optimization problem, determine a near-optimal resource allocation strategy on the fly, and enforce the derived strategy through light-weight, decentralized mechanisms. It builds on self-organizing structured overlays, which provide failure resilience and scalability, and complements them with stronger performance guarantees and robustness under sudden changes in workload. This work enables applications to meet system-wide performance targets, such as low average response times, high cache hit rates, and small update dissemination times with low resource consumption. Alternatively, applications can make the maximum use of available resources, such as storage and bandwidth, and derive large gains in performance.

I have implemented an extensible framework called Honeycomb to perform cost-aware resource management on structured overlays based on the above approach and built three critical network services using it. These services consist of a new name system for the Internet called CoDoNS that distributes data associated with domain names, an open-access content distribution network called CobWeb that caches web content for faster access by users, and an online information monitoring system called Corona that notifies users about changes to web pages. Simulations and performance measurements from a planetary-scale deployment show that these services provide unprecedented performance improvement over the current state of the art.

url: http://hdl.handle.net/1813/3493
date: 2006-09-01
creator: Tuncay, Alan
viewed: 1211
title: Improving fracture properties of MEMS components by surface control
abstract: This thesis studies the mechanical reliability of nanostructures. The strength statistics of Si nanobeams, their dependence on surface morphology and degradation due to air exposure are characterized and necessary conditions for maximum strength and durability are determined.

Due to their small sizes and use of low defect materials, nanostructures have the potential to be used in applications requiring very high stresses at low failure probabilities. Fracture strength of 190-nm thick Si beams have been shown to be as high as 13 GPa, approximately 30 times higher than the strength of macroscale samples. Testing similarly prepared beams etched with relatively smooth morphologies (0.4 nm rms) we showed that the strengths were further improved to 16 GPa, approaching theoretical strengths predicted by previous atomistic calculations.

To explain this influence, a series of fracture mechanics based Monte Carlo simulations were performed. Chemically modified surfaces of the tested beams were measured, statistically characterized and equivalent surfaces were generated. The surfaces consisted of bunched steps which act as stress concentrators, resulting in very high local stresses and hence enhancing material failure. Simulations of nanobeams processed using two different chemical etchants demonstrate the impact of surface morphology on fracture strengths characterized in terms of the Weibull distribution. It was shown that even a small increase in roughness reduces the strength considerably.

This high strength potential is promising for nanomechanical devices requiring high stress levels. Yet, for practical applications, maintenance of strength throughout the structure's service life may be as important as high initial strengths. Tests performed over a period of three weeks showed that this high strength degrades to 11 GPa when the beams are exposed to air. Coating the sample surfaces with protective methyl monolayers resulted in a 10\% higher initial mean strength, which was maintained throughout the test period under the same environmental conditions as the uncoated samples. Our results show that the strength degradation can be prevented by effective protection of surfaces.

The results of our experiments and simulations suggest that surface control is essential for the improvement and maintenance of high mechanical strengths at nanoscales.Cornell Center for Materials Research (CCMR), a Materials Research Science and Engineering Center of the National Science Foundation (DMR-0520404)

url: http://hdl.handle.net/1813/3494
date: 2006-09-06
creator: Patton, Leslie
viewed: 1852
title: DEVELOPMENT OF A MODEL TO PREDICT EFFECTS OF MICROBIAL PREDATION ON LEAD PHASE DISTRIBUTION AND TOXICITY
abstract: Interactions between microbial predators and their prey can significantly influence the behavior of toxic trace metals. Metals associated with bacterial prey can be released into the dissolved phase following digestion by a predator, and/or metals can remain in the predator and potentially be transferred to the next level of the food chain. Toxic metal ions in the aqueous phase are also expected to modify the growth and predation rate of a microbial predator. A defined predator-prey system was developed to study metal behavior in simple microbial food chains using lead (Pb) as a representative metal. Desired features of this system were the ability to define the chemical speciation of dissolved metals as well as to distinguish between prey and predator-bound metals. Pseudomonas putida and the ciliate protozoan Tetrahymena thermophila were selected as representative bacterial prey and predator species, respectively. Batch reactors were used to measure

microbial growth parameters, effects of prey density on predation and Pb phase distribution. A mathematical model was developed to describe predator-prey dynamics and their influence on the behavior and fate of Pb. Growth data were used to obtain model parameters, and model simulations for Pb fractionation were compared to experimental observations.

The methodological studies demonstrated successful predator-prey separation techniques with little metal loss. Results of batch reactor experiments demonstrated that some kinetic parameters related to prey consumption and growth of T. thermophila are altered by Pb. Upon addition of predator to prey cells in equilibrium with dissolved Pb, dissolved and prey-bound Pb became associated with the predator through ingestion and adsorption. Ingested Pb was later excreted as a bound metal associated with T. thermophila waste matter. Experimental observations that did not match model predictions prompted further mathematical modeling of this predator-prey system. These simulations also explored Pb behavior under other hypothetical experimental conditions such as a chemostat reactor and a pulsed Pb dosing regime. The generality of the model was demonstrated by matching the trends in experimental data reported by other investigators for a different trace metal (Cd) in a different predator-prey system.

url: http://hdl.handle.net/1813/3495
date: 2006-09-06
creator: Yin, Xiaolong
viewed: 2379
title: Structure-Property Relations in Bubble and Solid Particle Suspensions with Moderate Reynolds Numbers
abstract: In this study, several important properties of inertial bubble and solid particle suspensions have been characterized using numerical simulations. These properties include the hindered settling velocity and microstructure in solid particle suspensions, the scaling of the
velocity variance and hydrodynamic diffusivity in solid particle suspensions, the hindered rise velocity and microstructure in suspensions of monodisperse, spherical, non-coalescing bubbles, and the lift force on bubbles in a sheared suspension. In order to simulate suspensions of monodisperse, spherical, non-coalescing bubbles, a lattice-Boltzmann boundary rule was designed. On the last subject, the lift force in a sheared suspension, experiments have also been conducted to verify the simulations.

url: http://hdl.handle.net/1813/3496
date: 2006-09-11
creator: Rivera, Jennifer
viewed: 2139
title: TEST ITEM CONSTRUCTION AND VALIDATION: DEVELOPING A STATEWIDE ASSESSMENT FOR AGRICULTURAL SCIENCE EDUCATION
abstract: In 2001, the New York State Board of Regents approved the New York State Regents Career and Technical Education Policy. Through the process of program approval, career and technical education (CTE) programs can provide students greater flexibility in attaining graduation credits in the areas of math, science, English and/or social studies for students completing such programs. The policy also states that individual career and technical completers can receive a technical endorsement on their Regents diploma. Part of the process for CTE program approval is to administer a technical assessment certifying that students meet current industry standards.

The impetus for this study was addressing the need of one secondary career and technical education program, agricultural science education, which does not have a statewide exam. Currently, the Department of Education at Cornell University in collaboration with New York Agricultural Education Outreach is in the process of developing a statewide exam for use as the technical assessment to certify students. Once approved, this exam will meet the technical assessment requirement for program approval. This study focuses on the

written multiple-choice portion of the statewide exam, specifically two aspects of developing an exam, item construction and item validation. Based on criterion-referenced test construction procedures two of the nine sections of the exam were developed, animal systems and plant systems.
The results of this study outline a process for developing and validating items. They highlight some of the benefits and disadvantages faced when developing test items for a diverse audience without the aid of a testing institute. Further consideration is given to procedures used to validate test items, specifically expert judgment and analytical data. The results from this study provide guidance to test developers related to aligning items to content, writing and editing items, and revising items.

url: http://hdl.handle.net/1813/3497
date: 2006-09-12
creator: Kingsbury, John M.
viewed: 1581
title: Common Poisonous Plants
abstract: Poisonous plants are found everywhere. This bulletin, which includes color photographs, tells how to recognize the most common ones, how to avoid them, and what to do if a poisoning occurs. More than 40 species are described and illustrated. Poisonous cultivated house plants, flower and vegetable garden plants and ornamentals, as well as toxic wild plants are covered. Pet owners, parents, and farmers will find this information particularly useful.

url: http://hdl.handle.net/1813/3498
date: 2006-09-12
creator: Wilkins, Sandra;Perkins, Susan;Bailey, John
viewed: 2134
title: Parenting Skills Workshop Series
abstract: This workshop manual is designed for professionals working with parents who may not learn well from text-based teaching approaches. Basic parenting skills are presented in a hands-on learning format suitable for any level of literacy. Originally designed for court-mandated parents, this workshop has proved successful with a broad audience.
The eight-week curriculum is based on themes consistent with familiar parent education programs such as STEP (Systematic Training and Effective Parenting), and PET (Parent Effectiveness Training). Each two-hour workshop becomes a setting for participants to learn new skills in a format that emphasizes action in "real" situations. "Five Basic Parenting Skills" posters and reproducible handouts, as well as a reproducible "Certificate of Achievement" included.

url: http://hdl.handle.net/1813/3498
date: 2006-09-12
creator: Wilkins, Sandra;Perkins, Susan;Bailey, John
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"Certificate of Achievement" included.

url: http://hdl.handle.net/1813/3499
date: 2006-09-12
creator: Saumier, Jo Ellen
viewed: 2909
title: Your Septic System
abstract: Studying up on septic systems often ranks last in importance with homeowners - until an emergency strikes. This cleverly designed fact sheet set not only describes what to do if your septic system fails, but also contains all the necessary information to understand how a septic system works, how to properly maintain a septic system ? to prevent emergencies, and how to keep maintenance records ? all in a tidy, clearly marked and easy to find, tabbed folder that fits in a filing cabinet or notebook.
This resource is inexpensive, informative, practical, and it supports the concept and value of clean water quality standards and human health. A septic system is a critical component of a home, treating liquid waste in order to prevent contamination of drinking water and nearby lakes and streams.
The folder itself not only acts as an organizational device to hold vital septic system information, but also doubles as a quick-tip guide, and a maintenance record worksheet. Each of the five fact sheets inside the folder speaks to a unique topic revolving around septic systems. Fact Sheet #1, titled "What to Do if Your Septic System Fails", describes what a failure is, why failures happen, symptoms of a failure, immediate steps to take in case of a failure, long-term options, and prevention tips. Fact Sheet #2, "Maintaining Your Septic System: Special Considerations for Shoreline Property Owners" addresses unique issues associated with homes built near lakes, streams, or ponds, including how to identify signs that contaminants are reaching the water, and how to prevent problems. Fact Sheet #3, "How to Conserve Water in Your Home and Yard" offers 17 water saving tips that help reduce the risk of damaging your septic system, while saving money and protecting your health. Fact Sheet #4, "What You Need to Know When Buying or Selling a House" provides a list and description of minimum evaluation criteria, as well as an easy-to-use worksheet to aid in your home-buying or selling decision. Fact Sheet #5, "Considerations When Building or Remodeling a Home" covers siting your septic system, codes and permits, percolation tests, design and installation, and also includes a handy table for determining minimum septic tank capacities.
"Your Septic System" was developed by Cornell Cooperative Extension Project Team members Martha G. Shortlidge, Westchester County; Jo Ellen Saumier, Rockland County; Marjorie L. Nichols Keith, Putnam County; and A. Meyer, Dutchess County; and supported by a grant from the Water Resources Institute at Cornell University, with funds provided from the NYS Department of Agriculture and Markets. Some portion of the information contained in these facts sheets was adapted from Michigan State University Cooperative Extension Service.

url: http://hdl.handle.net/1813/3501
date: 2006-09-13
creator: Comerford, Nicolas;Franca Borges, Lillian;Souza da Silva, Ana Cristina;Falcao, Newton Paolo de Souza
viewed: 2050
title: utrient Bioavailability of Anthropogenic Dark Earth Soils and Surrounding Soils of Central Amazonian
abstract: A greenhouse experiment was carried out at the National Institute for Amazon Research, Manaus, AM, Brazil, to evaluate the nutrient bioavailability of Anthropogenic Dark Earth Soils and surrounding soils. Maize (Zea maiz L.) was planted in pots with two kg of air-dried soil to determine the relative fertility of the Dark Earth Soil and surrounding soil (Oxisol). Soil samples of surface layer (0-20 cm) was collected of four sites (Laranjal farm, A?utuba farm, Jiquitaia farm, Hatahara farm) and two soils per site (Dark Earth Soil

and Oxisols) following a randomized factorial design (4X2) with 8 treatments and eight replication, totals 64 pots. Half the pots were watered with distilled water to field capacity as required. The other half was watered with a minus-P nutrient solution to field capacity as required. The nutrient solution was applied to supply nutrients minus P, giving a bioassay of P bioavailability for the different soil locations and depths. Entire plants were harvested at the end of 2 months and total dry matter of shoots, roots and total nutrients uptake by plant were measured. Additionally soil fertility variability and phosphorus fractionation was done after maize was harvested. The results showed that Dark Earth soils are inherently more fertile by contrasting the growth and nutrient accumulation in the water-only-pots. Dark earth soil phosphorus availability from A?utuba ranged from 236 mg kg-1 (minus nutrient solution treatment) to 227 mg kg-1 (treatment with nutrient solution); dark earth soil phosphorus availability from Rio Preto da Eva ranged from 284 mg kg-1 (minus nutrient solution treatment) to 189 mg kg-1 (treatment with nutrient solution) and dark earth soil phosphorus availability from Laranjal ranged from 367 mg kg-1 (minus nutrient solution treatment) to 305 mg kg-1 (treatment with nutrient solution). The total phosphorus in the shoots showed a slight decrease with all treatments with dark earth soil plus nutrient solution. The treatments with dark earth soil plus nutrient solution showed that the phosphorus amount in the shoots ranged from 3, 11 to 3, 79 g kg-1. On the other hand, the same treatment minus nutrient solution showed that the phosphorus concentration in shoots ranged from 3, 43 to 4, 92 g kg-1. The treatments with surrounding soil plus nutrient solution showed that the phosphorus amount in the shoots ranged from 0, 92 to 3, 01 g kg-1. On the other hand, the same treatment minus nutrient solution showed that shoots phosphorus concentration ranged from 1, 30 to 3, 86 g kg-1. The higher increment of biomass was got to dark earth soil plus nutrient solution ranged from 9,56 g/pot (minus nutrient solution) to 26,13 g/pot (plus nutrient solution), an increment of 273%. All dark earth soil treatment presented low amounts of exchangeable potassium, ranged from 0, 05 Cmolc kg-1 to 0, 14 Cmolc kg-1, after maize was harvested. Based on preliminary results presented above, we propose that the natural fertility of the Dark Earth Soil is relative since low levels of potassium are a restriction to crop growing. Not only the surrounding soils but also the dark earth soils in all sites presented aluminium phosphate plus iron phosphate higher than 65% of the total phosphorus pool, except the dark earth soil from the Hatahara farm that showed calcium phosphate higher then 60% of the total phosphorus pool.

url: http://hdl.handle.net/1813/3502
date: 2006-09-13
creator: Gaunt, John;Liang, Biqing;Lehmann, Johannes;Yates, Helen;Sohi, Saran
viewed: 2965
title: Exploring Atypical Stabilization Pathways Using Pool-Based Modeling
abstract: Simulation models that explicitly account for the impact and interaction of soil and environmental variables can assist in predicting the accumulation of C and its rate of turnover. Relevant, verifiable (i.e. measurable) pools of Soil Organic Matter (SOM) provide the most robust basis for elucidating the underlying mechanisms. We have developed a model based around three measurable pools of SOM which can be measured using a density-based fractionation procedure, and verified by extensive chemical characterization. The model has been optimized against measurements of C and N and isotope-tracers in several soils amended with isotope-labeled organic matter. According to recent estimates black C is a much larger component of Soil Organic Carbon (SOC) in typical agricultural soils than previously assumed. Since black C may also be the most stable form of organic C in the soil, the amount of black C in the soil must impact both on the bulk rate of soil C mineralization (turnover) and the extent to which a particular management intervention can alter SOC. Until now our simulations have not accounted explicitly for the effect of black C on the dynamics of each pool. We are now examining how black C is characterized by physical location within the soil matrix, and in order to account for the influence of black C using this model affects C mineralization, and the distribution of charcoal between each of the measured fractions.

url: http://hdl.handle.net/1813/3503
date: 2006-09-14
creator: Ladha, JK;Gummert, M;Koyama, S;Knoblauch, C;Konboon, Y;Haefele, SM
viewed: 2505
title: Black Carbon from Rice Residues as Soil Amendment and for Carbon Sequestration
abstract: On highly weathered soils in tropical and subtropical climates, maintenance of soil organic matter is essential to sustain system productivity and avoid rapid soil degradation. But climatic conditions as well as soil characteristics favor the rapid decomposition of organic matter. However, several recent studies indicated that black carbon, the product of incomplete combustion of organic material, could combine characteristics highly beneficial for soil nutrient dynamics with high stability against chemical and microbial breakdown. Lasting soil amelioration by incorporation of black carbon from wooden plants was proposed based on the beneficial evidence from ?Terra Preta? soils in Western Amazonia. Theoretically, charred crop residues in rice-based systems could serve the same purpose but this hypothesis has never been tested. Within this context, our objectives were to 1) assess possible options for the use of charred rice residues, to 2) test the effect of charred rice residues on important soil fertility parameters and rice growth, and 3) to evaluate the effect and stability of charred rice residues in a variety of rice growing environments. Initial investigations showed that charred rice husks are already used in several Asian countries, e.g. in Japan for seed bed preparation of rice and vegetable crops, and in the Philippines for soil amelioration in ornamental plant production. Charring of rice husks in Japan is known as ?Kuntan? and simple techniques for its production are even part of agricultural training courses. First experiments showed that charring rice husks slightly increases the relative carbon content but the weight loss from fresh to charred rice husks is about 70%. Similarly to carbon, the relative concentration of other nutrient elements (e.g., N, P, K, Ca, Mg) is maintained or even increased. Greenhouse studies in pot experiments conducted in the Philippines and northeast Thailand in 2005 showed positive effects of charred rice husks on rice biomass, rice yield, and cation exchange capacity. No increased leaching of organic carbon was observed when charred rice husks were added to the soil. Randomized and replicated field trials including control treatments and +/- inorganic fertilizer treatments were established in a variety of rice-growing environments including irrigated lowlands, rainfed uplands (both in the Philippines), rainfed lowlands (northeast Thailand), and the rice-wheat system (India). In these trials, the quantity of carbon applied equaled about 1.4% in the surface soil layer (0.0 - 0.1 m) or about 16 t carbon per hectare. Converted to biomass, this is equivalent to the crop residues of about 10 to 20 seasons, depending on the system's productivity (including straw and assuming the above mentioned efficiency in black carbon production). In the first cropping season, observed agronomic effects of the charred rice husks were variable and depended on the cropping system and the indigenous soil fertility. Contrary to that, the effects on soil characteristics were more consistent and major effects were an increase of the cation exchange capacity, a decrease of soil bulk density, and a stable increase of soil organic carbon. However, preliminary results strongly suggest that a continuation of the field trials is necessary to better evaluate the long-term treatment effects. If the greater part of the applied black carbon proves to be stable in some or all tested cropping systems, this technology could be an interesting option for carbon sequestration. If used at a large scale, considerable research efforts would be needed to evaluate the various and far-reaching consequences of the proposed technology.

url: http://hdl.handle.net/1813/3504
date: 2006-09-14
creator: Tien, Joseph
viewed: 2887
title: Optimization for Bursting Neural Models
abstract: Advisor: John Guckenheimer,
Committee Members: Lars Wahlbin, Ron Harris-WarrickThis thesis concerns parameter estimation for

bursting neural models. Parameter estimation for differential equations is a difficult task due to complicated objective function landscapes and numerical challenges. These difficulties are particularly salient in bursting models and other multiple time scale systems. Here we make use of the geometry underlying bursting by introducing defining equations for burst initiation and termination. Fitting the timing of these burst events simplifies objective function landscapes considerably. We combine this with automatic differentiation to accurately compute gradients for these burst events, and implement these features using standard unconstrained optimization algorithms. We use trajectories from a minimal spiking model and the Hindmarsh-Rose equations as test problems, and bursting respiratory neurons in the preBotzinger complex as an application. These geometrical ideas and numerical improvements significantly enhance algorithm performance. Excellent fits are obtained to the preBotzinger data both in control conditions and when the neuromodulator norepinephrine is added. The results suggest different possible neuromodulatory mechanisms, and help analyze the roles of different currents in shaping burst duration and period.

url: http://hdl.handle.net/1813/3505
date: 2006-09-14
creator: Rojo, Patricio
viewed: 1887
title: IDL's utils
abstract: Collection of IDL routines. This is version 0.16 of the 'utils' package. The package provides routines to read and convolve data files, to make plotting windows user-interactive, and to resample arrays in different coordinates, among others.The National Aeronautics and Space Administration under grant NAG5-13154 issued through the Science Mission Directorate.

url: http://hdl.handle.net/1813/3506
date: 2006-09-14
creator: Rojo, Patricio
viewed: 3355
title: Transit v3.3
abstract: Check for the most recent release of transit at: http://www.das.uchile.cl/~pato/sw/Transit produces a theoretical modulation spectrum for a transiting planet, using the radiative transfer physics described in Patricio Rojo's Ph.D. Dissertation (2007). The code, written in C, is available under the GNU General Public License.

url: http://hdl.handle.net/1813/3507
date: 2006-09-15
creator: Harrington, Joseph;Rojo, Patricio
viewed: 1928
title: A Method to Remove Fringes from Images using Wavelets (with IDL's defringeflat v1.5.5)
abstract: Check for the most recent release of the accompanying software at: http://www.das.uchile.cl/~pato/sw/We have developed a new method that uses wavelet analysis to remove interference fringe patterns from images. This method is particularly useful for flat fields in the common case where fringes vary between the calibration and object data. We analyze the efficacy of this method by creating fake flats with fictitious fringes and removing the fringes. We find that the method removes 90% of the fringe pattern if its amplitude is equal to the random noise level and 60% if the fringe amplitude is ~1/10 of the noise level. We also present examples using real flat-field frames. Version 1.5.5 of a routine written in IDL that implements this algorithm is available from the authors and as an attachment to this paper.The National Aeronautics and Space Administration under grant NAG5-13154 issued through the Science Mission Directorate.

url: http://hdl.handle.net/1813/3508
date: 2006-09-15
creator: Rojo, Patricio
viewed: 1072
title: IDL's datareduction v0.23
abstract: The routines were created specifically for the particular VLT dataset described in the dissertation and might not work for other datasets. Check for the most recent release of IDL's datareduction at: http://www.das.uchile.cl/~pato/sw/The routines in this package are intended to reduce spectral data as described in Patricio Rojo's Ph.D. dissertation (2007). All routines are available under the GNU General Public License. Users are responsible for the scientific content of the result they obtain after using these routines. The National Aeronautics and Space Administration under grant NAG5-13154 issued through the Science Mission Directorate.

url: http://hdl.handle.net/1813/3509
date: 2006-09-15
creator: Maloney, Katherine
viewed: 2756
title: Biologically Active Natural Products from Plants and Their Endophytes
abstract: Plants and the fungi that colonize them (endophytic fungi) are prolific producers of the kinds of structurally interesting and biologically active small molecules (natural products) that captivate chemists and biologists alike. The work reported here focuses on the isolation of new natural products by two different yet complementary strategies. In the first, we sought new chemical diversity from a largely unexplored pool of biodiversity - the endophytic fungi. In the second, we examined a well-studied natural product reservoir - traditional Chinese medicinal plants - using new and innovative biological screens at the Institute of Chemistry and Cell Biology at Harvard Medical School.

The isolation and structure determination of a new inhibitor of STAT3 signaling from the Floridian endophytic fungus FA39 is described. FA39 showed 97% rDNA sequence identity to the ascomycete Phaeosphaeria avenaria. Bioassay-guided fractionation of FA39 yielded the STAT3 inhibitor phaeosphaeride A, and its inactive diastereomer phaeosphaeride B.

The discovery of a new family of non-templated biopolyesters from the Costa Rican endophytic fungus CR873 is described. CR873 showed 99% rDNA sequence identity to the ascomycete Daldinia concentrica. This fungus produces large amounts of oligomers of (3R,5R)-3,5-dihydroxyhexanoic acid - the first example of a eukaryote that produces biopolyesters of this nature.

The isolation and structure elucidation of two new cytokinesis-inhibitory cucurbitacins using a fluorescence imaging screen is described. The new cucurbitacins were isolated from Physocarpus capitatus along with a new biphenyl and the known compounds cucurbitacin F and 23,24-dihydrocucurbitacin F. Studies into the mechanism of action of the cucurbitacins are also reported.

The isolation and structure elucidation of TRPV4 channel activators and the structure elucidation of an angiogenesis inhibitor from prefractionated traditional Chinese medicinal plants are described. TRPV4 activators kaikasaponin III from Sophora sp. and linoleic acid from Stellaria sp. and Fritillaria sp. were identified without any further chromatographic separation. The diterpene dimer bisandrographolide A was isolated from Andrographis sp. after a single round of HPLC and found to potently activate TRPV4 channels. Hydroferulic acid from Stellaria sp. was identified in a screen of angiogenesis inhibitors without any further chromatographic separation. Attempts to optimize the activity of hydroferulic acid are also described.NSF Graduate Research Fellowship; NIH-NCDDG grant (CA67786); NIH-Starr Foundation grant (R21AT001979); NIH grant (CA24487)

url: http://hdl.handle.net/1813/3510

date: 2006-09-15
creator: Rothstein, David Mark
viewed: 2377
title: The Weather Around Black Holes: Accretion Disk and Jet Evolution in GRS 1915+105 and Other Systems
abstract: Ph.D. dissertation, Cornell University, Department of Astronomy. Faculty members supervising this work included Richard Lovelace (chair), Steve Eikenberry, Jim Cordes and Dong Lai.A fundamental problem in astrophysics involves the origin of jets and the dynamics of accretion disks. How does a collimated outflow arise from hot material that is spiraling into a central object (be it a black hole, neutron star, white dwarf or young star)? Why do jets appear to turn "on" and "off" as the accretion disk changes between different states?

In this thesis, we attempt to shed some light on this question through observational, theoretical and computational studies. We present high time resolution observations of the Galactic black hole candidate GRS 1915+105 and show how subtle differences in the accretion disk evolution in this object during different episodes of activity are related to different types of jet ejections. We then develop several new theoretical results about accretion disks that allow us to parametrize our uncertainty about the jet and other complex physics in a way that can be studied in one- or two-dimensional numerical simulations. Following this, we present FRIENDLY, a new code for numerical integration of arbitrary partial differential equations to arbitrary orders of accuracy that was developed during the course of this thesis. Finally, we present a preliminary application of FRIENDLY, in which we attempt to simulate an accretion disk that experiences a sudden increase in the strength of turbulence, as might be expected if an ordered magnetic field were ejected from the system in the form of a jet. We compare the simulations to the observations of GRS 1915+105 and conclude that further study of this mechanism may lead to an explanation for the behavior of this enigmatic object.Much of the material in this thesis is based upon work supported under a National Science Foundation Graduate Research Fellowship. Additional support came from NSF CAREER award NSF-9983830, the Cornell Science Inquiry Partnerships (CSIP) program at Cornell (a National Science Foundation Graduate Teaching Fellows in K-12 Education program), the NASA Space Grant program, and the Stewardship Sciences Academic Alliances program of the National Nuclear Security Administration under US Department of Energy Cooperative agreement DE-FC03-02NA00057.

url: http://hdl.handle.net/1813/3511
date: 2006-09-15
creator: Stearns, Carrie
viewed: 1603
title: Characterizing the Interplay between FAK, Src, and ACK2 in the Regulation of SH3PX1 Activity
abstract: Sorting nexin, SH3PX1, has been associated with endocytosis through its interactions with key endocytic proteins involved in the processing of cell surface receptors. These dramatic cellular effects, largely associated with the tyrosine phosphorylation of SH3PX1, have elicited interest in determining the molecular mechanisms underlying this phosphorylation event.

The first major focus of these studies was to develop reagents that could be used to further characterize the role of SH3PX1 in endocytosis. SH3PX1 has been identified as a substrate of the nonreceptor tyrosine kinase, activated Cdc42-associated kinase-2 (ACK2), and the resulting phosphorylation enhances degradation of the epidermal growth factor (EGF) receptor in cells. In order to further characterize ACK2-catalyzed SH3PX1 phosphorylation, we have identified tyrosine 287 as a major site of phosphorylation by mass spectrometry. Moreover, we have shown that the pyridopyrimidine PD158780 is a potent inhibitor of ACK2 kinase activity in vitro (IC50 ~80 pM). Together, we believe that phosphorylation-defective mutants of SH3PX1 and small molecule inhibitors of ACK2 kinase activity will help to further establish the roles of ACK2 and SH3PX1 in EGF receptor processing.

The second aspect of these studies involved the identification and characterization of novel tyrosine kinases that phosphorylate SH3PX1 in cells, namely focal adhesion kinase (FAK) and Src. Here, we show that FAK and Src differ considerably from ACK2 in their abilities to phosphorylate SH3PX1. For example, FAK and Src are more effective kinases for SH3PX1, compared to ACK2. In addition, we show that FAK and Src are able to phosphorylate several carboxyl-terminal truncation mutants of SH3PX1 that are defective for ACK2-catalyzed phosphorylation, suggesting that FAK and Src bind to and phosphorylate different sites on SH3PX1. This was further confirmed by mass spectrometry analysis which identified residues Y177, Y239, Y269, Y294, and Y561, as Src-catalyzed phosphorylation sites, with Y239 as the major site. Given the observed differences exhibited by FAK and Src, versus ACK2, in binding and phosphorylating SH3PX1, it now seems likely that this sorting nexin may be responsible for translating a complicated array of regulatory inputs into the endocytosis and degradation of membrane receptors.

url: http://hdl.handle.net/1813/3512
date: 2006-09-15
creator: Rojo, Patricio M
viewed: 1197
title: Transit Spectroscopy of the Extrasolar Planet HD209458b: The Search for Water
abstract: === Committee members === Chair: Peter Gierasch.
Member: Joseph Harrington (advisor). Minor Member: Warren Allmon. Field Appointed Member: Donald Campbell.This dissertation describes an attempt to detect water in the atmosphere of the extrasolar planet HD209458b using transit spectroscopy. It first discusses the importance of water detection and reviews the state of knowledge about extrasolar planets. This review discusses the main statistical trends and describes the detection methods employed to this date. The importance of the transiting planets and the many measurements of the known ones are also discussed.

A radiative transfer model designed and built specifically for this project predicts, given a planetary temperature/pressure/composition profile, the dependence in wavelength of the stellar spectrum modulation due to a transiting planet. A total of 352 spectra around 1.8 microns were obtained on four nights (three in transit) of observations on August 3--4, September 26, and October 3 of 2002 using ISAAC at the Very Large Telescope.

Correlating the modeled modulation with the infrared spectra yields a non-detection of water in the atmosphere of \hdt. It is found that the non-detection is due to an unfortunate choice of observing parameters and conditions that made it impossible to reach the required sensitivity. Nonetheless, the results are scaled with synthetic spectra to place strong limits on the planetary system configurations for which the observing parameters and telluric conditions would have yielded a successful detection. None of the 10 other known transiting planets would be detectable with the choice of parameters and conditions for this observation.

A quantitative model of an improved observing strategy for future observations of this kind is developed. The improvements include: airmass and timing constraints, the simultaneous observation of a calibrator star, and a new method to find the optimal wavelength range.

The data-reduction process includes several original techniques that were developed during this work, such as a method to remove fringes from flat fields and several methods to correct for telluric absorption, among others.

Some of the code developed for this project is available under the GNU General Public License at the DSpace Internet archive from Cornell University.The National Aeronautics and Space Administration under grant NAG5-13154 issued through the Science Mission Directorate.

url: http://hdl.handle.net/1813/3517
date: 2006-09-19
creator: McConnochie, Timothy

viewed: 2063
title: OBSERVATIONS OF THE MARTIAN ATMOSPHERE: THEMIS-VIS CALIBRATION, MESOSPHERIC CLOUDS, AND THE POLAR VORTEX
abstract: We present observations of the Martian atmosphere derived from two instruments: the Thermal Emission Spectrometer (TES) on the Mars Global Surveyor space-craft, and the visible light subsystem of the Thermal Emission Imaging System (THEMIS-VIS) on the Mars Odyssey spacecraft. For TES, we start with vertically resolved temperatures derived as described by Conrath et al. (2000, JGR, 105), and from them we derive horizontal winds and Ertel potential vorticity on a time series of regular three-dimensional grids. The Ertel potential vorticity is used as a dynamical tracer and diagnostic tool to study the behavior of the martian polar vortices. We find that, in contrast to the terrestrial polar vortices, the martian polar vortices? Ertel potential vorticity typically has an annular maximum well away from the pole. We also find that the martian northern winter vortex is better organized than the southern winter vortex, and thus is likely to be a more effective barrier to mixing. For THEMIS-VIS we develop a complete radiometric calibration pipeline. This pipeline is used for standard data processing to convert Engineering Data Records (EDRs) to the Reduced Data Records (RDRs) released by NASAs Planetary Data System. We use THEMIS-VIS nadir-pointed images to detect clouds in the 40 km to 80 km altitude range, measuring altitude from parallax and velocity fromcross-track motion during the imaging sequence. We have observed 5 cases of aphelion season equatorial high-altitude clouds during late afternoon, all located in the eastern Tharsis / Valles Marineris region, and 30 cases of high-altitude cloud features in the northern winter (perihelion season) mid-latitudes, all but one in the Acidalia region. A simple radiative transfer model yields optical depths greater than 0.2 for the equatorial clouds, as well as constraints on their composition. The mid-latitude high-altitude features are visible only in twilight, a geometry for which our simple plane parallel radiative transfer model is not valid. Comparing the zonal velocity of the clouds with a radiative transfer model, we find good agreement in the northern winter mid-latitudes, but poorer agreement for equatorial clouds.

url: http://hdl.handle.net/1813/3521
date: 2006-09-21
creator: Waterfall, Joshua
viewed: 2183
title: Universality in Multiparameter Fitting: Sloppy Models
abstract: In order to understand a variety of physical phenomena (such as signaling networks in molecular biology or crystal structures in condensed matter physics), scientists often develop models with many unknown or tunable parameters. Such multi-parameter models and systems are often sloppy. For practical purposes their behavior depends only on a few stiffly constrained combinations of parameters; other directions in parameter space can change by orders of magnitude without significantly changing the behavior. We develop the theoretical basis of sloppiness and argue that there is in fact a new universality class to which these models belong.

We begin by defining sloppiness (an exponentially large range of sensitivity to different combinations of parameters, with a roughly uniform distribution of sensitivities between the extremes). We then document sloppiness in a variety of models from different scientific fields. Several mathematically well-defined classes of models, some sloppy and some not sloppy, are then analyzed to understand the origins of sloppiness. Drawing connections to the field of random matrix theory, we derive an ensemble of sloppy models. The heart of sloppiness in this ensemble is shown to be the Vandermonde matrix. By demonstrating the novel statistical properties of this ensemble we argue that it constitutes a new universality class. Inspired by the properties of this Vandermonde ensemble we develop new tools for analyzing complex, real-world models with many parameters.

In the final section we focus on a particular complex, real-world model with many parameters. We formulate and analyze a mathematical description of the quorum sensing network in the bacterium Agrobacterium

tumefaciens. This network allows Agrobacterium to regulate gene expression in accordance with its population density. The mathematical description includes twenty four unknown parameters quantifying the biochemical interactions. While not complete, the model provides insight into the quorum sensing process and we suggest ways of coupling the model with experiments in the future.

url: http://hdl.handle.net/1813/3522
date: 2006-09-21
creator: Hughes, Robert E.;Bauer, Simon H.
viewed: 3067
title: A Conversation with Simon H. Bauer
abstract: The Oral History Project of the Department of Chemistry and Chemical Biology sponsored this DVD video about Simon H. Bauer [runtime: 2 hr, 47 min] with interviewer Robert E. Hughes. Topics covered are [minutes:seconds]: Introduction [1:58]; Early Years [1:58]; Undergrad at U. Chicago [2:55]; Graduate at U. Chicago [0:31]; Electron Diffraction-1 [0:34]; Mass Spectrometry [1:39]; Research in 30?s vs. present [3:33]; Computers [1:13]; I. I. Rabi [1:35]; Postdoc Study at CalTech [0:58]; Infrared Studies [1:04]; Linus Pauling [1:17]; Depression Era Job [2:49]; Cornell Appointment 1938 [0:55]; Lynn Hoard [0:38]; Teaching Qualitative Analysis [1:22]; Electron Diffraction-2 [1:37]; Harry Bush [1:03]; Peter Debye-1 [2:51]; Frank Long [1:10]; Fluorocarbon [1:04]; Electron Diffraction-3 [1:03]; Ken Hedberg [1:18]; John Kirkwood and Peter Debye-2 [4:01]; Paul Flory and Peter Debye-3 [1:06]; Chemical Kinetics [2:01]; Impact tubes-1 [1:53]; R. C. Tollman [3:37]; Shock Tubes-2 [1:56]; Hans Bethe [2:00]; Sound Dispersion [2:36]; Photoacoustic Effect [2:46]; CO2/N2 Lasers [1:37]; Shock Tube Studies-2 [10:58]; Single-pulse Shock Tubes [2:07]; Chemical Lasers [2:10]; Polyani[2:54]; Molecular Beams [1:53]; Excited States [0:39]; DF Lasers [0:40]; UV Lasers [1:14]; NMR Techniques [4:24]; Formic Acid [1:34]; X-ray / CHESS Studies [6:22]; Heats of Formation of CH Species [3:09]; Heats of Formation of Boron Hydrides [6:05]; Electron Diffraction [2:07]; Boron Hydride Oxidations [1:19]; Condensation of Vapors [11:44]; Shock-tube Synthesis of Amino Acids [6:09]; Four-center Reactions [3:32]; G. N. Lewis-Acid/Base Reactions [4:54]; Instructional Importance of Quantum Physics [11:39]; Conclusion [2:15]. Additional Resources: Bauer Biography and List of Publications; Bauer Photo Gallery; Hughes Brief Biography. At 95 he continues to publish. The streaming video is openly accessible at: http://ifup.cit.cornell.edu. The DVD was produced by J. Robert Cooke.

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Hydrides [6:05]; Electron Diffraction [2:07]; Boron Hydride Oxidations [1:19]; Condensation of Vapors [11:44]; Shock-tube Synthesis of Amino Acids [6:09]; Four-center Reactions [3:32]; G. N. Lewis-Acid/Base Reactions [4:54]; Instructional Importance of Quantum Physics [11:39]; Conclusion [2:15]. Additional Resources: Bauer Biography and List of Publications; Bauer Photo Gallery; Hughes Brief Biography. At 95 he continues to publish. The streaming video is openly accessible at: http://ifup.cit.cornell.edu. The DVD was produced by J. Robert Cooke.

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url: http://hdl.handle.net/1813/3523
date: 2006-09-21
creator: Wilcox, Charles;Cooke, W. Donald
viewed: 1758
title: A Conversation with W. Donald Cooke
abstract: Sponsored by the Oral History Project of the Department of Chemistry and Chemical Biology at Cornell University, led by Charles Wilcox and Kelly Strickland, this presents an extended interview with a senior member of the faculty, W. Donald Cooke, in which he shares his life's journey, professional interests and reflections about the distinctive character of his department and its nurturing environment. Short biographies of interviewee and interviewer [Charles Wilcox] are included, in addition to a photo gallery and list of publications of the interviewee. Video Total Run Time: [40 minutes]. Topics covered: [minutes: seconds]: Introduction [1:31]; Growing up in Philadelphia [5:17]; Army Air Force [4:52]; Coming Home [2:38]; Graduate School at Penn [4:42]; Postdoctoral at Princeton [2:00]; Cornell [1:05]; Research Support [0:48]; Cornell - Then and Now [1:03]; Regrets [1:54]; 1969 ? Troubled Times [3:50]; Vice President for Research [1:39]; Poker [0:35]; Conclusion [0:32].
The streaming video is openly accessible at: http://ifup.cit.cornell.edu. The DVD was produced by J. Robert

Cooke.

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date: 2006-09-21
creator: Wilcox, Charles;Cooke, W. Donald
viewed: 1758
title: A Conversation with W. Donald Cooke
abstract: Sponsored by the Oral History Project of the Department of Chemistry and Chemical Biology at Cornell University, led by Charles Wilcox and Kelly Strickland, this presents an extended interview with a senior member of the faculty, W. Donald Cooke, in which he shares his life's journey, professional interests and reflections about the distinctive character of his department and its nurturing environment. Short biographies of interviewee and interviewer [Charles Wilcox] are included, in addition to a photo gallery and list of publications of the interviewee. Video Total Run Time: [40 minutes]. Topics covered: [minutes: seconds]: Introduction [1:31]; Growing up in Philadelphia [5:17]; Army Air Force [4:52]; Coming Home [2:38]; Graduate School at Penn [4:42]; Postdoctoral at Princeton [2:00]; Cornell [1:05]; Research Support [0:48]; Cornell - Then and Now [1:03]; Regrets [1:54]; 1969 ? Troubled Times [3:50]; Vice President for Research [1:39]; Poker [0:35]; Conclusion [0:32].
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viewed: 1758
title: A Conversation with W. Donald Cooke
abstract: Sponsored by the Oral History Project of the Department of Chemistry and Chemical Biology at Cornell University, led by Charles Wilcox and Kelly Strickland, this presents an extended interview with a senior member of the faculty, W. Donald Cooke, in which he shares his life's journey, professional interests and reflections about the distinctive character of his department and its nurturing environment. Short biographies of interviewee and interviewer [Charles Wilcox] are included, in addition to a photo gallery and list of publications of the interviewee. Video Total Run Time: [40 minutes]. Topics covered: [minutes: seconds]: Introduction [1:31]; Growing up in Philadelphia [5:17]; Army Air Force [4:52]; Coming Home [2:38]; Graduate School at Penn [4:42]; Postdoctoral at Princeton [2:00]; Cornell [1:05]; Research Support [0:48]; Cornell - Then and Now [1:03]; Regrets [1:54]; 1969 ? Troubled Times [3:50]; Vice President for Research [1:39]; Poker [0:35]; Conclusion [0:32].
The streaming video is openly accessible at: http://ifup.cit.cornell.edu. The DVD was produced by J. Robert Cooke.

url: http://hdl.handle.net/1813/3524
date: 2006-09-21
creator: Widom, Ben;Hoffmann, Roald
viewed: 3561
title: A Conversation with Roald Hoffmann
abstract: Sponsored by the Oral History Project of the Department of Chemistry and Chemical Biology at Cornell University, led by Charles Wilcox and Kelly Strickland, this presents an extended interview with a senior member of the faculty, Roald Hoffmann, in which he shares his life's journey, professional interests and reflections about the distinctive character of his department and its nurturing environment. Short biographies of interviewee and interviewer [Ben Widom] are included, in addition to a photo gallery and

list of publications of the interviewee. Video Total Run Time: 1 hr and 25 minutes. Topics [m:s]: Early Years [17:02]; Coming to America [6:49]; High School and College [10:56]; Graduate School [4:31]
Extended Huckel Method [4:06]; Connection to Woodward [15:12]; Cornell [4:25]; Nobel Prize [7:23]; Current Research [8:13]; Poetry [5:13]; Conclusion [9:00]
The streaming video is openly accessible at: http://ifup.cit.cornell.edu. The DVD was produced by J. Robert Cooke.

url: http://hdl.handle.net/1813/3524
date: 2006-09-21
creator: Widom, Ben;Hoffmann, Roald
viewed: 3561
title: A Conversation with Roald Hoffmann
abstract: Sponsored by the Oral History Project of the Department of Chemistry and Chemical Biology at Cornell University, led by Charles Wilcox and Kelly Strickland, this presents an extended interview with a senior member of the faculty, Roald Hoffmann, in which he shares his life's journey, professional interests and reflections about the distinctive character of his department and its nurturing environment. Short biographies of interviewee and interviewer [Ben Widom] are included, in addition to a photo gallery and list of publications of the interviewee. Video Total Run Time: 1 hr and 25 minutes. Topics [m:s]: Early Years [17:02]; Coming to America [6:49]; High School and College [10:56]; Graduate School [4:31]
Extended Huckel Method [4:06]; Connection to Woodward [15:12]; Cornell [4:25]; Nobel Prize [7:23]; Current Research [8:13]; Poetry [5:13]; Conclusion [9:00]
The streaming video is openly accessible at: http://ifup.cit.cornell.edu. The DVD was produced by J. Robert Cooke.

url: http://hdl.handle.net/1813/3524
date: 2006-09-21
creator: Widom, Ben;Hoffmann, Roald
viewed: 3561
title: A Conversation with Roald Hoffmann
abstract: Sponsored by the Oral History Project of the Department of Chemistry and Chemical Biology at Cornell University, led by Charles Wilcox and Kelly Strickland, this presents an extended interview with a senior member of the faculty, Roald Hoffmann, in which he shares his life's journey, professional interests and reflections about the distinctive character of his department and its nurturing environment. Short biographies of interviewee and interviewer [Ben Widom] are included, in addition to a photo gallery and list of publications of the interviewee. Video Total Run Time: 1 hr and 25 minutes. Topics [m:s]: Early Years [17:02]; Coming to America [6:49]; High School and College [10:56]; Graduate School [4:31]
Extended Huckel Method [4:06]; Connection to Woodward [15:12]; Cornell [4:25]; Nobel Prize [7:23]; Current Research [8:13]; Poetry [5:13]; Conclusion [9:00]
The streaming video is openly accessible at: http://ifup.cit.cornell.edu. The DVD was produced by J. Robert Cooke.

url: http://hdl.handle.net/1813/3525
date: 2006-09-21
creator: Abruna, Hector;McLafferty, Fred W.
viewed: 1792
title: A Conversation with Fred W. McLafferty
abstract: Sponsored by the Oral History Project of the Department of Chemistry and Chemical Biology at Cornell University, led by Charles Wilcox and Kelly Strickland, this presents an extended interview with a

senior member of the faculty, Fred McLafferty, in which he shares his life's journey, professional interests and reflections about the distinctive character of his department and its nurturing environment. Topics [m:s]: Biography [13:37]; Cornell Faculty [6:26]; Department Changes [19:54]; Industry Changes [4:48]; McLafferty Rearrangement [6:46]; Long View [10:51]; Fourier Transform [9:21]; Next Frontiers [10:46]; Concluding Remarks [3:59]
Short biographies of interviewee and interviewer [Hector Abruna] are included, in addition to a photo gallery and list of publications of the interviewee. Video Total Run Time: 1 hr and 31 minutes
The streaming video is openly accessible at: http://ifup.cit.cornell.edu. The DVD was produced by J. Robert Cooke.

url: http://hdl.handle.net/1813/3525
date: 2006-09-21
creator: Abruna, Hector;McLafferty, Fred W.
viewed: 1792
title: A Conversation with Fred W. McLafferty
abstract: Sponsored by the Oral History Project of the Department of Chemistry and Chemical Biology at Cornell University, led by Charles Wilcox and Kelly Strickland, this presents an extended interview with a senior member of the faculty, Fred McLafferty, in which he shares his life's journey, professional interests and reflections about the distinctive character of his department and its nurturing environment. Topics [m:s]: Biography [13:37]; Cornell Faculty [6:26]; Department Changes [19:54]; Industry Changes [4:48]; McLafferty Rearrangement [6:46]; Long View [10:51]; Fourier Transform [9:21]; Next Frontiers [10:46]; Concluding Remarks [3:59]
Short biographies of interviewee and interviewer [Hector Abruna] are included, in addition to a photo gallery and list of publications of the interviewee. Video Total Run Time: 1 hr and 31 minutes
The streaming video is openly accessible at: http://ifup.cit.cornell.edu. The DVD was produced by J. Robert Cooke.

url: http://hdl.handle.net/1813/3525
date: 2006-09-21
creator: Abruna, Hector;McLafferty, Fred W.
viewed: 1792
title: A Conversation with Fred W. McLafferty
abstract: Sponsored by the Oral History Project of the Department of Chemistry and Chemical Biology at Cornell University, led by Charles Wilcox and Kelly Strickland, this presents an extended interview with a senior member of the faculty, Fred McLafferty, in which he shares his life's journey, professional interests and reflections about the distinctive character of his department and its nurturing environment. Topics [m:s]: Biography [13:37]; Cornell Faculty [6:26]; Department Changes [19:54]; Industry Changes [4:48]; McLafferty Rearrangement [6:46]; Long View [10:51]; Fourier Transform [9:21]; Next Frontiers [10:46]; Concluding Remarks [3:59]
Short biographies of interviewee and interviewer [Hector Abruna] are included, in addition to a photo gallery and list of publications of the interviewee. Video Total Run Time: 1 hr and 31 minutes
The streaming video is openly accessible at: http://ifup.cit.cornell.edu. The DVD was produced by J. Robert Cooke.

url: http://hdl.handle.net/1813/3526
date: 2006-09-21
creator: Wilcox, Charles;Scheraga, Harold A.
viewed: 2108

title: A Conversation with Harold A. Scheraga
abstract: Sponsored by the Oral History Project of the Department of Chemistry and Chemical Biology at Cornell University, led by Charles Wilcox and Kelly Strickland, this presents an extended interview with a senior member of the faculty, Harold A, Scheraga, in which he shares his life's journey, professional interests and reflections about the distinctive character of his department and its nurturing environment. Topics [m:s] Growing up in Monticello, NY [5:40]; War Years [7:06]; Post-doctoral at Harvard [5:30]; Coming to Cornell [4:21]; Department Chair [12:42]; Research ? Structure of Water [6:40]; Research ? Computer Studies [9:33]; Biological Significance of Global Free-Energy Minimum [6:10]; Can the Protein Folding Problem Be Solved? [2:42]; Conclusion [1:10]
A short biographies of interviewee and interviewer [] are included, in addition to a photo gallery and list of publications of the interviewee. Video Total Run Time: 64 minutes.
The streaming video is openly accessible at: http://ifup.cit.cornell.edu. The DVD was produced by J. Robert Cooke.

url: http://hdl.handle.net/1813/3526
date: 2006-09-21
creator: Wilcox, Charles;Scheraga, Harold A.
viewed: 2108
title: A Conversation with Harold A. Scheraga
abstract: Sponsored by the Oral History Project of the Department of Chemistry and Chemical Biology at Cornell University, led by Charles Wilcox and Kelly Strickland, this presents an extended interview with a senior member of the faculty, Harold A, Scheraga, in which he shares his life's journey, professional interests and reflections about the distinctive character of his department and its nurturing environment. Topics [m:s] Growing up in Monticello, NY [5:40]; War Years [7:06]; Post-doctoral at Harvard [5:30]; Coming to Cornell [4:21]; Department Chair [12:42]; Research ? Structure of Water [6:40]; Research ? Computer Studies [9:33]; Biological Significance of Global Free-Energy Minimum [6:10]; Can the Protein Folding Problem Be Solved? [2:42]; Conclusion [1:10]
A short biographies of interviewee and interviewer [] are included, in addition to a photo gallery and list of publications of the interviewee. Video Total Run Time: 64 minutes.
The streaming video is openly accessible at: http://ifup.cit.cornell.edu. The DVD was produced by J. Robert Cooke.

url: http://hdl.handle.net/1813/3526
date: 2006-09-21
creator: Wilcox, Charles;Scheraga, Harold A.
viewed: 2108
title: A Conversation with Harold A. Scheraga
abstract: Sponsored by the Oral History Project of the Department of Chemistry and Chemical Biology at Cornell University, led by Charles Wilcox and Kelly Strickland, this presents an extended interview with a senior member of the faculty, Harold A, Scheraga, in which he shares his life's journey, professional interests and reflections about the distinctive character of his department and its nurturing environment. Topics [m:s] Growing up in Monticello, NY [5:40]; War Years [7:06]; Post-doctoral at Harvard [5:30]; Coming to Cornell [4:21]; Department Chair [12:42]; Research ? Structure of Water [6:40]; Research ? Computer Studies [9:33]; Biological Significance of Global Free-Energy Minimum [6:10]; Can the Protein Folding Problem Be Solved? [2:42]; Conclusion [1:10]
A short biographies of interviewee and interviewer [] are included, in addition to a photo gallery and list of publications of the interviewee. Video Total Run Time: 64 minutes.
The streaming video is openly accessible at: http://ifup.cit.cornell.edu. The DVD was produced by J. Robert

Cooke.

url: http://hdl.handle.net/1813/3527
date: 2006-09-22
creator:
viewed: 1560
title: Cornell Alumni News Vol. 12, No. 1 - No. 40, 1909 - 1910
abstract: Cornell Alumni News Vol. 12, No. 1 - No. 40, 1909 - 1910. Please note the following: Issue 40 contains a Volume Index.

url: http://hdl.handle.net/1813/3528
date: 2006-09-22
creator:
viewed: 557
title: Cornell Alumni News Vol. 13, No. 1 - No. 40, 1910 - 1911
abstract: Cornell Alumni News Vol. 13, No. 1 - No. 40, 1910 - 1911. Please note the following: Issue 40 contains a Volume Index.

url: http://hdl.handle.net/1813/3529
date: 2006-09-22
creator:
viewed: 518
title: Cornell Alumni News Vol. 14, No. 1 - No. 40, 1911 - 1912
abstract: Cornell Alumni News Vol. 14, No. 1 - No. 40, 1911 - 1912.

url: http://hdl.handle.net/1813/3530
date: 2006-09-22
creator:
viewed: 752
title: Cornell Alumni News Vol. 15, No. 1 - No. 40, 1913 - 1914
abstract: Cornell Alumni News Vol. 15, No. 1 - No. 40, 1912 - 1913

url: http://hdl.handle.net/1813/3531
date: 2006-09-25
creator:
viewed: 573
title: Cornell Alumni News Vol. 16, No. 1 - No. 40, 1913-1914
abstract: Cornell Alumni News Volume 16, No. 1 - No. 40, 1913-1914. Please note the following: Issue 40 contains a Volume Index.

url: http://hdl.handle.net/1813/3532
date: 2006-09-25
creator:
viewed: 581
title: Cornell Alumni News Vol. 17, No. 1 - No. 40, 1914-1915
abstract: Cornell Alumni News Volume 17, No. 1 - No. 40, 1914-1915. Please note the following: Issue 40 contains a Volume Index and Issue 25 contains a supplement.

url: http://hdl.handle.net/1813/3533
date: 2006-09-25
creator:
viewed: 807
title: Cornell Alumni News Vol. 18, No. 1 - No. 40, 1915 - 1916
abstract: Cornell Alumni News Volume 18, No. 1 - No. 40, 1915 - 1916. Please note the following: Issue 40 contains a Volume Index.

url: http://hdl.handle.net/1813/3534
date: 2006-09-25
creator:
viewed: 751
title: Cornell Alumni News Vol. 19, No. 1 - No. 40, 1916 - 1917
abstract: Cornell Alumni News Volume 19, No. 1 - No. 40, 1916 - 1917.

url: http://hdl.handle.net/1813/3535
date: 2006-09-25
creator:
viewed: 373
title: Cornell Alumni News Vol. 20, No. 1 - No. 40, 1917 - 1918
abstract: Cornell Alumni News Volume 20, No. 1 - No. 40, 1917 - 1918.

url: http://hdl.handle.net/1813/3536
date: 2006-09-25
creator:
viewed: 819
title: Cornell Alumni News Vol. 21, No. 1 - No. 40, 1918 - 1919
abstract: Cornell Alumni News Vol. 21, No. 1 - No. 40, 1918 - 1919

url: http://hdl.handle.net/1813/3537
date: 2006-09-25
creator:
viewed: 434
title: Cornell Alumni News Vol. 22, No. 1 - No. 40, 1919 - 1920
abstract: Cornell Alumni News Vol. 22, No. 1 - No. 40, 1919 - 1920.

url: http://hdl.handle.net/1813/3538
date: 2006-09-25
creator:
viewed: 439
title: Cornell Alumni News Vol. 23, No. 1 - No. 40, 1920 - 1921
abstract: Cornell Alumni News Vol. 23, No. 1 - No. 40, 1920 - 1921. Please note the following: Issue 40 contains a Volume Index.

url: http://hdl.handle.net/1813/3539
date: 2006-09-25
creator:
viewed: 461

title: Cornell Alumni News Vol. 24, No. 1 - No. 40, 1921 - 1922
abstract: Cornell Alumni News Vol. 24, No. 1 - No. 40, 1921 - 1922. Please note the following: Issues 1, 5, 13, 17, 21, 25, 29, 33, 38 contain a supplements.

url: http://hdl.handle.net/1813/3540
date: 2006-09-25
creator:
viewed: 533
title: Cornell Alumni News Vol. 25, No. 1 - No. 40, 1922 - 1923
abstract: Cornell Alumni News Vol. 25, No. 1 - No. 40, 1922 - 1923. Please note the following: Issue 5 contains an supplement and Issue 40 contains a Volume Index.

url: http://hdl.handle.net/1813/3541
date: 2006-09-25
creator:
viewed: 529
title: Cornell Alumni News Vol. 26, No. 1 - No. 40, 1923 - 1924
abstract: Cornell Alumni News Vol. 26, No. 1 - No. 40, 1923 - 1924. Please note the following: Issue 40 contains a Volume Index.

url: http://hdl.handle.net/1813/3542
date: 2006-09-25
creator:
viewed: 627
title: Cornell Alumni News Vol. 27, No. 1 - No. 40, 1924 - 1925
abstract: Cornell Alumni News Vol. 27, No. 1 - No. 40, 1924 - 1925.

url: http://hdl.handle.net/1813/3543
date: 2006-09-25
creator:
viewed: 508
title: Cornell Alumni News Vol. 28, No. 1 - No. 40, 1925 - 1926
abstract: Cornell Alumni News Vol. 28, No. 1 - No. 40, 1925 - 1926. Please note the following: Issue 40 contains a Volume Index.

url: http://hdl.handle.net/1813/3544
date: 2006-09-25
creator:
viewed: 516
title: Cornell Alumni News Vol. 29, No. 1 - No. 40, 1926 - 1927
abstract: Cornell Alumni News Vol. 29, No. 1 - No. 40, 1926 - 1927. Please note the following: Issue 40 contains a Volume Index.

url: http://hdl.handle.net/1813/3545
date: 2006-09-25
creator:
viewed: 632
title: Cornell Alumni News Vol. 30, No. 1 - No. 40, 1927 - 1928

abstract: Cornell Alumni News Vol. 30, No. 1 - No. 40, 1927 - 1928. Please note the following: Issue 40 contains a Volume Index.

url: http://hdl.handle.net/1813/3546
date: 2006-09-25
creator:
viewed: 449
title: Cornell Alumni News Vol. 31, No. 1 - No. 40, 1928 - 1929
abstract: Cornell Alumni News Vol. 31, No. 1 - No. 40, 1928 - 1929. Please note the following: Issue 40 contains a Volume Index.

url: http://hdl.handle.net/1813/3547
date: 2006-09-25
creator:
viewed: 481
title: Cornell Alumni News Vol. 32, No. 1 - No. 35, 1929 - 1930
abstract: Cornell Alumni News Vol. 32, No. 1 - No. 35, 1929 - 1930. Please note the following: Issue 35 contains a Volume Index.

url: http://hdl.handle.net/1813/3548
date: 2006-09-25
creator:
viewed: 603
title: Cornell Alumni News Vol. 33, No. 1 - No. 35, 1930 - 1931
abstract: Cornell Alumni News Vol. 33, No. 1 - No. 35, 1930 - 1931. Please note the following: Issue 35 contains a Volume Index.

url: http://hdl.handle.net/1813/3549
date: 2006-09-25
creator:
viewed: 450
title: Cornell Alumni News Vol. 34, No. 1 - No. 35, 1931 - 1932
abstract: Cornell Alumni News Vol. 34, No. 1 - No. 35, 1931 - 1932. Please note the following: Issue 35 contains a Volume Index.

url: http://hdl.handle.net/1813/3550
date: 2006-09-25
creator:
viewed: 323
title: Cornell Alumni News Vol. 35, No. 1 - No. 35, 1932 - 1933
abstract: Cornell Alumni News Vol. 35, No. 1 - No. 35, 1932 - 1933.

url: http://hdl.handle.net/1813/3551
date: 2006-09-25
creator:
viewed: 539
title: Cornell Alumni News Vol. 36, No. 1 - No. 35, 1933 - 1934
abstract: Cornell Alumni News Vol. 36, No. 1 - No. 35, 1933 - 1934.

url: http://hdl.handle.net/1813/3552
date: 2006-09-25
creator:
viewed: 359
title: Cornell Alumni News Vol. 37, No. 1 - No. 35, 1934 - 1935
abstract: Cornell Alumni News Vol. 37, No. 1 - No. 35, 1934 - 1935.

url: http://hdl.handle.net/1813/3553
date: 2006-09-25
creator:
viewed: 513
title: Cornell Alumni News Vol. 38, No. 1 - No. 35, 1935 - 1936
abstract: Cornell Alumni News Vol. 38, No. 1 - No. 35, 1935 - 1936.

url: http://hdl.handle.net/1813/3554
date: 2006-09-25
creator:
viewed: 1024
title: Cornell Alumni News Vol. 39, No. 1 - No. 35, 1936 - 1937
abstract: Cornell Alumni News Vol. 39, No. 1 - No. 35, 1936 - 1937. Please note: Issue 35 contains a supplement.

url: http://hdl.handle.net/1813/3555
date: 2006-09-25
creator:
viewed: 410
title: Cornell Alumni News Vol. 40, No. 1 - No. 35, 1937 - 1938
abstract: Cornell Alumni News Vol. 40, No. 1 - No. 35, 1937 - 1938.

url: http://hdl.handle.net/1813/3557
date: 2006-09-27
creator: Griffiths, Jean T.
viewed: 853
title: Positive Attitudes and Youth Horse Programs
abstract: Uses the Cornell Cooperative Extension horse program to concisely illustrate how a positive attitude benefits youth and adults. Concepts are applicable in any program, worldwide. 2 pp.

url: http://hdl.handle.net/1813/3558
date: 2006-09-27
creator: Henick-Kling, Thomas;Martens, Mary-Howell;Peterson, David V.;Pool, Robert M.;Reisch, Bruce I.
viewed: 795
title: Wine and Juice Grape Varieties for Cool Climates
abstract: This information bulletin describes the broad range of leading wine and juice grape varieties available for commercial use, including Vitis vinifera, hybrids and selected Vitis labrusca. Descriptions of selected varieties in the grape stage and the resulting wines are included. Information regarding susceptibility of varieties to low-temperature injury and disease, as well as bird, insect, and disease damage and control is included as well.

url: http://hdl.handle.net/1813/3559
date: 2006-09-27
creator: Robinson, Willard B.
viewed: 1295
title: Homemade Wine
abstract: Explains the basics for successfully fermenting grapes naturally into wine. Provides information on clarifying, finishing, and bottling.

url: http://hdl.handle.net/1813/3560
date: 2006-09-27
creator: Fischer, Charles Clayton
viewed: 1126
title: Growing African Violets
abstract: This classic bulletin list violet variations, describes the procedures for repotting, crown division, watering, lighting, rejuvenating and addresses common problems with this year round bloomer.

url: http://hdl.handle.net/1813/3561
date: 2006-09-27
creator: Calhoun, Karen
viewed: 2351
title: Being a Librarian
abstract: This presentation was adapted from a Taiga Forum http://www.taigaforum.org/ presentation made in March 2006Librarians have perhaps taken the most pride in their role as intermediaries, whether as reference librarians personally connecting users to the information they need, or as the creators of tools, like library catalogs, that facilitate those connections. However, in the interconnected world of the Web, information seekers behave more and more self-sufficiently, choosing simple but powerful search engines and moving well beyond catalogs and library collections in their pursuit of information. Using her recent research on the integration of the catalog with other discovery tools as a starting point, Calhoun will explore how librarians can continue advancing the state of knowledge in a digital world.

url: http://hdl.handle.net/1813/3562
date: 2006-09-28
creator: Steinhart, Gail
viewed: 711
title: Libraries as Distributors of Geospatial Data: Data Management Policies as Tools for Managing Partnerships
abstract: Libraries can bring substantial expertise to bear on the collection, curation, and distribution of digital geospatial information, making them trusted and competent partners for organizations that wish to distribute geospatial data. By developing a well-thought-out data management and distribution policy, libraries can define the parameters of a data distribution partnership and reinforce a data provider's confidence in the library's role as a data custodian and distributor. In developing a policy, data distributors are advised to consider such issues as intellectual property rights, liability issues, distribution methods and services, data and metadata management practices, security risks posed by geospatial data, and user limitations. This article describes the most common elements of data sharing and distribution agreements and describes the development of a data management policy for the Cornell University Geospatial Information Repository (CUGIR).

url: http://hdl.handle.net/1813/3564
date: 2006-10-03
creator: Gardescu, Sana;Marks, Peter L.;Mohler, Charles L.
viewed: 1652
title: Guide to the Plant Communities of the Central Finger Lakes Region
abstract: This book is for anyone with an interest in the outdoors, who would like to learn about the Finger Lakes region in general, and in particular about the kinds of plant communities found in central New York. Our main objective is to provide an introduction to the major types of plant communities in the region and where in the landscape they occur. It is intended to be read as a normal book, from beginning to end; it can also be used as a reference to be consulted about the nature of a particular community type. The book is written primarily for those without a background in botany or plant ecology, but should also be of interest to naturalists and biologists.

url: http://hdl.handle.net/1813/3564
date: 2006-10-03
creator: Gardescu, Sana;Marks, Peter L.;Mohler, Charles L.
viewed: 1652
title: Guide to the Plant Communities of the Central Finger Lakes Region
abstract: This book is for anyone with an interest in the outdoors, who would like to learn about the Finger Lakes region in general, and in particular about the kinds of plant communities found in central New York. Our main objective is to provide an introduction to the major types of plant communities in the region and where in the landscape they occur. It is intended to be read as a normal book, from beginning to end; it can also be used as a reference to be consulted about the nature of a particular community type. The book is written primarily for those without a background in botany or plant ecology, but should also be of interest to naturalists and biologists.

url: http://hdl.handle.net/1813/3567
date: 2006-10-03
creator: Marcham, John;LaFeber, Walter F.
viewed: 555
title: The Legacy of Frederick G. Marcham
abstract: The life and career of Prof. Frederick G. Marcham (1898-1992) who taught English history at Cornell University for 69 years. Length 41:44.

url: http://hdl.handle.net/1813/3567
date: 2006-10-03
creator: Marcham, John;LaFeber, Walter F.
viewed: 555
title: The Legacy of Frederick G. Marcham
abstract: The life and career of Prof. Frederick G. Marcham (1898-1992) who taught English history at Cornell University for 69 years. Length 41:44.

url: http://hdl.handle.net/1813/3568
date: 2006-10-03
creator: Marcham, Frederick G.
viewed: 1811
title: A Last Class (Taught by Frederick Marcham)
abstract: Prof. Marcham discusses his life and his Rules to Live By with the 1991 last meeting of a Cornell

University course. Length 28:44.

url: http://hdl.handle.net/1813/3568
date: 2006-10-03
creator: Marcham, Frederick G.
viewed: 1811
title: A Last Class (Taught by Frederick Marcham)
abstract: Prof. Marcham discusses his life and his Rules to Live By with the 1991 last meeting of a Cornell University course. Length 28:44.

url: http://hdl.handle.net/1813/3569
date: 2006-10-03
creator: Marcham, Frederick G.
viewed: 1682
title: A Talk on Job at Sage Chapel (audio)
abstract: Prof. Marcham reads from and comments on the Book of Job, March 29, 1992, in the Cornell University chapel.
Length: 14:27,

url: http://hdl.handle.net/1813/3569
date: 2006-10-03
creator: Marcham, Frederick G.
viewed: 1682
title: A Talk on Job at Sage Chapel (audio)
abstract: Prof. Marcham reads from and comments on the Book of Job, March 29, 1992, in the Cornell University chapel.
Length: 14:27,

url: http://hdl.handle.net/1813/3570
date: 2006-10-03
creator: Lewis, Rev. Jack;Marcham, John;LaFeber, Walter F.;Conable, John S.;Rhodes, Frank H.T.;Johnson, Rev. Robert L.
viewed: 1434
title: Memorial Service for Frederick G. Marcham (audio)
abstract: A memorial service for Prof. Marcham at Sage Chapel, Cornell, Jan. 24, 1993. Length: 1:13:51

url: http://hdl.handle.net/1813/3570
date: 2006-10-03
creator: Lewis, Rev. Jack;Marcham, John;LaFeber, Walter F.;Conable, John S.;Rhodes, Frank H.T.;Johnson, Rev. Robert L.
viewed: 1434
title: Memorial Service for Frederick G. Marcham (audio)
abstract: A memorial service for Prof. Marcham at Sage Chapel, Cornell, Jan. 24, 1993. Length: 1:13:51

url: http://hdl.handle.net/1813/3572
date: 2006-10-03
creator: Good, George;Weir, Richard III
viewed: 608

title: The Cornell Guide for Planting and Maintaining Trees and Shrubs
abstract: The Cornell Guide for Planting and Maintaining Trees and Shrubs is a benchmark text written for professional horticulturists and home owners alike.
Includes reliable tips for properly selecting plants from nurseries, guidance for appropriate site selection, transplanting processes and schedules, drainage management, and soil preparation. Important tasks immediately following planting - from watering, mulching, staking and wrapping, to pruning, fertilizing and anti-desiccant application provide professionals and hobbyists with knowledge to ensure their trees and shrubs flourish and thrive. Regular maintenance practices, including tips for protecting plants during construction, and the importance of monitoring for insect and disease problems are included. Includes numerous drawings, tables, tips, historical references, and a glossary with important terms.

url: http://hdl.handle.net/1813/3573
date: 2006-10-03
creator: Weir, Richard III;Rakow, Donald A.
viewed: 918
title: PruningAn Illustrated Guide to Pruning Ornamental Trees and Shrubs
abstract: This pruning guide offers practical information, with clear, easy to follow instructions for successful pruning and maintenance of ornamental trees and shrubs. Readers begin with the basics of timing and frequency of pruning, and the necessary equipment to achieve the desired results. Gardeners and landscapers will find detailed instructions for pruning, maintaining, and rejuvenating deciduous and evergreen trees, shrubs, heaths and heathers. A section is devoted to manipulation techniques for shaping shrubs into small trees, as well as configuring hedges and vines. Topiary, pollarding, espalier and chemical growth control instruction is included for advanced gardeners. Numerous drawings, tables, tips, historical references, and the glossary are included in the bulletin which is drawn from Cornell research, extension demonstrations, and practical landscape and garden experience.

url: http://hdl.handle.net/1813/3574
date: 2006-10-03
creator: Rossi, Frank
viewed: 1270
title: Lawn Care Without Pesticides
abstract: This text focuses on reducing environmental stressors on grass plants as the key to a lush, beautiful, and thriving lawn. This bulletin teaches how grass grows and why lawns matter, and suggests ways to reduce stress. Following the steps in this bulletin can cause the home lawn to grow stronger, and be more resistant to weeds, insects and diseases.
Lawn Care without Pesticides begins with a 7-step, first-year plan. The publication covers how grass grows, best mowing, watering & fertilizing practices, how to repair small bare spots, renovating and establishing lawns, choosing lawn grasses, relieving thatch, coping with shade, and dealing with salt damage. During the first-year this bulletin teaches the user to gather information about the lawn: Test the soil, observe soil conditions, watch the sun, and note high-traffic areas. This publication has helpful diagrams and tables throughout.

url: http://hdl.handle.net/1813/3575
date: 2006-10-04
creator: Oenema, Oene;Hoffland, Ellis;Becx, Gertjan A.;van den Broek, Joep A.;van Hofwegen, Guido
viewed: 1721
title: Biochar solutions for reducinf pollution in the Netherlands
abstract: Presentation regarding possible benefits of converting organic wastes to biochar, generating energy

and enhancing soil fertility.Wageningen University

url: http://hdl.handle.net/1813/3576
date: 2006-10-05
creator: Yeh, Richard Cheng-I
viewed: 1699
title: Liquid-on-liquid mixing for slide-based biological assays
abstract: Many parallel biochemical assays rely on thin aqueous films to spread a reactant solution over a wide area decorated with multiple distinct substrates. In this asymmetric, microfluidic geometry, diffusion limits the transport of reactants to substrates. Chemical equilibrium, a requirement for reproducibility of results, can take days to achieve.

The liquid-on-liquid mixing (LOLM) method overcomes the diffusion barrier by layering an immiscible spectator fluid, such as mineral oil, on the thin film. Stirring the spectator fluid transmits shear at the liquid-liquid interface into the thin film. The mixing accelerates the march towards equilibrium. This technique increases the speed and sensitivity of immunofluorescence staining of Drosophila larval polytene chromosomes by a factor of 100 in time and concentration, when compared to standard coverslip techniques.

Flow visualization experiments reveal the fluid motions in the thin aqueous layer. Using time-lapse video photography to monitor the evolution of a drop of colloidal dye in the thin film, I estimate the time needed to achieve good mixing at various stir rates.

The major aim of this technique is improving the hybridization step in DNA microarrays. I printed microarrays and subjected them to hybridizations with varying stir rates, durations, and target DNA concentrations. My data suggest that the mixing produces at best a modest improvement in efficiency, uniformity, sensitivity, and specificity when compared to microarrays incubated with the standard coverslip method.This work was supported by the Cornell University Center for Biotechnology, a New York State Center for Advanced Technology, supported by the New York State Office for Science, Technology, and Academic Research and industrial sponsors. This material is based upon work supported in part by the STC Program of the National Science Foundation under Agreement No. ECS-9876771, through the Cornell Nanobiotechnology Center (NBTC). This work made use of the computing facility of the Cornell Center for Materials Research (CCMR), supported through the National Science Foundation Materials Research Science and Engineering Centers (MRSEC) program (DMR-0079992). This work made use of a site license for National Instruments LabVIEW software purchased by the Cornell Laboratory of Atomic and Solid-State Physics. I thank Cornell University and in particular the Department of Physics for awarding me a teaching assistantship in the spring of 2004 to allow me to conduct this research.

url: http://hdl.handle.net/1813/3577
date: 2006-10-05
creator: Limkumnerd, Surachate
viewed: 1305
title: Mesoscale Theory of Grains and Cells: Polycrystals & Plasticity
abstract: Solids with spatial variations in the crystalline axes naturally evolve into cells or grains separated by sharp walls. Such variations are mathematically described using the Nye dislocation density tensor. At high temperatures, polycrystalline grains form from the melt and coarsen with time; the dislocations can both climb and glide. At low temperatures under shear the dislocations (which allow only glide) form into cell structures. While both the microscopic laws of dislocation motion and the macroscopic laws of coarsening and plastic deformation are well studied, we hitherto have had no simple, continuum explanation for the evolution of dislocations into sharp walls. We present here a mesoscale theory of dislocation motion. It provides a quantitative description of deformation and rotation, grounded in a microscopic order parameter field exhibiting the topologically conserved quantities. The current of the Nye dislocation density tensor

is derived from downhill motion driven by the microscopic Peach--Koehler forces between dislocations, making use of a simple closure approximation. The resulting theory is shown to form sharp dislocation walls in finite time mathematically described by Burgers equation---similar to those seen in the theory of sonic booms and traffic jams. Our finite-difference methods use special upwind and Fourier techniques for dealing with the shock formation. The outcomes of our simulations in one and two dimensions are in good agreement with experiment and other discrete dislocation simulations. These results provide fundamental insights into the basic phenomena of plastic deformation in crystals, and offers predictions for residual stress, cell-structure refinement, and the distinguish features of different hardening stages in plastic deformation.
ITR/ASP ACI0085969
DMR-0218475

url: http://hdl.handle.net/1813/3578
date: 2006-10-06
creator: Block, David
viewed: 781
title: Mission Culture on the Upper Amazon: Native Tradition, Jesuit Enterprise and Secular Policy in Moxos, 1660-1880
abstract: The native peoples of the Moxos region of modern Bolivia began a cultural transformation with their contact by Jesuit missionaries in the mid 17th century. The amalgamation of autocthonous and European modes formed a particular "mission culture" that endured until the Amazonian rubber boom reached Moxos at the end of the 19th century.

url: http://hdl.handle.net/1813/3579
date: 2006-10-07
creator: Kooi, Adeline Min Fen
viewed: 960
title: Neighbors Building Neighborhoods: A Critical Look at Citizen Participation in Rochester
abstract: In the last several decades, there has been a shift away from the central planning model in America. Reactions from the grassroots have emerged as citizens strive to address urban needs independently of planning bodies. However, many would argue that this is not the answer either.

Planning at the level of urban administration currently coexists in tension with planning at the grassroots level. Planning from the top is attempting to be more attentive to needs in the neighborhoods, as citizens have begun to acquire the energy and resources to lobby for change. Oftentimes, government-grassroots partnerships are forged to exploit the capacities of both entities in planning endeavors. However, this leads to the question of how this tension creates opportunities for improvements of social conditions, whether it contributes to the larger vision of enlarging the political capacity of a society, and which is the appropriate body to make a plan and implement it.

A government-grassroots partnership was attempted in the City of Rochester, through the Neighbors Building Neighborhoods (NBN) program. The year 2006 marks the 13th year of the program. After 13 years of negotiations, consultation, community meetings, conflict, and lobbying, numerous milestones have been achieved. Through NBN, hundreds of neighborhood projects have come to fruition, while many others have broken ground. These projects include physical improvements, beautification projects, the construction of new schools and stores, better public services, and increased public safety measures. NBN also received awards for its successful neighborhood revitalization efforts, and is recognized as a model of best practices.

Many people in Rochester are happy with the achievements made through NBN. However, some believe that the process can be further modified for greater success. The recent election of a new mayor into the Rochester City administration has resulted in some uncertainty in the future of NBN ? will the process continue as it, be modified, or go down in history as a pet project of the previous administration? This thesis

examines the NBN process to: 1. document the NBN process in Rochester an example of government-initiated grassroots-planning action that other city planning organizations can refer to; 2. place the era of NBN in the context of Rochester's history as a city of citizen action; and 3. explore NBN as Rochester's solution to the problem of the appropriate bodies to make a plan and implement it.Cornell Department of City and Regional Planning - Kermit C. Parsons and Janice I. Parsons Scholarship ; Housing Development Board (Singapore) / Economic Development Board (Singapore) - Singapore Inc. Scholarship

url: http://hdl.handle.net/1813/3580
date: 2006-10-08
creator: Fogle, Homer William Jr
viewed: 607
title: Chapter and Alumni Operations Handbook, 1994
abstract: 30 p; tables, appendices, bibliography; 28 cm. Electronic reproduction. Original, 12 February 1994.Reference data concerning the Delta Kappa Epsilon Fraternity, the Delta Chi Chapter of Delta Kappa Epsilon at Cornell University, the Delta Chi Association and Cornell University is tabulated. A bibliography of historical studies concerning the Cornell chapter is included.

url: http://hdl.handle.net/1813/3582
date: 2006-10-11
creator:
viewed: 871
title: Cornell Alumni News Vol. 41, No. 1 - No. 35, 1938 - 1939
abstract: Vol. 41, No. 1 - No. 35, 1938 - 1939

url: http://hdl.handle.net/1813/3583
date: 2006-10-11
creator:
viewed: 257
title: Cornell Alumni News Vol. 42, No. 1 - No. 35, 1939 - 1940
abstract: Vol. 42, No. 1 - No. 35, 1939 - 1940

url: http://hdl.handle.net/1813/3584
date: 2006-10-11
creator:
viewed: 1075
title: Cornell Alumni News Vol. 43, No. 1 - No. 34, 1940 - 1941
abstract: Vol. 43, No. 1 - No. 34, 1940 - 1941

url: http://hdl.handle.net/1813/3585
date: 2006-10-11
creator:
viewed: 427
title: Cornell Alumni News Vol. 44, No. 1 - 2, and 4 - 34, 1941 – 1942
abstract: Vol. 44, No. 1 - 2, and 4 - 34, 1941 - 1942

url: http://hdl.handle.net/1813/3586
date: 2006-10-11
creator:

viewed: 1059
title: Cornell Alumni News Vol. 45, No. 1 - No. 30, 1942 - 1943
abstract: Vol. 45, No. 1 - No. 30, 1942 - 1943

url: http://hdl.handle.net/1813/3587
date: 2006-10-11
creator:
viewed: 448
title: Cornell Alumni News Vol. 46, No. 1 - No. 24, 1943 - 1944
abstract: Vol. 46, No. 1 - No. 24, 1943 - 1944

url: http://hdl.handle.net/1813/3588
date: 2006-10-11
creator:
viewed: 254
title: Cornell Alumni News Vol. 47, No. 1 - No. 24, 1944 - 1945
abstract: Vol. 47, No. 1 - No. 24, 1944 - 1945

url: http://hdl.handle.net/1813/3589
date: 2006-10-11
creator:
viewed: 1144
title: Cornell Alumni News Vol. 48, No. 1 - No. 21, 1945 - 1946
abstract: Vol. 48, No. 1 - No. 21, 1945 - 1946

url: http://hdl.handle.net/1813/3590
date: 2006-10-11
creator:
viewed: 783
title: Cornell Alumni News Vol. 49, No. 1 - No. 21, 1946 - 1947
abstract: Vol. 49, No. 1 - No. 21, 1946 - 1947

url: http://hdl.handle.net/1813/3591
date: 2006-10-11
creator:
viewed: 265
title: Cornell Alumni News Vol. 50, No. 1 - No. 18, 1947 - 1948
abstract: Vol. 50, No. 1 - No. 18, 1947 - 1948

url: http://hdl.handle.net/1813/3592
date: 2006-10-11
creator:
viewed: 2373
title: Cornell Alumni News Vol. 51, No. 1 - No. 18, 1948 - 1949
abstract: Vol. 51, No. 1 - No. 18, 1948 - 1949

url: http://hdl.handle.net/1813/3593
date: 2006-10-11

creator:
viewed: 1614
title: Cornell Alumni News Vol. 52, No. 1 - No. 18, 1949 - 1950
abstract: Vol. 52, No. 1 - No. 18, 1949 - 1950

url: http://hdl.handle.net/1813/3594
date: 2006-10-11
creator:
viewed: 1348
title: Cornell Alumni News Vol. 53, No. 1 - No. 18, 1950 - 1951
abstract: Vol. 53, No. 1 - No. 18, 1950 - 1951

url: http://hdl.handle.net/1813/3595
date: 2006-10-11
creator:
viewed: 227
title: Cornell Alumni News Vol. 54, No. 1 - No. 18, 1951 - 1952
abstract: Vol. 54, No. 1 - No. 18, 1951 - 1952

url: http://hdl.handle.net/1813/3596
date: 2006-10-11
creator:
viewed: 275
title: Cornell Alumni News Vol. 55, No. 1 - No. 18, 1952 - 1953
abstract: Vol. 55, No. 1 - No. 18, 1952 - 1953

url: http://hdl.handle.net/1813/3597
date: 2006-10-11
creator:
viewed: 227
title: Cornell Alumni News Vol. 56, No. 1 - No. 18, 1953 - 1954
abstract: Vol. 56, No. 1 - No. 18, 1953 - 1954

url: http://hdl.handle.net/1813/3598
date: 2006-10-11
creator:
viewed: 1377
title: Cornell Alumni News Vol. 57, No. 1 - No. 18, 1954 - 1955
abstract: Vol. 57, No. 1 - No. 18, 1954 - 1955

url: http://hdl.handle.net/1813/3599
date: 2006-10-11
creator:
viewed: 718
title: Cornell Alumni News Vol. 58, No. 1 - No. 18, 1955 - 1956
abstract: Vol. 58, No. 1 - No. 18, 1955 - 1956

url: http://hdl.handle.net/1813/3600

date: 2006-10-11
creator:
viewed: 268
title: Cornell Alumni News Vol. 59, No. 1 - No. 18, 1956 - 1957
abstract: Vol. 59, No. 1 - No. 18, 1956 - 1957

url: http://hdl.handle.net/1813/3601
date: 2006-10-11
creator:
viewed: 1280
title: Cornell Alumni News Vol. 60, No. 1 - No. 18, 1957 - 1958
abstract: Vol. 60, No. 1 - No. 18, 1957 - 1958

url: http://hdl.handle.net/1813/3602
date: 2006-10-11
creator:
viewed: 401
title: Cornell Alumni News Vol. 61, No. 1 - No. 18, 1958 - 1959
abstract: Vol. 61, No. 1 - No. 18, 1958 - 1959

url: http://hdl.handle.net/1813/3603
date: 2006-10-11
creator:
viewed: 883
title: Cornell Alumni News Vol. 62, No. 1 - No. 18, 1959 - 1960
abstract: Vol. 62, No. 1 - No. 18, 1959 - 1960

url: http://hdl.handle.net/1813/3604
date: 2006-10-11
creator:
viewed: 322
title: Cornell Alumni News Vol. 63, No. 1 - No. 18, 1960 - 1961
abstract: Vol. 63, No. 1 - No. 18, 1960 - 1961

url: http://hdl.handle.net/1813/3605
date: 2006-10-11
creator:
viewed: 1295
title: Cornell Alumni News Vol. 64, No. 1 - No. 11, 1961 - 1962
abstract: Vol. 64, No. 1 - No. 11, 1961 - 1962

url: http://hdl.handle.net/1813/3606
date: 2006-10-11
creator:
viewed: 771
title: Cornell Alumni News Vol. 65, No. 1 - No. 11, 1962 - 1963
abstract: Vol. 65, No. 1 - No. 11, 1962 - 1963

url: http://hdl.handle.net/1813/3607
date: 2006-10-11
creator: Estevez, Nicolas
viewed: 540
title: FUNCTIONAL BLUEPRINTS: A DYNAMICAL APPROACH TO STRUCTURE REPRESENTATION
abstract: In engineering design, form has traditionally been specified explicitly using blueprints. This thesis explores an alternate way of specifying form built on interactions between dynamical systems. This alternate form specification is based on ideas from natural development. Inspired by termite nest building behavior, dynamic developmental systems are proposed as an alternate method to produce and represent structure designs, which when compared to the conventional blueprint method are a more robust form specification method, more adaptive, and even able to self-repair. Developmental systems are uses here as a method of form specification and an evolutionary algorithm is the method of design chosen to explore the capabilities of these developmental systems. Evolutionary algorithms have already been widely studied and proven to be an effective method of finding solutions to tough problems, and in this work they are simply a validated tool being used. The experiments included in this work use developmental systems with high degrees of system-environment interaction and show the importance of a subtle and often overlooked difference between two similar kinds of systems. An important distinction is being made between systems which both use feedback from the environment. These systems are referred to as the reactive system and the interactive system. The reactive systems simply use environment feedback during their development, whereas the interactive systems not only use environmental feedback but actually form a two-way dynamic feedback cycle WITH the environment. Our control experiments are the systems with one-way feedback which have a system-environment interaction level where the system uses information from the environment during its development but does not affect the environment?s dynamics. Our experiment systems ii use dynamic feedback, which allows them to affect the dynamics of the environment while simultaneously the environment reacts to this stimulus, forming a two-way feedback loop which makes the system more situated in the environment. The experiments in this thesis used the evolutionary algorithms to search for systems which fulfilled the desired effect on the environment. In this case this effect is to build a structure that causes the average temperature in the environment to come as close as possible to a target temperature, which is specified at the beginning of the evolutionary run. Both types of systems were evolved using evolutionary algorithms and those systems which used dynamic environmental feedback consistently displayed better performance.

url: http://hdl.handle.net/1813/3608
date: 2006-10-11
creator: Basu, Kaushik
viewed: 1816
title: Gender and Say: A Model of Household Behavior with Endogenously-determined Balance of Power
abstract: The evidence that the same total income can lead a household to choose different consumption vectors, depending on who brings in how much of the income, has led to an effort to replace the standard unitary model of the household with the ?collective model?, which recognizes that the husband and the wife may have different preferences and depending on the balance of power between them the household may choose differently. One weakness of this new literature is that it fails to recognize that the household?s choice could in turn influence the balance of power. Once this two-way relation between choice and power is recognized we, are forced to confront some new questions concerning how to model the household. This paper tries to answer these by defining a “household equilibrium”, examining its game-theoretic properties and drawing out its testable implications. It is shown, for instance, that a household equilibrium can be inefficient and that (for a certain class of parameters) children will be least likely to work in a household where power is evenly balanced. The paper also draws out the implications for female labor supply.

url: http://hdl.handle.net/1813/3609
date: 2006-10-11
creator: Basu, Kaushik
viewed: 939
title: Racial Conflict and the Malignancy of Identity
abstract: This paper demonstrates how our sense of identity can emerge out of mere markers of social distinction that may have no innate significance, but, nevertheless, spread to various aspects of our lives and be the root of conflict. The basis of such conflicts could arise from the use of race to form conditional judgments about people?s behavior. Moreover, there are contexts where racial conflict is inevitable even though, if individuals had common knowledge of one another's preferences, there would be no conflict. It is argued that this kind of conflict, where many individuals have no innate aggressive preference, is widespread and understanding the process that gives rise to such conflict is the key to crafting effective policy that contains it.

url: http://hdl.handle.net/1813/3610
date: 2006-10-12
creator: Tellmann, Ute
viewed: 425
title: The Economy and the Foundation of the Modern Body Politic: Malthus and Keynes as Political Philosophers
abstract: My dissertation explores the making of the modern division between the political and the economic realm. To modern political reason, the economy appears like a self-standing reality, internally related in terms of functions and understood to follow regulating laws of its own. The dissertation counters this account of the relation between the economic and the political realm. It analyzes the epistemological claims to objectivity, on which this division rests and shows how the allegedly neutral depictions of economic necessity remain inextricably linked to political imaginations of order. The main thesis of the work posits that the modern rendering of economic reality in terms of a self-contained and functional realm stems from the desire to establish secure foundations for a viable body politic.
The works of Malthus and Keynes are the exemplary cases for this study of the intimate relations between political reason and accounts of economic objectivity. The writings of Malthus crystallize in important respects the emergence of the specific modern objectivity at the beginning of the nineteenth century. With him, the notion of scarcity gained its important role for defining economy. It is shown that the definition of economy in terms of scarcity is tied to Malthus? attempts to envision a regulatory epistemology for the social body, which ensures a silent and visceral order against the uncertainties of the political world. The economic realm is thus conceived as the foundation of the body politic. The writings of Keynes witness the crisis of this economic foundation at the beginning of the twentieth century. The dissertation explicates Keynes' critique of the epistemology of scarcity, which underwrites modern accounts of economy. He opens a perspective on economy in terms of temporality, conventions and power, which traverses the closed boundaries of the economy. But this different view on economy is overlaid by Keynes' political desires to procure new foundations for the body politic: the envisioning of a national economy under the guidance of the economic expert, for which Keynesian economics is known, fulfills this desire. The thinking of economy is thus shown to be inextricably tied to the question of the political.

url: http://hdl.handle.net/1813/3611
date: 2006-10-12
creator: Yeh, Richard Cheng-I
viewed: 1173
title: Design and calibration of optical tweezers for single-molecule studies

abstract: This version is a PDF produced from the source Microsoft Word document. Figure 13, on logical page 36 (PDF page 46), is missing. It was a CorelDraw drawing of the optical layout. Please see the supplemental files "20000710 tweezers1xx AI9.emf" and "20000710 tweezers1xx AI9.ai" for enhanced metafile and Adobe Illustrator 9 versions of that figure.Feedback-controlled optical tweezers are used to manipulate single biological molecules in experiments on deoxyribonucleic acid (DNA) substrates. Before we trust these measurements, it is essential to know the accuracy and the precision of the device. This thesis describes the design and calibration of the optical tweezers. We measure relative displacements with nanometer accuracy and forces with an accuracy of 10%. The chief source of imprecision is in the human positioning of the sample under study. The capability of the instrument is demonstrated by stretching single molecules of DNA because of the elasticity of DNA has previously been well characterized. This thesis also compares DNA elasticity measurements made on this device with previously published data. I demonstrate that this instrument is well suited for characterizing DNA molecules that are long (~ 4000 bp), but not for DNA that are relatively short (~ 1000 bp). Fit parameters for new DNA tethers containing 4400 base pairs (bp) of DNA agree with expected values. The optical tweezers instrument is accurate enough to determine that one-hour-old 4400-bp DNA tethers have degraded, losing some 4% of their length. Our current methods are not appropriate for measurements of force-extension of short DNA molecules, such as 1155-bp DNA tethers.This work was supported by NIH Molecular Biophysics Training Grant T32 GM08267 and grants to Michelle D. Wang from the NIH and from the Keck Foundation.

url: http://hdl.handle.net/1813/3615
date: 2006-10-13
creator: Dressel, Andrew
viewed: 1192
title: THE BENCHMARKED LINEARIZED EQUATIONS OF MOTION FOR AN IDEALIZED BICYCLE (IMPLEMENTED IN SOFTWARE AND DISTRIBUTED VIA THE INTERNET)
abstract: People have been successfully building and riding bicycles since the 1800s, and many attempts have been made to describe the motion of these machines mathematically. However, common acceptance of the correct linearized equations of motion for a bicycle has remained elusive. In his 1988 master?s thesis at Cornell University, Scott Hand derived the equations again and performed the first known extensive survey of the literature, finding and documenting the mistakes made in previous attempts. The question remained however of what mistakes, if any, Mr. Hand and his advisors made. The subsequent advent of cheap and plentiful computing power and the development of numerical methods to take advantage of it provide an opportunity to confirm, once and for all, the correct linearized equations of motion for an idealized bicycle. That is exactly what A. L. Schwab, J. P. Meijaard, and J. M. Papadopoulos have done in their recent paper. The next step is to efficiently promulgate these correct and confirmed equations in a useful form. The goal is that anyone working in the areas of bicycle or motorcycle handling or control can use these equations directly or verify their own underlying equations against this benchmark. This thesis describes a program, JBike6, its on-line help, and its web site designed specifically for that purpose: to provide a turn-key application for evaluating the self-stability of a bicycle. JBike6 also generates numbers (eigenvalues and matrix entries) that can be used to compare, to very high precision, against any other linearized or fully non-linear equations of motion for a bicycle. After a brief review of the application, theory, and results of JBike6, the contents of this thesis consist primarily of hard copy of the on-line help and web site and screen shots of the program. The text has been modified to be more readable as a narrative and some pictures have been formatted to fit within the margins. Obviously, the interactive nature of the program, the help file, and the web site, including the hyperlinks, animations, and videos, is not available in this printed document. While all the components will continue to evolve, this thesis is a snapshot of them in September 2006. Many redundancies have been removed, but some remain in order to preserve the integrity and flow of the individual components. All these components may currently be found on-line at www.tam.cornell.edu/~ad29/JBike6

url: http://hdl.handle.net/1813/3616
date: 2006-10-13
creator: Casey, Fergal P
viewed: 1617
title: Prediction and Optimal Experimental Design in Systems Biology Models
abstract: In this dissertation we propose some approaches in model-building and model analysis techniques that can be used for typical systems biology models.

In Chapter 2 we introduce a dynamical model for growth factor receptor signaling and down-regulation. We show how, by quantitatively fitting the model to experimental data, we can infer interactions that are needed to describe the dynamical behavior. We demonstrate that predictions need to be accompanied by uncertainty estimates for both model validation and hypothesis testing. We then introduce some of the techniques from the optimal experimental design literature to reduce the prediction uncertainty for dynamical variables of interest.

In Chapter 3 we analyze the convergence properties of some of the Markov Chain Monte Carlo (MCMC) algorithms that can be used to give more rigorous uncertainty estimates for both parameters and dynamical variables within a model. We lay out a straightforward procedure which gives approximate convergence rates as a function of the tunable parameters of the MCMC method. We show that the method gives good estimates of convergence rates for the one dimensional probability distributions we examine, and it suggests optimal choices for the tunable parameters. We discover that variants of the basic MCMC algorithms which claim to have accelerated convergence often completely fail to converge geometrically in the tails of the probability distribution.

In Chapter 4 we consider a different problem --- how to efficiently simulate stochastic dynamics within a biochemical network. We introduce a mixed dynamics simulation algorithm which describes the biochemical reactions where some of the species can be treated as continuous variables, but other species are naturally described as discrete stochastic variables. We then attempt to describe an approximation to the continuous dynamics in a situation where the discrete variables change on a much faster relative time scale, analogous to the quasi-equilibrium assumption made in fully deterministic systems. However our approximation method mostly fails to capture the true correction to the dynamics; we speculate as to the reasons for this.

url: http://hdl.handle.net/1813/3617
date: 2006-10-17
creator: Milanovici, Florian
viewed: 432
title: Continuous-Time Tail Index Estimation
abstract: In applications to finance, insurance, physics and many other fields, statisticians are often faced with high quality datasets that exhibit deviations from the "normal behavior", caused by the extremes in the sample. As a consequence in recent years a great deal of research has been done in heavy-tailed modelling. Although much of the existing literature focuses on the discrete time case, the continuous-time heavy-tailed modelling is a very natural technique in many applications and therefore more attention should be paid to the continuous-time case. This is the motivation for the research in this dissertation. We will be focusing mainly on extending the Hill estimator (Hill (1975)) to estimating the tail index of continuous-time stationary stochastic processes. Since one can sample basically as many observations as possible from the continuous-time process, there is a temptation on the practitioner's part to use as large a sample as possible when applying the Hill estimator. We will show that this will lead in many instances to asymptotically inconsistent estimators.

url: http://hdl.handle.net/1813/3618

date: 2006-10-17
creator: Warholic, Donald T.;Kline, Roger A.;Bellinder, Robin R.
viewed: 1154
title: Weed Control for the Home Vegetable Garden
abstract: This information bulletin enables home gardeners to identify the most common weeds with the help of full-color photographs, and to select the most suitable strategies for controlling them - whether mechanical, cultural or chemical.

url: http://hdl.handle.net/1813/3619
date: 2006-10-18
creator: Eames-Sheavly, Marcia
viewed: 1326
title: The Appealing Apple
abstract: Stories, myths and legends help students discover the rich and varied history of apples. History, botany, cultivation and harvesting are explored through interesting and fun hands-on activities. 12 recipes including how to make home-made cider are highlighted, along with many interesting apple facts throughout the book.

url: http://hdl.handle.net/1813/3620
date: 2006-10-18
creator: Byrne, Cormac John
viewed: 344
title: PLANAR-FLOW MELT SPINNING: PROCESS STABILITY AND MICROSTRUCTURAL CONTROL
abstract: Various melt spinning embodiments have been developed over the past 30 years and have been widely used, particularly at bench-scale for the production of metallic glasses. Much of the processing science has been developed 'as-needed' by the metallurgical community. Commercial scale-up has been limited, primarily because of the difficulty in maintaining good product quality. As yet, pilot-scale, and larger, single stage melt-spinning machines have not become industrially significant. The broad aim of this work is to develop a scientific basis for some technological objectives.
One obvious processing restriction is the presence of surface defects on the product. A common span-wise defect, referred to as the cross-wave, is related to processing parameters. The key physics underlying the defect are found to be natural oscillations of the liquid metal puddle, akin to the oscillations of a plucked sphere of liquid. This discovery, not only provides a key piece of information about the defect and ways to eliminate it, but also ties this highly applied process to a classical fluid dynamics problem.
The planar-flow melt spinning process is known to become unstable for various combinations of control parameters. As with any manufacturing process, a wider range of control and outputs is desirable. In this spirit, a theory, based on capillarity constraining the liquid metal, is developed which predicts a range of stable operating conditions. This theory also suggests a technology to extend the range of stable operation. This technology has been developed and successfully reduced to practice. The theory is further developed to provide more intimate details of the flow structure and pressure drops in the process.
Another technologically driven element of this work is the examination of the cooling rates in the process and their manipulation using local heat transfer disruptions on the liquid metal puddle. This work demonstrates how product properties may be manipulated on a sub-millimeter scale.
Finally a detailed description of the experimental operating procedure and hardware is presented, in order that future researchers may not have to 're-invent the wheel' regarding many subtle aspects of the process.
NSF Grants DMI-0124730 and DMI-0423791

url: http://hdl.handle.net/1813/3621
date: 2006-10-18
creator: Eames-Sheavly, Marcia
viewed: 969
title: The Three SistersExploring an Iroquois Garden
abstract: The legend of the Three Sisters sets the stage for students to engage in an exploration of the culture and practices of the Iroquois through a gardening method that embraces the concept of botanical diversity. This method refers to the planting of corn, pole beans and squash together in hills and mounds. Legends and activities throughout round out this award winning publication.

url: http://hdl.handle.net/1813/3622
date: 2006-10-18
creator: Hill, Tomeka
viewed: 624
title: AN EMPIRICAL ANALYSIS OF PENSIONS FOR THE LABOR MARKET
abstract: Empirical research of pensions and its role in the labor market has been limiting and has led to inconclusive and sometimes contradictory results. What is needed to have a better understanding of the role of pensions is better data that are longitudinal and national, include worker and firm information, and provide information that helps deal with endogeneity between certain variables. This dissertation discusses such a new data set and discusses the empirical uses of the data when investigating the role of pensions on firm productivity. This dissertation comprises of two chapters. Each chapter is discussed below.
Chapter 1, "Results from Integrating the Form 5500 Pension Information with the U.S. Census Business Register and the Longitudinal Employer-Household Dynamics State Data" discusses the process in creating a new, unique data set which is longitudinal and includes information about private firms, their employees, and the different pensions that they offer. This data has firm and pension information for all private employers in the United States for years 1994 through 2001 and added employee information for firms that exist in twelve states over the same period. This data set is shown to be far superior to any currently available data set.
Chapter 2, "Do Changes in Deferred Compensation Lead to Changes in Productivity?" empirically examines the effects on firm productivity when a firm terminates a defined benefit plan and replaces it with a defined contribution plan. The empirical analysis was done using the data set discussed in Chapter 1. The empirical results show that when performing two-step estimations and comparing one group of firms that kept their defined benefit plans to another group of firms that converted their pension plans, the group that converted experienced a reduction in productivity between the years 1995 and 2000. There is some evidence that this result occurred because workers no longer had the incentive to remain with the firm once the defined benefit plan was replaced, and as a result, workers were leaving the firm before gaining firm-specific skills. However, more work needs to be done to determine if the reduction in employee retention is truly the cause.

url: http://hdl.handle.net/1813/3623
date: 2006-10-18
creator: Eames-Sheavly, Marcia
viewed: 2002
title: The Great American Peanut
abstract: Journey across the globe in 1851 with Samuel Purvis and learn about the peanut and the people who grow it. Activities and experiments are open-ended to allow for individual interpretations of findings. Interesting peanut facts are sprinkled in with information regarding botany, cultivation and history. 4 recipes including how to make your own peanut butter are featured.

url: http://hdl.handle.net/1813/3624

date: 2006-10-18
creator: Eames-Sheavly, Marcia
viewed: 899
title: The Humble PotatoUnderground Gold
abstract: Join 3 imaginary children from different parts of the world (the Inca Empire, Ireland and Long Island) as they reveal their relationship with the potato through their history, celebrations, cultivation techniques and recipes. Hands-on activities and potato factoids add color to general information about botany and nutrition. 6 recipes are included - like how to bake a chocolate potato cake!

url: http://hdl.handle.net/1813/3625
date: 2006-10-18
creator: Eames-Sheavly, Marcia
viewed: 2397
title: Rice Grain of the Ancients
abstract: Explore rice growing through the letters of an imaginary pen pal named Lanlan Chen in northern China. Students will come to understand why rice is so important to the people of Southeast Asia through Lanlan's letters, proverbs, stories, poems and projects. 8 recipes included.

url: http://hdl.handle.net/1813/3626
date: 2006-10-18
creator: Eames-Sheavly, Marcia
viewed: 614
title: The Three SistersExploring an Iroquois Garden
abstract: The legend of the Three Sisters sets the stage for students to engage in an exploration of the culture and practices of the Iroquois through a gardening method that embraces the concept of botanical diversity. This method refers to the planting of corn, pole beans and squash together in hills and mounds. Legends and activities throughout round out this award winning publication.

url: http://hdl.handle.net/1813/3627
date: 2006-10-19
creator: Rakow, Donald A.
viewed: 462
title: Gardens of Fabulous Flowers
abstract: For adult use with youth; information is useful to gardeners of all ages wanting to get the most satisfaction from floral color in a garden or when arranging cut flower displays. The descriptions of popular annuals and perennials will make selection easy.

url: http://hdl.handle.net/1813/3628
date: 2006-10-19
creator: Kline, Roger;Rakow, Donald;Cockram, Mary
viewed: 669
title: Garden in the City
abstract: The Garden in the City project is designed for youth and leaders who have had little experience with gardening and limited space. It is a step-by-step guide to beginning gardening. The project begins in February with indoor gardening activities and ends in June with an outdoor garden plot. Most of the vegetables in this project will grow quickly, so at the last project meeting you can have a harvest party, eating the food you've grown. Garden planning, site cleaning, breaking ground, planting, weeding, thinning and harvesting are all covered. Learn how to build a garden box, and how to start seeds and sprouts too. 11

Lessons or activities, required supplies and tools, and a salad garden plant list are included.

url: http://hdl.handle.net/1813/3629
date: 2006-10-19
creator: Lockhart, Kristi;Tennessen, Daniel J.;Lalli, Vincent A.
viewed: 574
title: Using Plants to Bridge the GenerationsHorticultural Intergenerational Learning as Therapy (HILT)
abstract: Horticultural Intergenerational Therapy (HILT) is a successful program that uses horticulture to benefit the elderly by increasing their physical activity and mental stimulation. It also benefits youth by introducing them to concepts of horticulture as well as showing them how to cultivate relationships with the elderly. Tells how to plan a HILT program, organize participants, and obtain funding. Includes long-term activities, such as planning an outdoor garden, planting bulbs and seeds, drying flowers, and building birdhouses. Provides lists of materials needed to accomplish each project, 30 ways to hold gardeners' interest, and factors influencing germination.

url: http://hdl.handle.net/1813/3630
date: 2006-10-20
creator: Johnson, W. T.;Klass, Carolyn
viewed: 603
title: Know Your Insects
abstract: A graded project that can carry a young person through many years of work in entomology. The project material gives minimum instructions for beginning an entomology project. Included are an introduction to what an insect is, guidelines for making an insect collection including proper data collection and keys for the identification of specimens to order level, directions for making necessary collecting equipment, suggestions of how, when and where to collect, and lists references, and other aids that are available. The requirements for 3 years of general collecting for 4-H is included.

url: http://hdl.handle.net/1813/3631
date: 2006-10-20
creator: Cho, Jaesung
viewed: 334
title: MILK COMPOSITION AND FARM BUSINESS CHARACTERISTICS: SUR ESTIMATION OF PRODUCTION FUNCTIONS VERSUS AN OUTPUT DISTANCE FUNCTION
abstract: The milk price received by New York dairy farmers is now primarily based on the amounts of the three main milk components: butterfat, protein, and other solids. Thus, by altering individual component production levels in respond to each component price, dairy farmers may increase their profits. It is, therefore, important for dairy farmers, first, to identify the production factors involved in milk production, and to examine their effects on each of the component production as well as aggregate milk.
For many years, economists and animal scientists examined the relationship between production factors and milk production, but one important aspect of milk production that has been overlooked is the effects of business factors on milk components. Although most business factors in milk production are not considered to be as crucial as factors like feed and breed type, the production performance of a dairy farm is in fact strongly connected to various business factors such as human capital, housing type, and milking frequency. Therefore, it is imperative that individual component production be examined as functions of production factors, including traditional inputs like feed, as well as business characteristics reflecting management. Only through this type of study will dairy farmers be able to comprehensively understand their production performance and fully realize their potential.
To accomplish this end, four single-output production functions using SUR and a stochastic output distance

function were estimated using the New York Dairy Farm Business Summary data from 105 farms in 2003 and 107 farms in 2004. Since only two years of data were available for this study, estimating production functions with panel characteristics were precluded. Thus, a year dummy variable was included to allow for the unobserved technical changes and environmental between the two years.

Based on the estimation results, this study examined (a) the effects of business factors and other inputs on aggregate milk and individual component production, (b) the technical efficiency of New York dairy farms that participated in the DFBS project, and (c) the relationships between the outputs. Consequently, twelve common factors were found to have significant effects on milk production among 22 total independent variables related to feed, breed, labor, capital, and other managerial and environmental factors. Of these 12 significant variables, the amount of commercial feed provided to a cow, quality of hired labor, capital intensity of a farm, productivity of land for home-grown forage, herd genetics, cow comfort level, BST use, and milking frequency, were shown to increase overall milk output as well as individual milk components. On the other hand, year dummy variable (2003=0 and 2004=1), average operator age, amount of home-grown forage provided to a cow, and percentages of Non-Holstein breeds on the farm were found to have negative effects on milk production.

From the stochastic output distance function, very little technical inefficiency was found in these participating New York dairy farms. The minimum value of estimated technical efficiency was 90% and the average was 96%. This implies that almost all of the participants in the DFBS project produce outputs at near the maximum possible output levels, given their production technology.

This study also examined the relationships between the outputs by computing the elasticity between outputs. The elasticity between milk and butterfat, and milk and protein were both found to be negative, while milk and other solids were found to be positive. However, these elasticities may not be particularly useful because dairy cows cannot be asked to alter their milk composition without changing inputs, and these output substitution elasticities are computed from a constant input vector.

url: http://hdl.handle.net/1813/3632
date: 2006-10-20
creator: Loria, Rosemary;Zitter, Thomas A.
viewed: 337
title: Detection of Potato Tuber Diseases and Defects
abstract: The objective of this bulletin is to aid in the diagnosis of tuber diseases and defects that most often result in production problems. Symptoms of 20 selected diseases and disorders as they appear on the tubers are described and illustrated.

url: http://hdl.handle.net/1813/3633
date: 2006-10-20
creator: Feng, Feng
viewed: 1062
title: THE ROLE OF ESTROGEN IN THE INDUCTION AND MODULATION OF SYSTEMIC LUPUS ERYTHROMATOSUS (SLE)
abstract: Ph.D. DissertationSystemic lupus erythematous (SLE) is a systemic autoimmune disease, characterized by circulating auto-antibodies to nuclear and cytoplasmic self antigens. A striking female predominance has been documented in SLE, with a female to male occurrence ratio of 9:1. Although the sex discrepancy in SLE has been attributed to sex hormones especially the female sex steroid estrogen, its importance is still controversial and other mechanisms are proposed, such as X inactivation, imprinting, differential exposures, etc. The present studies were undertaken to investigate the role of estrogen in inducing and accelerating lupus in lupus-prone and non-autoimmune mice and identify the possible mechanisms involved.

We first ovariectomized or castrated female or male lupus-prone SNF1 mice in order to determine the impact

that removal of physiological levels of sex hormones would have on the pathogenesis of lupus nephritis; exogenous 17?-estradiol (E-2) at a dose of 1mg/kg was also administrated to male mice. The results suggested that E-2 accelerated and exacerbated SNF1 lupus nephritis by inducing pathogenic idiotypic-reactive T cell populations that led to increased production of IdLNF1+ IgG which was deposited in the kidneys, resulting in nephritis. In, contrast, the removal of physiological level of testosterone had no effect. E-2 was also shown to induce the lupus phenotype and disease in the non-autoimmune mice, DBF1 mice. Further, the development of lupus nephritis in bone marrow chimeras derived from SNF1 mice of different genders or between SNF1 mice and the nonautoimmune-prone DBF1 cross, required either a female host and/or the addition of exogenous E-2.
The possible mechanism(s) underlying the effect of estrogen were also investigated. Thymectomy of SNF1 mice (at 30 days of age) delayed disease onset; however E-2 treatment induced disease in thymectomized mice, suggesting that the thymus was not required for E-2 induced upregulation of pathogenic idiotypic-reactive T cell populations. Lastly, our data suggest that estrogen?s effects on lupus nephritis were ER-? dependent; E-2 exposure led to decreased survival and nephritis in WT (ER?+/+) but not ER?-/-, and SNF1 immune cells constitutively expressed more ER? compared to DBF1, which was upregulated after E-2 exposure.Jerrie Gavalchin

url: http://hdl.handle.net/1813/3650
date: 2006-10-23
creator: Petrovic, A. Martin;Hummel, Norman W.;Thurn, Mary C.
viewed: 272
title: Home Lawns Establishment and Maintenance
abstract: Every year Americans spend billions of dollars to make their lawns attractive. A turfgrass lawn increases property value, enhances the environment by filtering out atmospheric pollutants, reduces noise, and cools the area in the summer. A healthy lawn is more pest resistant, thus reducing the use of pesticides. The authors tell you how to analyze the site, have the soil tested, eliminate existing vegetation, drain and grade the land, add fertilizer or other amendments, select seed, prepare the seedbed, plant, irrigate, and mow. This edition explains integrated pest management and how its use can reduce reliance on pesticides. Illustrations are included.

url: http://hdl.handle.net/1813/3651
date: 2006-10-23
creator: Thonney, Patricia F.
viewed: 392
title: Yeast BreadsCooking Up Fun!
abstract: This teaching guide provides 20 recipes for breads ranging from breadsticks to pitas! Children explore cultural history, ways of making dough, science, grains, nutrition, and creative fun in this six-session cooking series. The goals for the Cooking Up Fun! initiative are to (1) Increase life skills related to food preparation; (2) Model practices that reflect Dietary Guidelines and the Food Guide Pyramid; (3) Expand opportunities for experiential learning; (4) Develop understanding of the science of cooking; and (5) Have fun! Developed for youngster 9 - 12 years of age.

url: http://hdl.handle.net/1813/3655
date: 2006-10-24
creator: Alpi, Kristine M.
viewed: 338
title: Mapping the literature of emergency nursing.
abstract: Medical Library Association's Nursing and Allied Health Resources

Section's project to map the nursing literaturePURPOSE: Emergency nursing covers a broad spectrum of health care from trauma surgery support to preventive health care. The purpose of this study is to identify the core literature of emergency nursing and to determine which databases provide the most thorough indexing access to the literature cited in emergency nursing journals. This study is part of the Medical Library Association's Nursing and Allied Health Resources Section's project to map the nursing literature. METHODS: Four key emergency nursing journals were selected and subjected to citation analysis based on Bradford's Law of Scattering. RESULTS: A group of 12 journals made up 33.3% of the 7,119 citations, another 33.3% of the citations appeared in 92 journals, with the remaining 33.3% scattered across 822 journals. Three of the core 12 journals were emergency medicine titles, and 2 were emergency nursing titles from the selected source journals. Government publications constituted 7.5% of the literature cited. CONCLUSIONS: PubMed/MEDLINE provided the best overall indexing coverage for the journals, followed by CINAHL. However, CINAHL provided the most complete coverage for the source journals and the majority of the nursing and emergency medical technology publications and should be consulted by librarians and nurses seeking emergency nursing literature.Nursing and Allied Health Resources Section of the Medical Library Association

url: http://hdl.handle.net/1813/3656
date: 2006-10-25
creator: Thonney, Patricia F.
viewed: 568
title: Muffins & MoreCooking Up Fun!
abstract: This teaching guide uses standards for comparing different types of quick bread as well as the role different flavors play in the final product. 14 recipes, 12 activities to interpret and use recipes, 7 activities to practice kitchen and food safety, and 12 science experiments to understand functions of ingredients are included. The goals for the Cooking Up Fun! initiative are to (1) Increase life skills related to food preparation; (2) Model practices that reflect Dietary Guidelines and the Food Guide Pyramid; (3) Expand opportunities for experiential learning; (4) Develop understanding of the science of cooking; and (5) Have fun! Developed for children ages 9 - 12.

url: http://hdl.handle.net/1813/3657
date: 2006-10-25
creator: Hirtle, Peter
viewed: 1625
title: Keeping Your Copyright for Content Producers
abstract: Much ado has recently been made about securing permission from other copyright holders, but what are your rights as an author? Peter Hirtle, Intellectual Property Officer at Cornell University Library, explains how you as authors can make sure that you have the right to repost your work, use it in your classes or give other colleagues permission to use it as well as how to successfully negotiate for better and broader control of your own publications.

url: http://hdl.handle.net/1813/3658
date: 2006-10-26
creator: Hertz, Neil
viewed: 390
title: The End of the Line : Essays on Psychoanalysis and the Sublime
abstract: Previously Published by Basil Blackwell, Inc. 432 Park Avenue South, Suite 1503, New York, NY 10016. Copyright 2005 by Neil Hertz. All rights reserved.Neil Hertz's long-awaited volume of essays explores the notion of the sublime in literary and psychoanalytic texts from Longinus to Freud. The End of the Line

focuses on "authorial surrogates" -figures who appear in literature, philosophy, or psychoanalysis as emblems of activity of writing that has produced the work. George Eliot's Mr. Casaubon or a mangy dog in a novel by Flaubert emerge in Hertz's readings as doubles or scapegoats; through masterful analyses Hertz locates the pressures that produce these surrogates -pressures, he shows, that are crucial to the creation of great art. Hertz's work has long been famous for its extraordinary range as well as its uncompromising rigor. Although its subject is blockage, repression, and surrogates, The End of the Line is a brilliant and complete critical performance.

url: http://hdl.handle.net/1813/3659
date: 2006-10-26
creator: Culler, Jonathan D.
viewed: 336
title: On Puns: the Foundation of Letters
abstract: Previously Published by Basil Blackwell, Inc. 432 Park Avenue South, Suite 1503, New York, NY 10016. Copyright 2005 by Jonathan Culler. All rights reserved.Based on a conference sponsored by the Society for the Humanities, Cornell University, in September 1985. Includes bibliographical references and index and compressed versions of the books with search indexes which can be downloaded and then expanded.

url: http://hdl.handle.net/1813/3660
date: 2006-10-26
creator: Shultz, Joseph
viewed: 1064
title: A DYNAMIC PARTICIPATION DECISION MODEL APPLIED TO THE CONSERVATION SECURITY PROGRAM FOR NORTHEASTERN UNITED STATES DAIRY FARMS
abstract: The Conservation Security Program was authorized in the 2002 Farm Bill and is hailed by many observers as the first true ?green payments? program for working lands in the United States. Previous analysis and anecdotal evidence for similar conservation programs show that premature termination of contracts is a persistent issue. This type of producer behavior is not easily explained using the standard assumptions of profit-maximization under perfect information and perfect rationality. Rather, this unexpected termination behavior demonstrates the need for analyses that take into account biophysical complexities and alternative decision-making assumptions. An alternative set of behavioral assumptions is explored in this research that employ descriptive rather than normative participation decision rules.
The objective of this research is to explore the impact of alternative behavioral assumptions and dynamic biophysical effects of conservation practices on the participation and termination decisions of New York dairy producers. A simulation model is constructed to represent the effects of selected biophysical processes on farm profitability, producers? ability to gather and utilize this information, and finally their decisions to participate in the program. The results of this simulation model provide insights concerning observed termination behavior and suggestions for policy design and implementation.
The results of the dynamic participation decision model indicate that premature termination of CSP contracts is possible and even probable under certain conditions. These conditions include the complex biophysical effects of conservation practices, behavioral characteristics of decision makers, and payment schedules of the Conservation Security Program. These are all significant factors affecting if and when producers decide to termination CSP contracts. Termination decisions, in this model, are a result of learning processes, that is, the producer?s realization of new information concerning the profitability, or net revenue from participating in the Conservation Security Program.
Behavioral characteristics play a significant role in shaping producers' learning processes and the formation of expectations of net revenue from the CSP contract. Most important for determining participation is the magnitude of the producer's initial estimation error as well as delays in updating their perceptions

and expectations of net revenue. These delays determine a producer's adjustment times for perceiving new information and the incorporation of that learning into new expectations about net revenue. This expectation formation process can further encourage farmers to terminate their CSP contracts by creating greater amounts of volatility in expectations. The type of decision rule used by the farmer is also of significance when determining if or when a farmer might terminate participation in CSP. This analysis examines ten alternative decision rules.

This analysis presents several implications for pragmatic policy solutions to the problem of premature termination of CSP contracts. Foremost, policy makers should look beyond typical cost/benefit models of decision-making when designing inventive structures for conservation programs. Taking into account alternative decision-making behavior, this research recommends an alternative payment schedule to what was implemented in the 2005 CSP sign-up. A more robust policy would be to vary the payment rates to compensate for the expected downturn in farmer perceptions and expectations. Evaluation of several dynamic payment schedules indicated that there are a variety of possible schedules that can increase initial sign-up rates, decrease termination rates, and decrease government expenditures simultaneously. The policy ?fix,? suggested by this analysis, is robust over variations in behavioral characteristics and for multiple decision rules. With this approach, it is possible to simultaneously decrease government expenditure and decrease cumulative termination rates.

url: http://hdl.handle.net/1813/3661
date: 2006-10-26
creator: Foote, Robert H.
viewed: 444
title: Artificial Insemination to Cloning: Tracing 50 years of Research
abstract: Tremendous changes in reproductive biotechnologies of animals and humans have occurred during the past 50 years, more than occurred in the previous millenium. The book is prefaced with a short chapter emphasizing what qualities the author believes a person should cultivate in the pursuit of knowledge, and the love of sharing it with others. The following chapters describe advances in understanding reproductive physiology of cattle, horses, swine, sheep, goats, rabbits, dogs and ferrets through the research started by Professor Glenn Salisbury in 1939, and continued by others at Cornell University through 1998. Studies included research on sexual behavior in males and females, spermatogenesis and oogenesis, sperm and oocyte preservation, artificial insemination, embryo culture and cloning. Finally, and importantly is a reminder that all researchers have a great responsibility to combine high ethical, moral and research standards in the pursuit of truth. Abstracts of and references to 489 papers published from 1939 to 1998 are included. Compressed versions of the book with search indexes that can be downloaded and expanded on your personal computer are also provided.

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preservation, artificial insemination, embryo culture and cloning. Finally, and importantly is a reminder that all researchers have a great responsibility to combine high ethical, moral and research standards in the pursuit of truth. Abstracts of and references to 489 papers published from 1939 to 1998 are included. Compressed versions of the book with search indexes that can be downloaded and expanded on your personal computer are also provided.

url: http://hdl.handle.net/1813/3662
date: 2006-10-26
creator: Foote, Robert H.
viewed: 515
title: Pre-electronic Age References on Reproductive Physiology Across Many Species of Mammals and Birds
abstract: As a graduate student in the late 1940s, Robert Foote wanted to expand his knowledge of comparative reproductive physiology, nutrition and genetics for professional improvement and to assist hundreds of undergraduate students that he helped teach. Soon, he had 60 scientific journals, plus abstract journals, that he checked every month. He developed triplicate abstract forms with a 3" x 5" perforated reference form to file by author with two 5" x 8" forms to add a brief abstract cross-filed under two subject matter headings. Included was a notation to indicate that a reprint had been sent for. By the time of the electronic age in the early 1980s, Robert Foote had accumulated about 15,000 reprints and 25,000 references. These included classic bulletins, a commonly used route to publish scientific data in the old days, as few scientific journals were available. The species and subject covered are summarized with typed references following. This typed list was started in 1966 to help about 200 undergraduates that Robert Foote taught.

url: http://hdl.handle.net/1813/3662
date: 2006-10-26
creator: Foote, Robert H.
viewed: 515
title: Pre-electronic Age References on Reproductive Physiology Across Many Species of Mammals and Birds
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url: http://hdl.handle.net/1813/3664
date: 2006-10-26
creator: Foote, Robert H.
viewed: 759
title: Reflections on the History of Reproductive Physiology Research in Dairy Cattle
abstract: This Power Point presentation contains
an overview of more detailed documentation of research published in "Highlights in Dairy Cattle Reproduction in the Last 100 Years" published by the author on June 1, 2005. It includes highlights on research with dairy

bulls and dairy cows that led to the widespread use of artificial insemination and great improvement in the genetics of dairy cattle. Venereal diseases, such as Vibriosis also were controlled. This presentation contains many photographs of pioneer researchers and associated research plus a challenge for future researchers in this field.

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url: http://hdl.handle.net/1813/3665
date: 2006-10-26
creator: Foote, Robert H.
viewed: 406
title: Highlights in Dairy Cattle Reproduction in the Last 100 Years
abstract: The booklet is written in two parts. Part I is a general overview of the important discoveries in reproduction and reproductive biotechnologies applied to dairy cattle, written for a general audience. Part II is a technical review of the topic documented with multiple references. Emphasis is placed on the most important biotechnology, artifi cial insemination, with associated research on both males and females.

url: http://hdl.handle.net/1813/3665
date: 2006-10-26
creator: Foote, Robert H.
viewed: 406
title: Highlights in Dairy Cattle Reproduction in the Last 100 Years
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url: http://hdl.handle.net/1813/3666
date: 2006-10-26
creator: Foote, Robert H.
viewed: 1138
title: Summary of Oral History Interviews
abstract: A project to record the histories of the development of dairy cattle artificial insemination (AI) in the United States was undertaken by Drs. Robert Bratton and Gould P. Colman. From the oral interviews of 14 people, including university personnel and AI industry leaders, about 900 pages were typed. The oral interviews reflect on many conditions that were instrumental in helping to get AI established.

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creator: Foote, Robert H.
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url: http://hdl.handle.net/1813/3667
date: 2006-10-27
creator: Biermann, David
viewed: 392
title: A Workload Adaptive Voltage Scaling Multiple Clock Domain Architecture
abstract: This thesis presents a comprehensive system for allowing a Multiple Clock Domain (MCD) processor to adapt to its workload in an efficient manner. We present adaptive techniques at both the architecture and software levels. These techniques allow our system to either meet specified throughput demands while consuming as little energy as possible, or to stay within an average power budget while providing the highest possible throughput.

We first present an architecture-level adaptive system. This system adapts the voltage/frequency configuration of the MCD processor to meet the workload of a single application efficiently. As its input, this system can take either a throughput goal to meet using the least possible energy, or an average power level to remain below. We also show that our adaptive system can give an MCD processor increased tolerance to changes in performance and power dissipation due to variations.

Next, we extend this adaptivity to multiprogrammed workloads. We present a scheduling algorithm that considers the throughput goals of each running application. Using this feedback, it schedules the applications in such a way as to minimize total energy consumption without altering the throughput of the individual applications.

Finally, we present a system that allows individual applications to determine their throughput by comparing their actual progress to their desired progress rate. This system acts as a bridge between our architectural and inter-program adaptive systems. Each application's desired throughput is used in two ways. First, this throughput becomes the target throughput for our architecture-level system. Second, this throughput information provides the feedback that allows our scheduler to determine how it should schedule the application workload to minimize energy.

url: http://hdl.handle.net/1813/3668
date: 2006-10-27
creator: Brink, Markus
viewed: 845
title: Imaging Single-Electron Charging in Nanostructures by Low-Temperature Scanning Force Microscopy
abstract: In this thesis we investigate Coulomb blockade phenomena and single-electron charging effects in two nanoscale structures: Long semiconducting carbon nanotubes (CNTs) and gold nanoparticles that are linked to a CNT by an organic molecule. While gold nanoparticles naturally exhibit single-electron charging at low temperature, it is disorder that causes the formation of quantum dots in long semiconducting CNTs at low carrier density. Our instrument of choice is a lowtemperature atomic force microscope (AFM) that is sensitive to electrostatic sample forces. A theory of the interactions between single-electron charging of

a quantum dot and the AFM tip and cantilever is worked out in linear response. In semiconducting CNTs we resolve single-electron charging events in the resonance frequency of the AFM cantilever. The AFM?s spatial resolution allows us to locate the quantum dots and address them individually. We extract the size of the quantum dots, their gate couplings, and exemplify how to extract their charging energy from the AFM measurements. We frequently observe interaction between neighboring quantum dots and characterize their interdot coupling. The evolution of the quantum dots in CNTs with gate voltage reflects the underlying potential energy landscape for the carriers on the tube. We observe the CNT band structure and extract quantitative information about the disorder potential. On the gold nanoparticle sample, we combine dissipation and frequency shift measurements by our AFM. In addition to the electrostatic gate couplings and the charging energy, this combination allows us to characterize the tunnel coupling between the gold nanoparticle and the CNT, which is acting as a lead.

The power of the demonstrated force probe techniques lies largely in the local nature of the measurement. Sensitive, spatially resolved information on electron transport is available even in the absence of device conduction. This advantage is apparent in the single-contact geometry of the gold nanoparticles, but also demonstrated on CNTs.

url: http://hdl.handle.net/1813/3669
date: 2006-10-27
creator: Patricola, Christina
viewed: 1500
title: Interactions Between North African Vegetation and the African Easterly Jet: A Mechanism for Abrupt Climate Change
abstract: Committee members: Dr. Kerry Cook, Dr. Stephen Colucci, and Dr. Bryan IsacksModeling studies and paleoclimate evidence of the mid-Holocene, 6,000 years ago, indicate that the potential for rapid climate change exists over northern Africa. A regional climate model that produces an excellent representation of today's climate over northern Africa is used to simulate the summer climate under present day solar forcing and SSTs and several prescribed static idealized zonal vegetation distributions. The purpose is to isolate and understand the role of interactions between vegetation and the dynamics of the West African summer monsoon in generating rapid climate change. Simulations with prescribed and interactive vegetation distributions are analyzed.

In simulations with prescribed idealized vegetation, the regional model simulates only small differences in precipitation when the southern desert border is located between 10.0N and 17.9N. However, when the desert border is moved only 180 km, from 17.9N to 19.4N, summer precipitation increases by a factor of 5 over the Sahara, and the zonal structure observed in the present day climate is eliminated. These precipitation anomalies are associated with a 50% reduction in the magnitude of the African easterly jet, a 20% increase in the magnitude of the low-level westerly jet and a deepening and moistening of the thermal low. The model suggests that when the southern desert border is located north of a threshold latitude, the positive soil moisture anomalies beneath the region of maximum vertical velocity associated with the thermal low support positive low-level moist static energy anomalies, which are indicative of strengthened convection.

Asynchronous coupling with a simple vegetation model reveals that when the initial desert border is located at 20.9N, a new equilibrium vegetation distribution results in which the central Sahara is vegetated, indicating that the interactions between vegetation and the atmosphere may produce rapid climate change. When the initial desert border is located at 10.0N, the equilibrium vegetation distribution closely resembles that of the present day, suggesting that the atmospheric conditions may allow regrowth of vegetation in a deforestation scenario under present day solar and SST forcings.This research was funded by the NSF Award ATM - 0415481 and the Cornell University Graduate Student Fellowship.

url: http://hdl.handle.net/1813/3671

date: 2006-10-27
creator: Fleischhauer, Carl
viewed: 914
title: Audio-Visual Archiving: Comparing Memory Institutions and Commercial Industries
abstract: This presentation will compare and contrast the audio-visual reformatting carried out in memory institutions with the production, distribution, and archiving of born digital content by record labels, television broadcasters, and motion picture producers. For sound recordings, digital practices have been established in both memory institutions and the industry, although issues regarding multi-track productions are troublesome for the industry. For video, digital approaches are widely used for reformatting by libraries and for new broadcast production, but most video masters continue to be recorded on conventional digital videotape rather than as media-independent digital file formats. For theatrical films, most memory institutions continue to reformat using proven photo-chemical approaches. Meanwhile, the production of new theatrical films is genuinely hybrid: Hollywood's current workflow mixes digital and film-based stages and elements. It is also the case, however, that high costs and the lack of relevant standards prevent motion picture producers from identifying and implementing a clear-cut digital solution for the long-term archiving of their valuable production assets. In all three areas--sound, video, and cinema--memory institutions and the industry face similar problems. Will they find ways to share their investigations and develop common solutions?

url: http://hdl.handle.net/1813/3672
date: 2006-10-27
creator: Dale, Robin
viewed: 1097
title: Audit and Certification of Digital Repositories: Exposing Risk and Fostering Collaboration
abstract: Over the last three years, the RLG - NARA Task for on Digital Repository certification has worked to develop a checklist which would allow objective evaluation of digital repositories and archives. The checklist was based upon international standards and community best practices for digital preservation as well as influences from information technology and information security standards. The goal was to develop metrics to evaluate three aspects influencing repository trustworthiness: the characteristics of the archiving organization that affect performance, accountability, and business continuity; technologies and technical infrastructure employed by the repository; and finally the processes and procedures utilized by the repository. A draft checklist was released for public consumption and comment in August 2005, leading to further development. In addition, the checklist has been leveraged by the Center for Research Libraries Auditing and Certification of Digital Archives project and used in test audits of three digital repositories and archives. Through public comment, practical application, and other CRL project activities, we have made further progress toward the development of a fully-fledged program of audit & certification for digital repositories. This presentation will discuss checklist development, envisioned uses of the checklist, the emerging audit & certification process, potential audit & certification process outputs, and compliance issues.

url: http://hdl.handle.net/1813/3673
date: 2006-10-27
creator: Strathmann, Stefan;Schoger, Astrid;Dobratz, Susanne
viewed: 946
title: The nestor Catalogue of Criteria for Trusted Digital Repository Evaluation and Certification
abstract: The Criteria for Trusted Digital Long-Term Preservation Repositories (urn: nbn:de:0008-2006060710 or http://edoc.hu-berlin.de/series/nestor-materialien/2006-8/PDF/8.pdf) have been developed by the nestor project and are now open for public comment. This criteria catalogue primarily addresses cultural heritage organizations, federal archives, libraries and museums and is designed as a guideline for the planning and setup of a digital long-term preservation repository. Secondarily, this catalogue can be an orientation guide

for software developers, third party vendors or service provides from the private sector. The nestor catalugue focuses on its applicability in Germany . Still, it must be discussed internationally and should adhere to international standards.

url: http://hdl.handle.net/1813/3674
date: 2006-10-27
creator: McHugh, Andrew;Ross, Seamus
viewed: 1470
title: Preservation Pressure Points: Evaluating Diverse Evidence for Risk Management
abstract: Preservation Pressure Points: Evaluating Diverse Evidence for Risk Management -- Establishing a comprehensive understanding of the effectiveness and trustworthiness of a digital repository requires a broad range of evidence. Preservation can be considered as a complex spatial and chronological network of challenges, and associated risks. For example the organisational, financial, technological and operational contexts within which a repository resides and the extent to which it is capable of managing them must be ascertained if an audit is to be able to assert the likelihood of the institution's success. Significant effort must be directed towards the definition of methodologies for identifying appropriate classes of evidence, to their evaluation, and to the attaching of weight to them. Formal means are required to facilitate the analysis and comparison of disparate evidence types in order to enable auditors to accommodate a diverse range of physical, testimonial and experiment-based proof. In addition to binary systems of inquiry (e.g., does the organisation have a mission statement?) auditors must display an ability to distinguish the most persuasive examples from those that provide less substantive evidence of organisational competence. Similarly, if, for instance, a significant proportion of staff reveal that they have no idea of the content of their organisation's mission statement then this must be reflected in the overall organisational assessment. A comprehensive insight, and consequent decision, can only be reached after fully exploring the evidential basis upon which compliance is to be founded. This discussion of evidential appraisal techniques for repository audit reflects the series of pilot audits undertaken by the Digital Curation Centre within a selection of UK data centres and archives, including the Beazley Archive and the British Atmospheric Data Centre.

url: http://hdl.handle.net/1813/3675
date: 2006-10-27
creator: Galloway, Patricia
viewed: 627
title: Repository Institutionalization: What makes it worth becoming infrastructure?
abstract: Repository Institutionalization: What makes it worth becoming infrastructure? Since the advent of inexpensive or open-source institutional repository software, libraries and other institutions have attempted to wrestle with delivering services that could justify supporting the repository through chargebacks of some kind; yet a major problem has been persuading people to fill the repositories with content of adequate value to prospective user communities. Since 2003 we have been running DSpace repository software in the School of Information, University of Texas at Austin, at first simply as a testbed for student work but since spring of 2005 as an institutional archival repository. In the course of this experience, following the ?seed-evolve-reseed? model developed by Gerhard Fischer at the University of Colorado for collaborative development of computing environments, we have begun to demonstrate the value of such a repository in several different directions: fulfilling the state of Texas statutory requirements for preserving official documents (in which the official version of administrative information is posted on the School?s website); providing faculty (and students) with preprint and postprint exposure of their work; providing secure storage for learning objects, including presentations and tutorials; providing secure archiving for digital materials of historical value both to the School and to the discipline; providing an environment for students to work on the problems of digital archiving, populated with objects that will over time and in their turn demonstrate further problems of digital

archiving; and providing the Information Technology service with a secure archive for versions of installed software and content. These uses within the School alone are beginning to weigh securely enough in the balance to warrant commitment of funding for the provision of infrastructure to the tasks of administering and delivering educational services.

url: http://hdl.handle.net/1813/3676
date: 2006-10-27
creator: Caplan, Priscilla
viewed: 968
title: DAITSS and the Florida Digital Archive
abstract: The Florida Digital Archive (FDA) is a digital preservation repository run by the Florida Center for Library Automation (FCLA) for the use of the eleven public universities of Florida. The FDA went into production in November 2005. It ingested 108,607 files (2.2 TB) in the first 6 months of operation. The FDA uses a locally developed software application called DAITSS to support the repository functions of ingest, data management and dissemination, and the preservation functions of format normalization and format migration. Functionally, DAITSS consists of a set of services. The Ingest Service performs format validation, extraction of technical metadata, creation of derivative files through normalization and/or migration, and storage preparation. Storage Maintenance assures that stored masters remain good copies on readable media. The Access Service is responsible for access control, reporting, and building Dissemination Information Packages in response to requests. Other services include Withdrawal and Repository Management. The system does not support discovery functions for end-users or real-time online access to archived materials. It can, however, be used as a preservation back-end to institutional repositories, publishing systems, digital libraries, or other user oriented applications. Following the OAIS reference model, DAITSS assumes a community of Producers who select, prepare and submit materials for preservation. In the FDA context, these are the libraries of the public universities of Florida, which have negotiated archiving agreements with the repository. To date, most submissions have been preservation masters from local digitization projects, and electronic theses and dissertations (ETDs). This presentation will give an overview of the Florida Digital Archive and the underlying DAITSS application, which is targeted for release as Open Source Software in 2006.

url: http://hdl.handle.net/1813/3677
date: 2006-10-27
creator: Payette, Sandy
viewed: 675
title: Fedora: Complex Objects, Information Networks, and the Challenges of Digital Preservation
abstract: Fedora: Complex Objects, Information Networks, and the Challenges of Digital Preservation -- We are at a point where the scope, definition, and uses of digital libraries and institutional repositories are changing along with the process of creating and disseminating scholarly and scientific information. It is not enough to just store documents, datasets, images, and other resources in repositories where they can be searched and accessed. The networked landscape in which we live inspires more and calls upon us to develop information architectures that promote (1) the creation of complex digital objects that consist of both local and remote content, (2) the ability to interconnect digital objects that reside in distributed repositories, (3) the ability to re-use objects or their components in the creation of new resources. All of these requirements have implications for how we build digital libraries, repositories, and scholarly information systems in the future, and they also present significant challenges for digital preservation. In this talk I will discuss how the Fedora Project is approaching the digital preservation problem. In particular, I will highlight key aspects of the Fedora repository system and service framework that are preservation-enabling. I will also review current work undertaken by the Fedora Project in collaboration with the Fedora Preservation Working Group. This work entails the use of message-oriented middleware to facilitate alerting of preservation-noteworthy events

and the development of services to respond to such events.

url: http://hdl.handle.net/1813/3678
date: 2006-10-27
creator: van Horik, Rene
viewed: 414
title: DANS: Data Archiving and Networked Services
abstract: DANS is the new Dutch organization, which has been tasked with the preservation and permanent access to research data in the humanities and the social sciences. The two main scientific administrative organizations in the Netherlands, the Royal Netherlands Academy of Arts and Sciences (KNAW) and the Netherlands Organisation for Scientific Research (NWO), are jointly responsible for DANS. DANS aims to promote (interdisciplinary) collaboration with and among researchers. DANS is also the Dutch national partner in European and other international data organizations. DANS is also an intermediary to researchers for the delivery of large databases from organizations such as Statistics Netherlands, The Social and Cultural Planning agency and the Topographical Service. Already existing data archives like the social science data archive 'Steinmetzarchief' and the Netherlands Historical Data Archive (NHDA) have been merged in DANS. DANS has been mandated to expand and improve the current data research infrastructure. New initiatives for data services and data archives are being developed in fields where such facilities have been lacking until recently. These TOPical Programmes (TOPs) are set up in collaboration with research groups. Work on the renewal of the infrastructure for digital data archiving is in progress. Innovation and staying ahead in the ICT-development is one of the main spearheads of this new organization. To be able to apply fundamental research findings to systems used for archiving and providing access to data DANS has established its own development team. For the acquisition of data sets, collaboration with faculties, research schools and academic institutes will be invigorated. DANS developed in collaboration with researchers in the field and the Netherlands Ministry of Housing, Spatial Planning and the Environment (VROM) a user-friendly repository for research archiving. Now researchers are able to place their research data in DANS compliant data repositories. They can rely on a safe preservation and curation of their data an they can share their data with other researchers. DANS aims to make access to research data as open as possible.

url: http://hdl.handle.net/1813/3679
date: 2006-10-27
creator: Brygfjeld, Svein Arne
viewed: 632
title: The Norwegian Digital Radio Archive - 8 years later, what happened?
abstract: The Norwegian Digital Radio Archive -- The Norwegian Broadcast Corporation (NRK, www.nrk.no) and the National Library of Norway has for six years been working together to digitise the historical radio archive of NRK. The project aims at preservation, professional re-use, and general access. More than 50.000 hrs (170.000 programs) have now been digitised in high quality. The archive is built within the National Library of Norway, but serves as the every-day radio archive for NRK with their headquarters 1000 kms away. The archive is also now the repository where the National Library of Norway stores copies of the daily radio broadcast in Norway, enabling the archive to be updated on a daily basis. The archive is also integrated with FEIDE (www.feide.no), a federated authentication regime for the research and education sector in Norway. Based on the use of FEIDE, the National Library of Norway has established a role-based access control for the archive.

url: http://hdl.handle.net/1813/3680
date: 2006-10-27
creator: Steinke, Tobias;Altenhoener, Reinhard

viewed: 480
title: Co-operative Development of a Long-term Digital Information Archive
abstract: Data for the future - the kopal project -- The German project kopal develops a cooperative used long-term digital archive. The archival system of kopal could be used by different clients, just like a bank account. It is hosted by an experienced service provider and based on software by IBM. Its interfaces are open defined in a way, that it is possible to use open software and standard object formats to connect to them. As a result of the project an open archiving and exchange format for digital objects was specified, called Universal Object format. There is also an open source software library called koLibRI to build up objects, generate technical metadata and manage the communication with the OAIS-compliant system. Migration and emulation will be supported, but especially migration is an essential part of koLibRI and the concept of technical metadata within the data management. The archival system is ready to be used by the project partners and ca. 10 TB of data will be ingested until the end of the year 2006.

url: http://hdl.handle.net/1813/3681
date: 2006-10-27
creator: Walters, Tyler;McDonald, Robert H.
viewed: 464
title: MetaArchive NDIIPP Partnership
abstract: The MetaArchive of Southern Digital Culture will discuss the first two years of deliverables (2004-2006) for their three year partnership for establishing a collaborative digital preservation network for southern cultural heritage materials. The MetaArchive of Southern Culture is a multi-institutional partner with the Library of Congress in their National Digital Information Infrastructure and Preservation Program (NDIIPP) and has established a distributed model for digital preservation. Headed by Emory University, this test-bed implementation network involves six different academic research libraries (Auburn University, Emory University, Georgia Institute of Technology, Florida State University, Virginia Polytechnic Institute and State University, University of Louisville) as well as a strategic alliance with the Stanford University based LOCKSS Program and the Library of Congress.
During the first two years of this project the MetaArchive partnership has implemented a collaborative digital preservation network, has tested the LOCKSS toolset for scale (3 terabytes), for ingest (HTTP and OAI-PMH), and for reliability (total system failure). The group has also developed a collection-level conspectus that inter-operates with LOCKSS ingest plug-ins and collection selection policies of the group. Included in this presentation will be a discussion of the collaborative partnership agreements and the forthcoming work on the next phases of the project which include establishing a non-profit entity that specializes in digital preservation networks for cultural heritage institutions, creating a formalized business model to advance our collaborative paradigm outside of our Library of Congress partnership, to conduct document format tests involving LOCKSS on-access migration and batch migration strategies, and to implement a preservation management framework that incorporates other open-source preservation software tools capable of integrating with our current LOCKSS-based network.

url: http://hdl.handle.net/1813/3682
date: 2006-10-27
creator: Tamminga, Tim
viewed: 622
title: Digital Archive Partnership
abstract: For almost two years, the National Library of New Zealand (NLNZ),
Endeavor Information Systems and Sun Microsystems have been working together to design and implement a comprehensive digital preservation platform for New Zealand's National Digital Heritage Archive. NLNZ has developed the requirements for the platform and with Endeavor is completing the specifications. From

that, Endeavor is building a components-based application platform (called Kronos) and Sun is developing the overall reference architecture. A goal for all three organizations is to create a solution that is generic and applicable for any library with large and varied types of digital content. An independent peer review group has periodically met with the three organizations to ensure that the Kronos design is widely applicable to other libraries and complies with international standards. Our presentation describes why the partnerships formed and how they have evolved. The concept of the Peer Review Group will be examined as a method of ensuring industry-wide compliance and as a mechanism for explicating and resolving tension between partners.

url: http://hdl.handle.net/1813/3683
date: 2006-10-27
creator: Baldwin, Gil;Haun-Mohamed, Robin
viewed: 476
title: Preservation of Federal Digital Publications
abstract: The U.S. Government Printing Office (GPO) is committed to ensuring permanent public access and preservation of U.S. Federal publications. Historically, preservation of the tangible materials has been handled in collaboration with the individual libraries participating in the Federal Depository Library Program. Advances in information dissemination and the need to preserve digital content has necessitated changes in processes associated with GPO's production and distribution of Federal publications. Working with U.S. Government agencies, depository libraries and other interested parties, GPO is moving to implement a life-cycle approach to publishing of Federal publications to ensure not only access, but preservation of the objects for the future. This presentation will focus on GPO's collaboration with other communities of practice and the development of FDsys, GPO's digital content management system.

url: http://hdl.handle.net/1813/3684
date: 2006-10-27
creator: Fenton, Eileen
viewed: 858
title: Portico: An Electronic Archiving Service
abstract: The work of the academy ? research and teaching ? is not possible without reliable access to the accumulated scholarship of the past. One component of this scholarly record, academic journals, is increasingly electronic ? and fragile ? and its future accessibility is a growing concern. The recent statement "Urgent Action Needed to Preserve Scholarly Electronic Journals" endorsed by leading libraries and organizations such as ARL, ALCTS and others underscores the urgency of this community need. But the scale and complexity of the technology infrastructure, specialized expertise and quality control processes necessary to preserve electronic resources exceeds that which can be supported by any individual library or institutional budget. This presentation will provide a brief history of Portico, the not-for-profit electronic archiving service developed in response to the library community's need for a robust, reliable means to preserve electronic scholarly journals. Portico was initiated by JSTOR and has been developed with the initial support of Ithaka, The Andrew W. Mellon Foundation, and the Library of Congress. Portico's mission is to preserve scholarly literature published in electronic form and to ensure that these materials remain accessible to future scholars, researchers, and students. In addition to an overview of the Portico service and access model developed with input from publishers and libraries, the presentation will include an update on library and publisher participation and the status of Portico's archival operations.

url: http://hdl.handle.net/1813/3685
date: 2006-10-27
creator: Oltmans, Erik

viewed: 739
title: The International e-Depot: e-Journal Archiving at the National Library of the Netherlands
abstract: Electronic journals dominate the field of academic literature, and it is of great importance to the international scientific community that this electronic intellectual output remains accessible in perpetuity. It is uncertain, however, whether the traditional model, based on national deposits and geographical frontiers, will be able to guarantee the long-term safety of the international academic output in a digital form. Academic literature is produced by multinational publishers, and has often no longer a country of origin that can be easily identified and thus no obvious guardian. Hence, in the traditional model there is a huge risk of academic records being lost forever. A systematic and more concentrated approach is needed to address this unacceptable risk. In this presentation we discuss the policy and ambitions of the National Library of the Netherlands (Koninklijke Bibliotheek, KB) regarding digital archiving of electronic publications. We discuss three possible threats against permanent access, and we propose a coordinated and systematic approach to address these risks: the Safe Places Network. This paper also includes a comprehensive overview of the e-Depot system and the KB approaches to digital preservation.

url: http://hdl.handle.net/1813/3686
date: 2006-10-27
creator: Reich, Victoria
viewed: 1002
title: LOCKSS: Lots of Copies Keep Stuff Safe
abstract: People with responsibility for scholarly assets agree that digital preservation is important. Tomorrow's readers will need today's materials; without preservation they won't exist. Librarians and publishers are asking two fundamental questions: From this moment on, who will have custody of society's electronic information? From this moment on, who will control and govern society's electronic archival assets? With LOCKSS over 150 libraries and over 80 publishers are working together to ensure no one organization has control over our intellectual heritage. By ensuring libraries can build collections and retain their role as long-term memory organizations in the electronic environment LOCKSS avoids the social hazards of centrally controlled information. With CLOCKSS 12 large publishers and seven libraries are working towards similar goals. For over 8 years the OAIS-compliant, format-agnostic, open source LOCKSS system has been demonstrating it can ingest a wide range of web content, audit and repair it to ward off damage and attacks, and transparently deliver it to readers with transparent on-access format migration. [www.lockss.org]

url: http://hdl.handle.net/1813/3687
date: 2006-10-27
creator: Smith, Adam;Kehoe, William;Enders, Markus
viewed: 620
title: Bringing Many Tools Together: Building a System of Co-operating OAIS's in the MathArc Project
abstract: Bringing many tools together to build a system of co-operating OAIS's in
the MathArc project. The MathArc project has created a protocol, software, and registry that enable multiple institutions to share and store digital objects in each other's OAIS repositories, regardless of the nature of each system's underlying repository. In the pilot version, the Goettingen State and University Library (SUB) and the Cornell University Library (CUL) are sharing, storing, and managing collections preserved in Goettingen's kopal system (based on DIAS) and Cornell's CUL-OAIS (based on aDORe). The tools and standards used to build the system are familiar to those working in the digital preservation field and have been described and presented in many places. They include METS, OAI-PMH, PREMIS, JHOVE, LOCKSS, aDORe, and the kopal version of DIAS. This presentation describes not how they work individually, but how they all work together in the MathArc system.

url: http://hdl.handle.net/1813/3688
date: 2006-10-27
creator: Kunze, John
viewed: 765
title: The Entity (N2T) Resolver: low-risk, low-cost persistent identification
abstract: Low-Risk Persistent Identification: the "Entity" (N2T) Resolver -- The N2T ("entity") identifier resolver addresses the same problem as URN, Handle, and DOI resolvers, but does so without complex or proprietary software components. N2T is lower-risk than those resolvers because it relies only on off-the-shelf open-source components, and it is the only resolver to acknowledge and address the "namespace splitting problem". N2T (Name-to-Thing) is both a persistent identifier resolver and a consortium of cultural memory organizations. The consortium has no fees or requirements, and merely offers its members the option to publicize a protected form of their URLs supported by the resolver. The resolver is a small, standard web server run in several mirrored instances by consortium volunteers under one hostname rented for about $30 USD per year. The resolver works equally well with any identifier scheme (URLs, ARKs, Handles, DOIs, URNs, PURLs) that can be expressed inside a URL.

url: http://hdl.handle.net/1813/3689
date: 2006-10-27
creator: Abrams, Stephen
viewed: 524
title: Global Digital Format Registry (GDFR): An Interim Status Report
abstract: The format of a digital object must be known in order to interpret the information content of that object properly. Strong format typing is therefore fundamental to the effective use, interchange, and preservation of all digitally-encoded content. In terms of the OAIS reference model, format typing is a component of an object's representation information. Formats themselves also have representation information--primarily, the set of syntactic and semantic rules for encoding content into digital form--that must be preserved to address the concern raised by the Library of Congress's recent planning report, Preserving Our Digital Heritage: "Longevity of digital data and the ability to read those data in the future depend upon standards for encoding and describing, but standards change over time." The Andrew W. Mellon Foundation has funded an effort by the Harvard University Library to create a Global Digital Format Registry (GDFR) that will provide preservation practitioners with sustainable services to store, discover, and deliver representation information about digital formats. This presentation will provide an update on GDFR project activities.

url: http://hdl.handle.net/1813/3690
date: 2006-10-27
creator: Neuroth, Heike
viewed: 1236
title: nestor II: e-Science and Preservation--A Perfect Match?
abstract: e-Science and Preservation - A Perfect Match: The hard sciences have worked for many years towards global collaboration on an infrastructural and workflow level. The concepts and technologies eveloped in this venture are increasingly being adopted by other disciplines including the social sciences or the arts and humanities. In Europe these disciplines aim to establish an integrated e-Science landscape to benefit from the existing resources and experiences attained by the "hard sciences". Current humanities projects under the e-Science umbrella are on a promising route. The preservation community could benefit greatly from the e-science community in the strive for - amongst other - sharing storage resources while maintaining local autonomy; interoperability and resource integration on a semantic level; adaptability for long-term stability; sharing services and synchronising workflows. As part of its mission as a national coalition for digital preservation, Nestor II aims to network the e-Science and preservation communities and further the

transfer of concepts and tools between them.

url: http://hdl.handle.net/1813/3691
date: 2006-10-27
creator: Plante, Ray;Milkey, Robert;Vishniac, Ethan;Szalay, Alex;DiLauro, Tim;Choudhury, Sayeed;Steffen, Julie;Hanisch, Robert
viewed: 474
title: Digital Data Preservation and Curation: A Collaboration Among Libraries, Publishers, and the Virtual Observatory
abstract: Digital Data Preservation and Curation: A Collaboration Among Libraries,
Publishers, and the Virtual Observatory. Astronomers are producing and analyzing data at ever more prodigious rates. NASA's Great Observatories, ground-based national observatories, and major survey projects have archive and data distribution systems in place to manage their standard data products, and these are now interlinked through the protocols and metadata standards agreed upon in the Virtual Observatory. However, the digital data associated with peer-reviewed publications is only rarely archived. Most often, astronomers publish graphical representations of their data but not the data themselves. Other astronomers cannot readily inspect the data to either confirm the interpretation presented in a paper or extend the analysis. Highly processed data sets reside on departmental servers and the personal computers of astronomers, and may or may not be available a few years hence. We are investigating ways to preserve and curate the digital data associated with peer-reviewed journals in astronomy. The technology and standards of the VO provide one component of the necessary technology. A variety of underlying systems can be used to physically host a data repository, and indeed this repository need not be centralized. The repository, however, must be managed and data must be documented through high quality, curated metadata. Multiple access portals must be available: the original journal, the host data center, the Virtual Observatory, or any number of topically-oriented data services utilizing VO-standard access mechanisms.

url: http://hdl.handle.net/1813/3692
date: 2006-10-27
creator: Gutmann, Myron;Green, Ann
viewed: 400
title: Preserving Things that Count: Exploring partnerships among domain specific repositories, institutional repositories, and social science researchers
abstract: In developing and debating digital repositories, the digital library world has devoted more attention to their missions and roles in supporting access to and stewardship of academic research output than to discussing discipline, or domain, specific digital repositories. This is especially interesting, given that in social science these domain-specific repositories have been in existence for many decades. The goal of this presentation is to juxtapose these two kinds of repositories and to suggest ways that they can help build partnerships between themselves and with the research community. It is based on the fundamental idea that all the parties involved share important goals, and that by working together these goals can be advanced successfully. We will begin by characterizing the life cycle of social science research, before turning to key elements of the two different kinds of repositories, and then to our recommendation that researchers and the two different kinds of repositories can forge partnerships. The key message is that by visualizing the role of repositories explicitly in the life cycle of the social science research enterprise, the ways that the partnerships work will be clear. These workings can be seen as a sequence of reciprocal information flows between parties to the process, triggers that signal that one party or another has a task to perform, and hand-offs of information from one party to another that take place at crucial moments. This approach envisions both cooperation and specialization. The researcher produces the scientific product, both data and publications; the institutional repository has specialized knowledge of campus conditions and the opportunity to interact

frequently with the researcher; and the domain-specific repository has specialized knowledge of approaches to data in a specific scientific field, for example domain-specific metadata standards, as well as the ability to give high-impact exposure to research products.

url: http://hdl.handle.net/1813/3693
date: 2006-10-27
creator: Langley, Somaya;Clifton, Gerard;Lee, Bronwyn
viewed: 1262
title: Preservation Metadata: Adapting or Adopting PREMIS for APSR
abstract: Preservation metadata requirements for repositories: a project of the Australian Partnership for Sustainable Repositories (APSR) -- APSR aims to establish a centre of excellence in sustainable digital resource management and partner universities are developing demonstrator repositories built on sustainability principles. This paper presents the work of a project commissioned by APSR to specify requirements for the collection of metadata needed for long term continuity of access to digital collections. The project was called PRESTA (PREMIS Requirements Statement) but it took a broader view than PREMIS alone. The MetaArchive of Southern Digital Culture will discuss the first two years of deliverables (2004-2006) for their three year partnership for establishing a collaborative digital preservation network for southern cultural heritage materials.

url: http://hdl.handle.net/1813/3694
date: 2006-10-27
creator: Gano, Gretchen;Gewirtz, David
viewed: 648
title: Towards a Preservation Content Model for Numeric Data Collections: PREMIS and FEDORA
abstract: A Preservation Model for Social Science Numeric Data Collections: PREMIS and FEDORA. This session will outline the workflow associated with migrating social science data collections into FEDORA, focusing on the implementation of PREMIS metadata as a component of the submission information package (SIP). Presenters will identify how the PREMIS data model serves to specialize the packaging of the SIP so that access aids can exploit the information package when it is transformed into an archival information package (AIP). Presenters will outline an example expression of PREMIS for social science datasets and will demonstrate how this metadata may be stored in a FEDORA repository. Data management issues including normalization will also be explored. Examples from the ongoing project to migrate the Yale Social Science Data Archive from a postgreSQL database into FEDORA will be provided.

url: http://hdl.handle.net/1813/3695
date: 2006-10-27
creator: Dunckley, Matt;McIlwrath, Brian;Crothers, Steve;Giaretta, David;Rankin, Stephen
viewed: 722
title: Virtualisation of Simple Scientific Data Objects
abstract: Virtualisation of Simple Scientific Data Objects.Capturing OAIS defined representation information in a standardised way is critical for the preservation and future reuse of scientific data. The structure of a scientific data object needs to be defined so that a future user can map the data bits to the actual scientific data. The semantics associated with the scientific data also needs to be defined so that the data can be understood and used by a user from the appropriate designated community. This presentation will show how simple scientific digital objects (tables, images etc.) can be described and "virtualised" by using representation information in the form of EAST file format descriptions (structure) and the corresponding DEDSL data dictionaries (semantics). It will also be shown that in some real life cases the EAST and DEDSL standards need to be extended so that they can fully describe the simple objects. Tools and APIs will be demonstrated

that take the structure and semantic definitions for a simple scientific digital object and automatically read the data it contains and render it in the appropriate way.

url: http://hdl.handle.net/1813/3696
date: 2006-10-27
creator: Signori, Barbara
viewed: 600
title: Web Archive Switzerland
abstract: Web Archive Switzerland is a pilot project undertaken in collaboration with the Swiss Cantonal libraries as part of the e-Helvetica Project at the Swiss National Library (SNL). The mission of the SNL and the Swiss Cantonal libraries is to collect and archive all Swiss publications, both printed and electronic. The objective of the e-Helvetica Project is to fulfill this mission for electronic publications. The Web Archive Switzerland pilot project recently designed and tested a shared workflow for selecting, collecting, cataloguing, archiving and disseminating non-commercial Swiss web resources. Within the workflow the Cantonal libraries are responsible for the identification, selection and announcement of data on the Web. The SNL is responsible for the web-harvesting (objects and rights), cataloguing, archiving and dissemination of those identified web resources. The aim of this co-operation is to share resources and knowledge. This presentation will give some historical context to Web Archive Switzerland and discuss the collaboration with the Cantonal libraries and the shared workflow. The approach chosen for selecting, cataloguing and harvesting the web resources will be highlighted as well as our experiences to date. The presentation will conclude with some ideas on how we are planning to disseminate the web resources. For further information on the e-Helvetica Project (in German and French), see: <http://www.e-helvetica.ch>.

url: http://hdl.handle.net/1813/3697
date: 2006-10-27
creator: Harden, Maegan
viewed: 503
title: Intrinsic and Extrinsic Contributions to the Development of the Zebrafish Olfactory Epithelium
abstract: Kathleen Whitlock, Ph.D.- advisor, Kenneth Kemphues, Ph.D.- committee member, David Lin, Ph.D- committee memberI have used the zebrafish, Danio rerio to study the following stages of olfactory sensory system development: the cell movements underlying olfactory placode (OP) formation, environmentally induced gene expression changes in the differentiating OP and modulation of gene expression changes in sensory neuron development.

Cranial neural crest (CNC) and placodes both contribute to vertebrate sensory structures. Little is understood about the extent of cellular mixing between the CNC and OP fields during OP formation. I used live imaging and molecular markers in fixed tissue to follow the CNC and OP fields during OP formation. I found that while the CNC cells associate with and eventually surround the OP, little cell mixing occurs between the fields during this process.

The OP develops into the olfactory epithelium (OE). I explored the effects of the nenvironment on gene expression in the developing OE. My lab previously showed that zebrafish form and retain olfactory memories of the odorant phenylethyl alcohol (PEA). I performed microarray analysis using the OEs of PEA imprinted fish to identify upregulated genes. One of the genes I identified was the transcription factor otx2. Otx2 is expressed in the developing and adult OE. The number of otx2 expressing cells is significantly increased in juvenile and adult OE of PEA exposed fish. I showed that otx2 cells also express neuronal markers suggesting that PEA exposure leads to an expansion of a neuronal precursor population that is maintained throughout life.

The environmentally induced gene expression changes I observed could be a consequence of activating the immediate early genes (IEGs), which are transcription factors that are rapidly upregulated in response to

sensory stimuli. To test if IEG expression was affected by odorant exposure my lab and I exposed juvenile zebrafish to a number of odorants and examined the expression of three IEGs in the developing OE. We found a significant change in the expression of the IEG, c-fos when fish were exposed to odorants of behavioral relevance. My studies provide a better understanding of how the OP forms and how the environment affects the differentiation of cells within the OE.Field of Genetics and Development NIH Training Grant (GM07617), GAANN (Graduate Assistants in Areas of National Need) Fellowship P200A000118, Cornell Center for Vertebrate Genomics Graduate Research Fellowship, NIH Grant R01 DC04218 (awarded K. Whitlock)

url: http://hdl.handle.net/1813/3698
date: 2006-10-27
creator: Thomas, David
viewed: 724
title: Digital Preservation in the UK
abstract: The UK scene -- David Thomas will focus on the Seamless Flow programme being undertaken at the National Archives of the UK. This is an ambitious plan to develop a fully comprehensive digital preservation service for the UK central government. It covers the selection of record for permanent preservation, their transfer to the National Archives and their storage, preservation and delivery to users. Crucially, the programme is doing work in two other spaces ? the intermediate storage of digital material which has a long-term business value to government (such as files relating to radioactive waste) and resource discovery. Many of the hard lessons learned on this challenging programme have a wider application and he will be sharing these with you.

url: http://hdl.handle.net/1813/3699
date: 2006-10-27
creator: Thibodeau, Kenneth
viewed: 511
title: A Dynamic Solution for Electronic Records: The National Archives and Records Administration's Electronic Records Archives
abstract: After a year long design competition, in September 2005 the National Archives and Records Administration awarded to Lockheed Martin Corporation a contract valued at $308 million to develop and operate the Electronic Records Archives (ERA) system. The system will enable a comprehensive transition of NARA?s governmentwide management of the records of the U.S. Government into the realm of e-government. It will automate records management processes, such as scheduling and appraisal, transfer of records to NARA, and destruction of temporary records. These functions will be applicable to records of all types, and support NARA?s different lines of business in the National Archives, Presidential Libraries, and Federal Records Centers. The system will also enable NARA to realize its vision of preserving and providing continuing access to any type of electronic record, free from dependence on the hardware and software originally used to create and store it, for as long as the records need to be retain, which includes for the life of the republic. The speaker will describe the architecture and processes for digital preservation and access in the ERA system.

url: http://hdl.handle.net/1813/3700
date: 2006-10-27
creator: Zhang, Xiaolin
viewed: 537
title: CADSL: China Archives of Digital Scientific Literature Initiatives
abstract: Dr. Zhang will present the China Archives of Digital Scientific Literature (CADSL) Initiative, proposed to the Ministry of Science and Technology of China, as the result of a feasibility study by the

National Science and Technology Library of China. Based on a need and crisis analysis, a distributed network of trusted archives with sustainable planning and administration mechanisms is suggested to preserve digital scientific information resources, including foreign published literature, home-grown literature, and scientific web resources. Outlined in the proposed initiative is (1) a distributed and shared system of responsibility to archive the targeted resources, (2) a framework of guidelines for intellectual property protection of preserved materials, (3) an open and continuous certification process for trusted repositories, (4) a rigorous set of outlines of technological, workflow management, service level agreement requirements for prospective archives, and (5) a public and yet competitive funding mechanism to utilize multiple resources for the initiative. Ways to mobilize research and educational institutions into the initiatives and future efforts to promote and collaborate with scientific data preservation and cultural heritage preservation are discussed in the end.
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url: http://hdl.handle.net/1813/3701
date: 2006-10-30
creator: Foote, Robert H.
viewed: 536
title: A.I. from the Origins Up to Today
abstract: From the Proceedings of the International Symposium, Regggio Emelia (Italy). Oct. 8-9, 1999. Editors: Vincenzo Russo, Stefania Dall'Olio, Luca Fontanesi.This review of artificial insemination (AI) includes the discoveries and applications from 1677 until 1999. Emphasis is on domestic animals, documented by a selected list of 352 references. Use of AI with multiple biotechnologies is included. Four tables summarize statistics of AI in 24 countries for cattle, sheep and goats, swine, and horses.

url: http://hdl.handle.net/1813/3701
date: 2006-10-30
creator: Foote, Robert H.
viewed: 536
title: A.I. from the Origins Up to Today
abstract: From the Proceedings of the International Symposium, Regggio Emelia (Italy). Oct. 8-9, 1999. Editors: Vincenzo Russo, Stefania Dall'Olio, Luca Fontanesi.This review of artificial insemination (AI) includes the discoveries and applications from 1677 until 1999. Emphasis is on domestic animals, documented by a selected list of 352 references. Use of AI with multiple biotechnologies is included. Four tables summarize statistics of AI in 24 countries for cattle, sheep and goats, swine, and horses.

url: http://hdl.handle.net/1813/3702
date: 2006-10-30
creator: Foote, Robert H.

viewed: 376
title: Glenn W. Salisbury: Biographical Memoir
abstract: Biographical Memoirs, Volume 86. Originally Published by the National Academy Press, Washington, DC.Glenn Salisbury graduated from Ohio State University in 1931 and then he continued at Cornell University where he received his Ph.D. in 1934. He was a pioneer in developing the artificial insemination program in dairy cattle. He was equally well-known for his outstanding administrative abilities at the University of Illinois from 1948 to 1978.

url: http://hdl.handle.net/1813/3702
date: 2006-10-30
creator: Foote, Robert H.
viewed: 376
title: Glenn W. Salisbury: Biographical Memoir
abstract: Biographical Memoirs, Volume 86. Originally Published by the National Academy Press, Washington, DC.Glenn Salisbury graduated from Ohio State University in 1931 and then he continued at Cornell University where he received his Ph.D. in 1934. He was a pioneer in developing the artificial insemination program in dairy cattle. He was equally well-known for his outstanding administrative abilities at the University of Illinois from 1948 to 1978.

url: http://hdl.handle.net/1813/3703
date: 2006-10-30
creator: Butler, W. Ronald;Foote, Robert H.
viewed: 566
title: Biography of Sydney Asdell
abstract: Dr. Sydney A. Asdell was the first Ph.D. student of F.H.A. Marshall at Cambridge University. Dr. Asdell had an encyclopedic memory. This served him well in teaching and research, and especially in compiling and organizing his book "Patterns of Mammalian Reproduction." This book is a classic compendium of the major facts of reproduction in many species. This brief biography summarizes his life and scientific career.

url: http://hdl.handle.net/1813/3703
date: 2006-10-30
creator: Butler, W. Ronald;Foote, Robert H.
viewed: 566
title: Biography of Sydney Asdell
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url: http://hdl.handle.net/1813/3704
date: 2006-10-30
creator: Leonard, Samuel L.
viewed: 379
title: Reminiscence in the Field of Reproductive Physiology and Endocrinology
abstract: Professor Emeritus Sam Leonard modestly recounts some of his illustrious career starting in the 1920s. Most of the seminar was devoted to early research on the various endocrine glands and their secretions by pioneering endocrinologists. Sam knew many of these pioneers and he provides personal glimpses into their lives and research. It is remarkable how much these brilliant researchers contributed to the field, given

the limited resources and technology available to them, and the accuracy with which Professor Leonard recounts their activities. Excerpts from an amateur video recording of his talk are included.

url: http://hdl.handle.net/1813/3704
date: 2006-10-30
creator: Leonard, Samuel L.
viewed: 379
title: Reminiscence in the Field of Reproductive Physiology and Endocrinology
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url: http://hdl.handle.net/1813/3705
date: 2006-10-30
creator: Leonard, Samuel L.
viewed: 290
title: As I Remember How It Was (Autobiography of Sam Leonard)
abstract: This is an account of a remarkable endocrinologist and a fun-loving, ethical human being. The autobiography combines serious accounts of research with the joys of living, both avidly pursued by Samuel L. Leonard. The autobiography is neatly sectionalized into short chronological periods starting with his birth in 1905 and then following his career after graduating from Rutgers University Phi Beta Kappa. He was among the first to discover the contraceptive effects of estrogen, and reported that two distinct gonadotropins were produced by the anterior pituitary. The account concludes with the death in 1990 of his loving, devoted wife, mother and companion, Olive. His list of 113 outstanding publications is appended.

url: http://hdl.handle.net/1813/3705
date: 2006-10-30
creator: Leonard, Samuel L.
viewed: 290
title: As I Remember How It Was (Autobiography of Sam Leonard)
abstract: This is an account of a remarkable endocrinologist and a fun-loving, ethical human being. The autobiography combines serious accounts of research with the joys of living, both avidly pursued by Samuel L. Leonard. The autobiography is neatly sectionalized into short chronological periods starting with his birth in 1905 and then following his career after graduating from Rutgers University Phi Beta Kappa. He was among the first to discover the contraceptive effects of estrogen, and reported that two distinct gonadotropins were produced by the anterior pituitary. The account concludes with the death in 1990 of his loving, devoted wife, mother and companion, Olive. His list of 113 outstanding publications is appended.

url: http://hdl.handle.net/1813/3706
date: 2006-10-31
creator: Gurwick, Noel Paul
viewed: 462
title: CARBON IN RIPARIAN SUBSURFACE ECOSYSTEMS: SOURCES, LABILITY, AND SPATIAL PATTERNS
abstract: Numerous studies suggest that denitrification in riparian zones removes nitrogen from groundwater

as it moves from terrestrial to aquatic ecosystems. However, removal rates vary widely among sites complicating the incorporation of riparian zones into models of nitrogen movement across landscapes. Because denitrification in the riparian subsurface is often limited by the supply of microbially-available carbon, explaining how and why carbon supply varies among riparian zones using mappable landscape attributes holds practical and theoretical appeal. First principles suggest three carbon sources for subsurface microbes: (1) dissolved organic carbon leached from surface soils; (2) deep plant roots; and (3) buried, carbon-rich soil horizons deposited long ago. Working in Rhode Island USA at riparian zones mapped as outwash and alluvium, I investigated the relative importance of different carbon sources to 3 meters depth.

Field and laboratory experiments showed that both roots and buried horizons can supply carbon in the shallow subsurface (40-75 cm), but that buried horizons dominate below 75 cm. Radiocarbon dates and results from ingrowth cores showed that roots 40-75 centimeters deep grow and decompose on decadal time scales and form patches of organic matter that may influence nitrogen removal from groundwater. However, in both alluvial and outwash profiles, most roots below 80 cm are relics (usually > 140 years old) and therefore do not act as direct carbon conduits between the surface and deep subsurface. Laboratory incubations of buried soils from many sites demonstrated that high rates of carbon mineralization associated with these soils are common. In-situ groundwater incubations and 14C dating demonstrated that metabolism of ancient carbon constitutes at least 31% of total carbon mineralization >2 meters below the surface at some sites.

My results suggest that: (1) the depth of the biologically active zone extends as deep as buried horizons; (2) on outwash and alluvium the riparian surface and subsurface are largely decoupled on time scales of months to years; (3) functional classifications of riparian zones intended to support management need to include buried horizons and recognize the limited influence of surface vegetation on subsurface biogeochemistry over short time frames.

url: http://hdl.handle.net/1813/3707
date: 2006-10-31
creator: Scharringhausen, Britt Rebecca
viewed: 593
title: A Photometric Model of the Inclined F Ring of Saturn
abstract: Philip Nicholson, Joseph Burns, Riccardo Giovanelli Peter Gierasch. Observations by Hubble Space Telescope (HST) of the rings of Saturn during the 1995 ring-plane crossing revealed a surprising asymmetry in the brightness of the east and west ansae. As in historical observations, the ring brightness was nonzero at the time that the rings are observed edge-on. We create a photometric model of the ring system with the F ring inclined to the main ring plane which re-produces the observed brightness of the rings and the asymmetry in ring brightness after the ring-plane crossing.

The F ring is modeled as "ribbon" 60 km tall, of indeterminate radial width, with a gaussian profile of optical depth as a function of height with an equivalent depth of D=10+/-4 km and a full width at half maximum of 13+/-7 km. This is the first estimate of the physical vertical thickness of the F ring, which we find is approximately 1000 times greater than the main ring thickness.

The model shows that as the Earth crosses the main ring plane, the F ring dominates the brightness of the system, and that the asymmetry in ring brightness after the ring-plane crossing is caused by asymmetric absorption of light from the main rings by the front of the F ring.

The model gives post-crossing asymmetries in good agreement with the HST data, but fails to reproduce the small asymmetries in ring brightness observed before the ring-plane crossing. The model profiles of ring brightness plotted vs. horizontal distance from the center of Saturn show many of the features observed in the HST profiles. However, the F ring in this model is longitudinally symmetric, and does not include the many clumps or arcs that have been observed in the real F ring. It therefore cannot reproduce many of the small-scale variations seen in the HST profiles. It may be that these small features are responsible for the asymmetries observed before the ring-plane crossing.

url: http://hdl.handle.net/1813/3708
date: 2006-10-31
creator: Leonard, Samuel L.
viewed: 295
title: Birth Control Pill Pioneer Turns 100
abstract: This is a slide show [and PDF] of an interview with Sam Leonard conducted on his birthday, November 26, 2005. The conversation with friends was spirited as Sam recounted that in 1931, at 26 years of age, he published two seminal papers. One paper demonstrated that estrogen could be used as a contraceptive pill. The other paper was the first one to demonstrate that the anterior pituitary gland produced two gonadotropins, follicle stimulating hormone and luteinizing hormone. Sam chuckled as he recounted his discovery that all you needed to do to get female canaries to sing was to give them a male voice with testosterone.

url: http://hdl.handle.net/1813/3708
date: 2006-10-31
creator: Leonard, Samuel L.
viewed: 295
title: Birth Control Pill Pioneer Turns 100
abstract: This is a slide show [and PDF] of an interview with Sam Leonard conducted on his birthday, November 26, 2005. The conversation with friends was spirited as Sam recounted that in 1931, at 26 years of age, he published two seminal papers. One paper demonstrated that estrogen could be used as a contraceptive pill. The other paper was the first one to demonstrate that the anterior pituitary gland produced two gonadotropins, follicle stimulating hormone and luteinizing hormone. Sam chuckled as he recounted his discovery that all you needed to do to get female canaries to sing was to give them a male voice with testosterone.

url: http://hdl.handle.net/1813/3709
date: 2006-10-31
creator: Foote, Robert H.
viewed: 548
title: Historical Perspective in Principles of Cloning
abstract: Cloning, or asexual reproduction, is the typical way that simple organisms reproduce. However, mammals normally cannot reproduce asexually. This chapter is part of a book that traces the development of a limited understanding of cellular regeneration that led to the cloning of adult mammals. An explosion of research with stem cells and related areas has followed. This research is designed to understand cellular differentiation, and use this knowledge with the potential of greatly advancing medical practice.

url: http://hdl.handle.net/1813/3709
date: 2006-10-31
creator: Foote, Robert H.
viewed: 548
title: Historical Perspective in Principles of Cloning
abstract: Cloning, or asexual reproduction, is the typical way that simple organisms reproduce. However, mammals normally cannot reproduce asexually. This chapter is part of a book that traces the development of a limited understanding of cellular regeneration that led to the cloning of adult mammals. An explosion of research with stem cells and related areas has followed. This research is designed to understand cellular differentiation, and use this knowledge with the potential of greatly advancing medical practice.

url: http://hdl.handle.net/1813/3710

date: 2006-11-01
creator: Lemley, Ann T.;Price, Judy L.
viewed: 577
title: Removing Stains at Home
abstract: Many stains can be removed from clothing and household furnishings using the directions in this booklet which have been tested in a Cornell University laboratory. If followed, the chance of removing the stain is very good. There is no single product or method for removing all stains, because the chemical makeup of each stain and agent is unique. Old stains are more difficult to remove than fresh stains, and some staining agents are so strong that they will not react to any efforts to remove them.

url: http://hdl.handle.net/1813/3711
date: 2006-11-01
creator: Birckmayer, Jennifer
viewed: 1187
title: Discipline Is Not a Dirty Word
abstract: Using practical examples and exercises, this book guides the reader through seven principles of discipline for correcting children's behavior. Practice episodes for teachers and parents demonstrate how the principles can be translated into action.

url: http://hdl.handle.net/1813/3711
date: 2006-11-01
creator: Birckmayer, Jennifer
viewed: 1187
title: Discipline Is Not a Dirty Word
abstract: Using practical examples and exercises, this book guides the reader through seven principles of discipline for correcting children's behavior. Practice episodes for teachers and parents demonstrate how the principles can be translated into action.

url: http://hdl.handle.net/1813/3712
date: 2006-11-01
creator: Ortiz, Darleene
viewed: 502
title: Public Speaking Made Easy
abstract: Being able to speak well in public is a skill that can help you teach, persuade or entertain others. Good speakers such as Abraham Lincoln, J.F.K., and Martin Luther King Jr. had the ability to accomplish great things because they knew how to deliver their message in a way that made people listen. You can become a good speaker, too! With the help of your leader, teacher, parents and this guide, you can learn to give a great public presentation.

url: http://hdl.handle.net/1813/3713
date: 2006-11-01
creator: Birckmayer, Jennifer
viewed: 343
title: A Day in Day CareA Program for Two-Year-Olds
abstract: Choosing a good day care program for a two-year-old is a puzzling problem for many parents. Teachers and caregivers, too, wonder about the kinds of activities that are most appropriate for very young children. The following description of a safe and interesting day care program for 2-year-olds can be used by parents as a guide to selecting good day care; it can also be used by a day care center to stimulate discussion

about program planning and implementation. The first section focuses on a chronological order of events from how to manage early arrivals, to snack time, story time, nap time, through to the end-of-day routines, and several other activities in between. The second section deals with selecting equipment, floor plans, and organization. Although the program described here is not perfect, it would meet New York State Department of Social Services day care licensing standards. The most important clue to the quality of a day care program is found in the feelings and the relationships of the people who participate in the program. If parents feel comfortable in the center and trust the caregivers, if caregivers feel valued loved, and if children feel relaxed, happy, and accepted, the foundation for good care exists. 12 illustrations, 3 floor plan diagrams, a short list of suggested books, and a list of educational equipment by area supplement this informative guide.

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url: http://hdl.handle.net/1813/3714
date: 2006-11-01
creator: Thonney, Patricia F.
viewed: 408
title: A Pyramid of Snacks
abstract: This teaching guide offers 16 different snack recipes, 12 games, 12 science experiments and 12 other food activities to reveal the structure and logic behind The Food Guide Pyramid. The goals for the Cooking Up Fun! initiative are to (1) Increase life skills related to food preparation; (2) Model practices that reflect Dietary Guidelines and the Food Guide Pyramid; (3) Expand opportunities for experiential learning; (4) Develop understanding of the science of cooking; and (5) Have fun! Developed for children ages 9 - 12.

url: http://hdl.handle.net/1813/3715
date: 2006-11-01
creator: Belluscio, Lynne;Becker, Robert F.;Kline, Roger A.
viewed: 407
title: The Heirloom Vegetable GardenGardening in the 19th Century
abstract: This publication is a timeless, illustrated - look back - at 36 vegetable varieties commonly grown during the 1800s. It's history and horticulture under one cover! Excerpts from that century's garden books as well as recipes included.

url: http://hdl.handle.net/1813/3716
date: 2006-11-02
creator: Beneria, Lourdes;Kudva, Neema
viewed: 704
title: Rethinking Informalization: Poverty, Precarious Jobs and Social Protection
abstract: This book contains a large proportion of the papers initially presented at the conference, "Rethinking Informalizatin in Labor Markets," which took place at Cornell University in October 2002.Globalization, deep economic restructuring, and neoliberal policies have transformed the world of work and labor markets in the North and the South. Contrary to expectations of those who studied the "informal sector" in the 1970s and 80s, the informal economy keeps expanding. This collection brings together an interdisciplinary group of researchers and activists to rethink informalization and the world of work. Together they explore the processes and reasons behind the growth of informal activities and the possibilities for generating decent work and equitable labor markets under the present conditions.
Rethinking Informalization includes papers that examine the heterogeneity of informal activities, the processes that generate its growth, and the lack of concern over increasing economic and social inequalities. Some contributions focus on the need to rethink social protections for labor and the generation of decent work. Others focus on the linkages between informality and poverty, and the final essay focuses on the impacts of informality on the segmentation of urban space and politics.
The volume will be of interest to anyone concerned with the continued growth and dynamism of the informal economy, as well as its pernicious effects on workers lives everywhere.

url: http://hdl.handle.net/1813/3717
date: 2006-11-02
creator: Foote, Robert H.
viewed: 533
title: Born to Live and Living to Learn: Autobiography of a Farm Boy, Soldier, Parent and Educator
abstract: Available in one large PDF file or four smaller subsets.The title of the book gives a synopsis of Robert Foote's life. On page 157 a list of 64 Thank You slides tells the story of a fine dairy farm family life in the depression, University of Connecticut classmates, and on to World War II. Dr. Foote's superb soldiers of Japanese ancestry taught him much about the meaning of life as they have remained friends for over 60 years. Family and university life and challenges over 60 years at Cornell are detailed. Copies of diaries, Christmas letters and reflections of a loving mother when he was 61 years old are inserted to provide unedited personal accounts of life and feelings.

url: http://hdl.handle.net/1813/3717
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viewed: 533
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url: http://hdl.handle.net/1813/3718
date: 2006-11-02
creator: Foote, Robert H.
viewed: 589
title: A Brief Photo Essay of My Family and Life: The First 81 years
abstract: This booklet was prepared to provide a pictorial story of Rober Foote's family and life and give personal glimpses not possible to convey in the autobiography "Born to Live and Living to Learn: Autobiography of a Farm Boy, Soldier, Parent and Educator." The photos follow chronologically from his ancestors to the sequence listed in the title of his autobiography. The educational component includes teaching and research.

url: http://hdl.handle.net/1813/3718
date: 2006-11-02
creator: Foote, Robert H.
viewed: 589
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abstract: This booklet was prepared to provide a pictorial story of Rober Foote's family and life and give personal glimpses not possible to convey in the autobiography "Born to Live and Living to Learn: Autobiography of a Farm Boy, Soldier, Parent and Educator." The photos follow chronologically from his ancestors to the sequence listed in the title of his autobiography. The educational component includes teaching and research.

url: http://hdl.handle.net/1813/3719
date: 2006-11-03
creator: Stewart, Derek;Leonard, Francois
viewed: 357
title: Properties of short channel ballistic carbon nanotube transistors with ohmic contacts
abstract: We present self-consistent, non-equilibrium Green's function calculations of the characteristics of short channel carbon nanotube transistors, focusing on the regime of ballistic transport with ohmic contacts. We first establish that the band lineup at the contacts is renormalized by charge transfer, leading to Schottky contacts for small diameter nanotubes and ohmic contacts for large diameter nanotubes, in agreement with recent experiments. For short channel ohmic contact devices, source-drain tunneling and drain-induced barrier lowering significantly impact the currrent-voltage characteristics. Furthermore, the ON state conductance shows a temperature dependence, even in the absence of phonon scattering or Schottky barriers. This last result also agrees with recently reported experimental measurements.

url: http://hdl.handle.net/1813/3726
date: 2006-11-06
creator: Nystrom, Nathaniel J.
viewed: 291
title: Programming Languages for Scalable Software Extension and Composition
abstract: Large software systems are often constructed by reusing existing code. This dissertation describes several approaches that address the limitations of existing code reuse mechanisms such as class inheritance. The Polyglot design pattern enables software systems to be extended in a scalable way: the code required to extend the system is proportional to the amount of new functionality provided. This design pattern has been used to implement an extensible compiler framework. Nested inheritance is an object-oriented programming language mechanism that supports scalable extensibility in a safer, more natural way than the design pattern approach. Nested inheritance permits modular, type-safe extension of a package (including nested packages and classes), while preserving existing type relationships. Nested intersection extends nested intersection to enable composition and extension of two or more packages, combining their types and behavior while

resolving conflicts with a relatively small amount of code. Nested intersection is implemented in the language J&. The utility of J& is demonstrated by using it to construct two composable, extensible frameworks: a compiler framework for Java, and a peer-to-peer networking system. Both frameworks support composition of extensions. For example, two compilers adding different, domain-specific features to Java can be composed to obtain a compiler for a language that supports both sets of features.

url: http://hdl.handle.net/1813/3727
date: 2006-11-07
creator: Rieger, Oya
viewed: 394
title: Successful Digital Repositories: Selecting an Institutional Repository Model
abstract: Preconference presentation for USAIN 2006 conferenceOya Rieger offers strategies to select and implement repository system features and functionality and illustrates a broad range of case studies.

url: http://hdl.handle.net/1813/3728
date: 2006-11-07
creator: Gibbons, Susan
viewed: 799
title: Building Successful Digital Repositories
abstract: Ultimately, the success of an institutional repository is dependent on faculty and researchers depositing their materials into it. Using a work practice study methodology and the guidance of a trained anthropologist, Susan Gibbons and others at the University of Rochester, River Campus Libraries undertook an investigation of how an institutional repository may or may not fit into the existing work practices of faculty in different disciplines. Ms. Gibbons shared those findings and suggested ways that an institutional repository can be better aligned with faculty expectations and practices.

url: http://hdl.handle.net/1813/3729
date: 2006-11-07
creator: Gardner, Melanie
viewed: 453
title: AgNIC: a Model for a National Digital Library for AgricultureBuilding Collaborative Partnerships Through Technology to Meet Global Needs for Agricultural Information
abstract: With a preponderance of electronic resources readily available as well as technology hardware and infrastructure advancing at a logarithmic pace, the needs for the physical library as a center for research have greatly diminished. Many libraries have moved to the notion of ?library as place,? a welcoming environment for group study, an information commons, and cyber cafes. For those on campus, particularly undergraduates, this new approach has effectively demonstrated increased use of library buildings.
Libraries must also be focused on the notion of ?place as library.? The library?s web presence should provide just as welcoming an environment as the library building for faculty, research staff and students. The sciences, in particular, have embraced the Internet for databases, distributed computing, and virtual collaboration where each member of the workgroup can be widely dispersed, beyond a single institution and, in some cases, beyond national borders.
The sciences have the greatest infrastructure of both digital resources and the newest technologies. New software products make the leap to virtual collaboration, virtual conferencing, and virtual teamwork seamless. Virtual collaborative activities take place in the digital environment, beyond the geographic constraints of the institution. So, where does the research library fit into this new and emerging model? The speaker listed shared some examples, with a focus on agriculture and related sciences, of how libraries can make a difference and provide research support services and an infrastructure for information access, dissemination,

and preservation in the ever evolving digital environment.

url: http://hdl.handle.net/1813/3730
date: 2006-11-07
creator: McGeachin, Rob
viewed: 240
title: Digitization of Texas Agricultural Experiment Station Documents for Inclusion in the Institutional Repository and World Wide Access
abstract: The Bulletin of the Texas Agricultural Experiment Station is being digitized, archived in the TxSpace Institutional Repository, and made accessible to a world wide audience. Each page of the original print bulletin is scanned with an OpticBook 3600 book edge scanner and saved as an archival gray scale tagged image file format (TIFF) file at 400 dpi for text pages or 600 dpi for figure or illustration pages. The page images are combined into a PDF document of the pages and optical character recognition generated searchable full text. Dublin Core metadata records are created for each Bulletin and National Agricultural Library Thesaurus subject terms are added to the records. The TIFF files, PDF file, and metadata record for each Bulletin are uploaded to the TxSpace Institutional Repository operated by the Texas A&M University Libraries. In addition to the search functionality of TxSpace the metadata records are harvestable by web crawlers and incorporated in many other web search indexes making them discoverable world wide. This contributed paper will provide details of the digitization, metadata cataloging, and uploading processes.

url: http://hdl.handle.net/1813/3731
date: 2006-11-07
creator: Ramaswamy, Mohan;Farmer, Diane;Zhou, Yongli
viewed: 1060
title: Winnowing the Chaff: Designing and Building a Grain Milling and Processing Web Library
abstract: Kansas State University (K-State) offers a unique curriculum in the milling, baking and industrial (i.e. nontraditional) utilization of grain products. The program targets a diverse audience from academics to amateur bakers to industry professionals to researchers looking at non-traditional fuel and other uses of grains. The range in the audience reflects the multidisciplinary subject areas, ranging from basic sciences (chemistry, biochemistry, food science), applied sciences (baking, milling), engineering (chemical, industrial), business, economics and so on. Given the possible subjects and the variety of audiences, information available on the Internet is widely dispersed and often difficult to find.
Our desire to provide organized access to the above information received additional impetus from the AgNIC Alliance and the request that K-State develop a site for Grain Milling and Processing.
An initial design was developed based on meetings and feedback with faculty in the Grain Science and Industry Department. Subject categories and subcategories were identified and templates for the initial static pages designed. Given the interdisciplinarity of the subjects, it became clear that selected sites could and would appear on several subject pages. Rather than try to update links on multiple pages individually, we investigated our options and selected creating a database as the best solution.
Design of the database led to more standardization of page organization and data elements. The database may be used to generate static or dynamic web pages. A selected site is entered only once, but can be profiled for as many pages as needed. Currently the database provides static pages that are updated monthly. Real time dynamic update of the web pages is in development. We are also developing a search interface for users who do not want to scroll the pages individually for sites of interest.
This presentation will discuss many of the issues we encountered ? issues regarding standards, technology, web usability, selection and display of content, and campus politics.

url: http://hdl.handle.net/1813/3732

date: 2006-11-07
creator: NAL, Staff;Young, Peter
viewed: 374
title: National Digital Library for Agriculture Panel Presentation (Session 1)Putting the pieces together
abstract: Presentation on the background of the National Digital Library for Agriculture (NDLA) initiative, review of the draft vision, mission, and guiding principles for the initiative; followed by an open discussion on the Goals for the NDLA.

url: http://hdl.handle.net/1813/3733
date: 2006-11-07
creator: Esman, Michael;Cole, Chris
viewed: 1043
title: Developing an Electronic Repository for Agricultural Literature (ERAL)
abstract: NAL has been planning and implementing a large scale repository for electronic items. NAL has in place a small electronic repository application (NALDR) containing a few digitized USDA titles including the Yearbook of Agriculture. Concurrently with NALDR, the planning began to create an Electronic Repository of Agricultural Literature (ERAL) of much larger scale and scope. This process has involved a vigorous pilot project involving scientists and laboratories within USDA. The ERAL will include:
? digitized USDA publications, ? peer reviewed articles authored by USDA scientists, ? scholarly presentations by USDA scientists. The process has involved: ? examining available commercial and open-source applications, ? reviewing metadata standards and linkages to existing systems, ? determination of the copyright and intellectual property issues ? enlisting the participation of the USDA scientists ? developing the logistical support for depositing new works ? integrating with AGRICOLA for search, discovery, and dissemination. This presentation reviews the procedure of the feasibility study and the experience of our pilot efforts.

url: http://hdl.handle.net/1813/3734
date: 2006-11-07
creator: Giovannoni, James
viewed: 474
title: Bioinformatics: Opportunities and Challenges for Data Recovery
abstract: Dr. Giovannoni is a San Francisco native who received a BS in Biochemistry at UC Davis in 1985. Jim received a Ph.D. in Molecular and Physiological Plant Biology from University of California, Berkeley in 1990. Jim spent 1990-1992 as a post-doctoral research associate at Cornell University in the laboratory of Steve Tanksley. In 1992 Jim took a position as Assistant Professor in the Horticultural Sciences Department at Texas A&M where he developed a research program based on analysis of developmental determinants of fruit ripening using molecular genetic and genomics approaches. Jim has been a Plant Molecular Biologist with the USDA-ARS Plant, Soil and Nutrition Laboratory in Ithaca, NY since late September 2000 and continues to work on tomato with emphases on genetic determinants of ripening and nutrient quality of fruit. Dr. Giovannoni?s laboratory is housed in the Boyce Thompson Institute for Plant Research (BTI) on the Cornell University campus. He holds the title of Scientist at the BTI and is an Adjunct Professor in the departments of Plant Biology, Plant Breeding and Horticultural Sciences at Cornell. The focus of research in the Giovannoni laboratory is molecular and genetic analysis of fruit ripening and related signal transduction systems with emphasis on aspects of nutritional quality. The laboratory is also part of a large National Science Foundation-funded tomato genomics consortium that recently initiated the international tomato genome sequencing effort. He has over 50 refereed publications and has five patents issued or pending.

url: http://hdl.handle.net/1813/3735
date: 2006-11-07

creator: Burnham, Erica
viewed: 413
title: Moving Digitization Projects into Institutional Repositories
abstract: Problem- The Lyman Entomological Digitization Project began with a $50,000 grant in the spring of 2003. Drawings, personal letters, hand-written minutes of society meetings, manuscripts of journal articles, historical research, monographs, pamphlets and colour plates formed the initial bulk of the material. Many hours of transcription, changes in the scope of the project, and scanning and editing of documents, consumed the next 18 months. The project stalled at the end of 2005, $22,000 overspent.
Methods- Digital projects on dedicated websites with individual databases managing content need maintenance and regular updating. Standards and best practices for library digitization projects are important, but managing a project within the scope of the budget in order to see preliminary results is paramount. We investigated ways to move unfinished, labour intensive projects into a well-maintained database of institutional research output.
Conclusions- The development of institutional repositories could also include library digitization projects. One database managing many projects and materials that can properly connect to a unique website, the depository search interface or even the library catalogue seems to be the best avenue for managing multiple projects. Problems with overambitious projects and the design and maintenance of a growing number of websites are untenable.

url: http://hdl.handle.net/1813/3736
date: 2006-11-07
creator: Saylor, John
viewed: 1107
title: Collection Development in Academic LibrariesStrategic Initiatives for the Changing Scholarly Information Environment
abstract: Collection development remains a cornerstone responsibility in academic and research libraries. The actions and methodologies involved in this activity are changing considerably due to factors including the preference for digital information, budget constraints, cooperative collection development, online ordering, and in some cases storage problems. In this dynamic environment, many institutions are examining their collection development policies and selection philosophies. Some libraries have begun exploring key issues such as whether the time has come to stop ?collecting for the ages? and instead primarily focus on the immediate information needs. The panel speakers discussed the innovations and changes they confront in collection development at their institutions.

url: http://hdl.handle.net/1813/3737
date: 2006-11-07
creator: Lanzas, Cristina
viewed: 453
title: Models to predict ruminal carbohydrate and nitrogen supply and nitrogen excretion in cattle
abstract: To mitigate the negative environmental impact of farming, it is important that diets are formulated to accurately match requirements. For that, an adequate characterization of feed composition and its variability is crucial. The original Cornell Net Carbohydrate and Protein (CNCPS) feed carbohydrate and protein fractionation schemes were evaluated and modified to improve predictions of the rumen degradable protein (RDP), rumen undegradable protein (RUP) and microbial protein supply. For carbohydrates, a new expanded scheme was developed; the CA1 is volatile fatty acids (VFA), CA2 is lactic acid, CA3 is other organic acids, CA4 is sugars, CB1 is starch, CB2 is soluble fiber, CB3 is available neutral detergent fiber (NDF), and CC is unavailable NDF. The expanded scheme accounted for more variation in changes in silage quality and non-fiber carbohydrate composition.

The CNCPS and National Research Council (NRC) protein schemes were evaluated using Monte Carlo techniques. Both schemes shared similar limitations including (1) the range of RDP and RUP was over-predicted; (2) the methods used to estimate degradation rates had low accuracy and repeatability, and (3) the assumptions underlying the kinetic models were too restrictive to mimic ruminal digestion. The CNCPS protein scheme was revised and alternative schemes were developed. Predictions of RDP and RUP were improved by assigning rates obtained with the inhibitory in vitro system to a combined insoluble protein B fraction, or by redefining A and B1 fractions as the non amino-N and amino-N in the soluble fraction, respectively.
Urea recycled to the rumen may represent an important source of N for microbes. A dynamic mechanistic model was developed to be used as a component of ration formulation models to predict N recycling to the GIT and urinary urea N. Recycling processes were modeled as positive feedbacks, while renal excretion was modeled as a negative feedback. Both processes were assumed to be regulated by N intake. Model simulations suggested that accurately accounting for urea recycled to the rumen reduces degradable nitrogen needed in the diet, and the use of the NRC 1985 empirical equation to predict urea recycling to the rumen may greatly underestimate recycling in lactating dairy cows.

url: http://hdl.handle.net/1813/3738
date: 2006-11-07
creator: Nelson, Paul E.;Horst, R. Kenneth
viewed: 503
title: Diseases of Geraniums
abstract: Geraniums are one of the most versatile and widely used flowering plants in the floriculture industry. The diseases discussed in this bulletin are primarily those that affect the florist, garden, or zonal geranium, Pelargonium x hortorum. 20 specific diseases are addressed, organized by type of disease, i.e. bacterial, fungal, viral, and non-parasitic. Each disease is described in terms of importance, symptoms, the pathogen that causes the disease, environmental relations, and control. Use of fungicides, and soil treatments are discussed in separate sections. 33 black and white photographs and 5 tables supplement the text.

url: http://hdl.handle.net/1813/3739
date: 2006-11-07
creator: Nelson, Eric B.
viewed: 853
title: Biological Control of Turfgrass Diseases
abstract: This information bulletin is written for turf managers, pest control applicators, and homeowners. Discusses approaches to biological control, use and results of both compost-based organic fertilizers and microbial fungicides. A chapter on future perspectives is also included.

url: http://hdl.handle.net/1813/3740
date: 2006-11-07
creator: Farrell, Tracy J.;Thonney, Patricia F.
viewed: 389
title: Kitchen Science for Kids
abstract: A collection of science experiments that teach food and nutrition concepts appropriate for children ages 5 to 12. The goal is to make science accessible and fun for children and to encourage discovery-based knowledge. The pages are filled with ideas and information especially for those with limited preparation time, space, and access to kitchen facilities. Each activity can be completed in one 20-minute period or expanded to provide additional learning opportunities. An excellent resource for home schools, clubs, after-school programs, as well as formal classrooms.

url: http://hdl.handle.net/1813/3741
date: 2006-11-07
creator: Farrell, Tracy J.;Thonney, Patricia F.
viewed: 930
title: In the Bag!Families Sharing Science Together
abstract: This Leader's Guide and Activity Sheets combo teaches kids aged five to eight and adults about food and nutrition through science and reading. The 20 reproducible handouts and activity guidelines cover basic tastes, smell and taste together, and sound and smell together. Each section suggests books for the adult and child to read together and then do the related experiment. Helps build skills related to science processes, techniques and concepts, including observation, classification, estimation, prediction, and communication.

url: http://hdl.handle.net/1813/3742
date: 2006-11-07
creator: Welser, Russell;Van Nostrand, Roger;Kline, Roger A.
viewed: 599
title: The Garden Strawberry
abstract: A timeless, how-to booklet on growing strawberries in your home garden. Site and variety selection, recommended culture, pest and weed control, irrigation, sidedressing, harvesting tips and winter protection are all covered.

url: http://hdl.handle.net/1813/3743
date: 2006-11-07
creator: Kenney, Anne
viewed: 308
title: Metes and Bounds:Agricultural E-Journal Archiving Landscape
abstract: Anne R. Kenney assessed the current state of e-journal preservation efforts as they relate to agricultural literature and discussed the various options currently available, based on a study she and her colleagues conducted on e-journal preservation for the Council of Library and Information Resources (CLIR) and the Association of Research Libraries (ARL).

url: http://hdl.handle.net/1813/3744
date: 2006-11-07
creator: Devare, Medha
viewed: 1410
title: An Introduction to NCBI?s Bioinformatics Resources
abstract: This workshop provides an introduction to National Center for Biotechnology Information (NCBI) databases commonly used by life scientists. The workshop is specifically designed for those with no or little knowledge of bioinformatics, and begins with a brief tutorial on molecular biology fundamentals and the basic theory behind DNA and protein sequencing. We will then move on to the effective use of NCBI's bibliographic, nucleotide, protein, gene, and genome databases, the Basic Local Alignment Search Tool (BLAST), and /Cn3D/, NCBI's 3-D visualization tool for proteins.

url: http://hdl.handle.net/1813/3745
date: 2006-11-07
creator: Clark, Katie
viewed: 253

title: Building A Digital Infrastructure: UR Research
abstract: With a preponderance of electronic resources readily available as well as technology hardware and infrastructure advancing at a logarithmic pace, the needs for the physical library as a center for research have greatly diminished. Many libraries have moved to the notion of ?library as place,? a welcoming environment for group study, an information commons, and cyber cafes. For those on campus, particularly undergraduates, this new approach has effectively demonstrated increased use of library buildings. Libraries must also be focused on the notion of ?place as library.? The library?s web presence should provide just as welcoming an environment as the library building for faculty, research staff and students. The sciences, in particular, have embraced the Internet for databases, distributed computing, and virtual collaboration where each member of the workgroup can be widely dispersed, beyond a single institution and, in some cases, beyond national borders. The sciences have the greatest infrastructure of both digital resources and the newest technologies. New software products make the leap to virtual collaboration, virtual conferencing, and virtual teamwork seamless. Virtual collaborative activities take place in the digital environment, beyond the geographic constraints of the institution. So, where does the research library fit into this new and emerging model? The speaker shared some examples, with a focus on agriculture and related sciences, of how libraries can make a difference and provide research support services and an infrastructure for information access, dissemination, and preservation in the ever evolving digital environment.

url: http://hdl.handle.net/1813/3746
date: 2006-11-07
creator: Steinhart, Gail;Devare, Medha
viewed: 241
title: Beyond Reference: New Models for Librarian Involvement in Scientific Research
abstract: Science librarians today increasingly serve users whose research is highly dependent on sophisticated information technology. Providing good service to such users not only involves knowledge of a wide variety of technologies and information tools, but also an understanding of the research process itself. Consequently, libraries are increasingly hiring librarians with expertise in the broad subject areas of their stakeholder communities. In addition to providing reference and consultation services, science librarians? responsibilities may potentially include specialized instruction, non-traditional outreach, and work on special projects to facilitate the research process. The participants on this panel briefly described their varied responsibilities and non-traditional roles, and invited discussion on the topic of librarian involvement in scientific research.

url: http://hdl.handle.net/1813/3747
date: 2006-11-07
creator: Ruggiero, Andrew;Kesselman, Martin
viewed: 1071
title: Open Access Software for Virtual Collaborations on Campus & BeyondA Case Study of Food & Nutrition Business
abstract: With a preponderance of electronic resources readily available as well as technology hardware and infrastructure advancing at a logarithmic pace, the needs for the physical library as a center for research have greatly diminished. Many libraries have moved to the notion of ?library as place,? a welcoming environment for group study, an information commons, and cyber cafes. For those on campus, particularly undergraduates, this new approach has effectively demonstrated increased use of library buildings. Libraries must also be focused on the notion of ?place as library.? The library?s web presence should provide just as welcoming an environment as the library building for faculty, research staff and students. The sciences, in particular, have embraced the Internet for databases, distributed computing, and virtual collaboration where each member of the workgroup can be widely dispersed, beyond a single institution and, in some cases, beyond national borders. The sciences have the greatest infrastructure of both digital resources and the newest technologies.

New software products make the leap to virtual collaboration, virtual conferencing, and virtual teamwork seamless. Virtual collaborative activities take place in the digital environment, beyond the geographic constraints of the institution. So, where does the research library fit into this new and emerging model? The speaker shared some examples, with a focus on agriculture and related sciences, of how libraries can make a difference and provide research support services and an infrastructure for information access, dissemination, and preservation in the ever evolving digital environment.

url: http://hdl.handle.net/1813/3748
date: 2006-11-07
creator: Perry, Valerie
viewed: 325
title: UK 101: A New Way of Introducing Freshmen to Campus Libraries
abstract: Personalized Library Portals, Virtual Reference and Federated Searching are some of the recent technological advancements offered in public service at many libraries. At the University of Kentucky, we realized that we needed to "get back to the basics" in order to improve our relationships with undergraduate students. In 2004, the Library Marketing Committee conducted focus groups with undergraduates to provide the data needed to create a marketing plan. The initial goals were to determine the best advertising methods to reach undergraduates effectively and which services we need to focus on first. The sample was small and non-scientific, but the results were consistent in each session. Our undergraduates were missing the most fundamental information about libraries--we provide free assistance and they are welcome at all fifteen campus libraries. In addition, they wanted to know more about the services we offered. During the same year, the Instruction Committee was charged with evaluating the library involvement in a voluntary one-credit course introducing incoming freshmen to the university, called UK 101. The University Libraries had tried several methods, from tours and library exercises for all sections to a dedicated four-week library component for a single section. After reviewing the focus group data, it was clear that a new approach was needed and UK 101 provided an excellent opportunity to reach at least one-third of the incoming freshman class each year. The Instruction Committee and the Marketing Committee collaborated to revamp the course so that it emphasized the basic reasons for using the library and welcomed students to visit the library of their choice. The new and improved library component of UK 101 was required by all sections reaching over 1600 freshmen in 71 sections during the first semester of 2004/2005 academic year. It consisted of a PowerPoint presentation conducted by library personnel, a library tour conducted by the peer instructor and a TILT-based tutorial. The presentation and tour took place during one class period and the tutorial was completed outside of class. The difference(s) between this project and many other library instruction sessions was the heavy emphasis on making students aware of the fifteen campus libraries. The presentation and the tutorial both used fresh and fun approaches to reach the students, and were created based on advice from the Teaching and Learning Center on campus. Due to the strong support of Library Administration, the workload was spread among 25 library employees including librarians, paraprofessionals and library science graduate students. University Libraries has continued participating in UK 101 and anticipates an increased enrollment in 2006. Simultaneously, in an effort to reach the rest of the student population, the Marketing Committee has increased awareness of library services and resources to undergraduates through exhibits at campus events, dorm presentations and advertisements in campus food services and stalls. These experiences have provided the instruction librarians a new way to approach information literacy and produced a foundation of competencies now expected of most undergraduate students.

url: http://hdl.handle.net/1813/3749
date: 2006-11-07
creator: Kawasaki, Jodee
viewed: 228

title: Collection Development at Montana State University
abstract: Collection development remains a cornerstone responsibility in academic and research libraries. The actions and methodologies involved in this activity are changing considerably due to factors including the preference for digital information, budget constraints, cooperative collection development, online ordering, and in some cases storage problems. In this dynamic environment, many institutions are examining their collection development policies and selection philosophies. Some libraries have begun exploring key issues such as whether the time has come to stop ?collecting for the ages? and instead primarily focus on the immediate information needs. The panel speakers discussed the innovations and changes they confront in collection development at their institutions.

url: http://hdl.handle.net/1813/3750
date: 2006-11-07
creator: Cline, John
viewed: 832
title: Transforming the Mann Library USDA Reports SystemNew Partners, New Reports, and Historical Reports via a Single Interface
abstract: Since 1995, Albert R. Mann Library at Cornell University has partnered with several agencies with the United States Department of Agriculture to deliver a variety of agricultural commodity reports and datasets via the Web. These partners include the National Agriculture Statistics Service (NASS), World Agricultural Outlook Board (WAOB), and the Economic Research Service (ERS). In 2003, this partnership was extended to include the Agricultural Marketing Service (AMS) and its ~1500 commodity reports issued daily, weekly, or monthly, using a new model of direct delivery of reports by email.
At the time the new AMS reports service was initiated, Mann Library recognized that the traditional labor-intensive posting of HTML pages would not be a viable way to extend an enlarged reporting service into the future. A two-year development effort has created a new back end database and significantly upgraded the web site to improve both content delivery and management, and the new site has been officially scheduled for release in late July, 2006. The new web interface simplifies discovering available reports and data, provides additional metadata including related reports and title changes, and allows patrons to sign up for or change their subscriptions. A new administrative interface allows agency personnel to create or modify titles and descriptions for reports, enter new titles, manage publication dates, and upload reports for immediate distribution.
To further complement recent reports, Mann Library has also undertaken a scanning project to archive historical reports and make them available via the same interface. Approximately 9000 NASS reports dating back to 1919 have been scanned and are available in PDF format via the Mann USDA website, and many more are undergoing scanning for release in the coming year.
Taken together, these changes significantly improve and extend what has already been one of the most significant collections of current agricultural data, and provide both very current awareness and historical continuity of agricultural information via a single point of contact.

url: http://hdl.handle.net/1813/3752
date: 2006-11-07
creator: Herold, Philip
viewed: 662
title: Defining the nature of a digital conservancyhow diverse collections and systems shape a unified digital repository program
abstract: The institutional repository (IR) is fast being embraced as a necessary service of the academic library. Most often, the IR is implemented as an isolated software system and by definition it contains a limited range of content (i.e., institutionally-produced works). At the same time, non-institutionally-produced digital

collections that the library owns typically sit separately ? perhaps they have special audiences, contributors, needs, and likely they have unique development histories.

What identity unifies them for presentation to users? Do they need to be tied together somehow? Organizationally, how should they be effectively and efficiently managed and preserved? Technically, are there ways to leverage systems to manage diverse collections found in IRs and in subject-based or special collections?

The answer for the University of Minnesota is the University Digital Conservancy, a new program that encompasses data management, preservation, delivery, and the development of new born-digital or previously-digitized collections. This paper focuses on the opportunities and challenges posed by the construction of a holistic framework for developing, managing, preserving, and delivering digital collections. It discusses the complexities involved in: bringing together disparate collections with distinct contributors and audiences; integrating and replacing legacy systems with current technology; developing policy and workflow for digital archival collections, institutional repository-type content, and subject-based repository content that originates in- and/or outside of the institution.

The paper focuses on three examples relevant to the agricultural, environmental, and natural resource sciences, including: AgEcon Search, an existing digital collection of 20,000 applied economics working papers contributed by faculty from around the world; agricultural extension publications; and, works of the new Institute for the Environment at the University of Minnesota. Discussion of the unique opportunities and challenges posed by each of these collections will help inform librarians working to develop their own institutional solutions around digital information.

url: http://hdl.handle.net/1813/3753
date: 2006-11-07
creator: Getze, Frederick
viewed: 347
title: K-5 Kids Use Databases to Learn About AgricultureA State / University / School Initiative
abstract: This presentation addresses our future users by demonstrating a unique program brought to K-12 schools in the state of Delaware. The program, UDLib/SEARCH, can help media specialists and faculty in Delaware public elementary schools teach their children about agricultural research, so that pupils may gain an interest in the future of agriculture and a knowledge of its modern techniques and challenges. These students have the potential to be the university and industry researchers in the upcoming ten to fifteen years.

UDLib/SEARCH, a partnership between the University of Delaware Library and the State of Delaware Department of Education, provides access to networked electronic resources and training for all Delaware public schools. UDLib/SEARCH databases include full-text online encyclopedias and full-text magazines/ journals databases.

Specific demonstrations will be given of appropriate searches, such as biotechnology and cloning, in the elementary school databases Britannica Elementary, Gale Kids?Info-Bits, and SIRS Discoverer. These searches, in turn, will be linked to specific Delaware state curricular standards in educational units related to agriculture, as well as to ongoing programs in the University of Delaware College of Agriculture and Natural Resources.

url: http://hdl.handle.net/1813/3754
date: 2006-11-07
creator: Poley, Janet;Olsen, Livia;McGeachin, Robert;Jenda, Claudine;Gardner, Melanie
viewed: 295
title: Cooperative Agreements to Build Digital Resources
abstract: The Agriculture Network Information Center (AgNIC) is a voluntary alliance of more than 50 institutional partners who collaborate to bring quality agricultural information to Internet users. Over the

years, AgNIC partners have tried to identify sources of funding to support the building of quality digital content. In 2004 and again in 2005, the National Agricultural Library (NAL) was able to provide small, one-year cooperative agreements to several AgNIC partners for a variety of content-building projects. These projects were envisioned to provide broad access to valuable information and to have mutual benefit to each participating institution and the National Agricultural Library.
The moderated panel session summarized a variety of successful projects funded by the National Agricultural Library / Agricultural Research Service ?mini-grant? cooperative agreement program and encouraged additional participation if future cooperative agreement funding becomes available. * Brief overview describing how the cooperative agreement program originated, the process for submitting proposals, and reporting requirements -Melanie Gardner * Improving Access to USAIN?s State and Agricultural Experiment Station Publications - Claudine Jenda * Digitization of Texas Agricultural Agency Publications in Support of Development of the National Digital Library for Agriculture - Robert McGeachin * Digitizing and Preserving Rare Images of Pathological Disorders of Corn (Zea Mays) and Potato (Solanum tuberosum) - Livia Olsen * Project to Digitize Back Files of the Journal of Rangelands - Jeanne Pfander * Project to Translate into Spanish the "English-only" Terms in the NAL Thesaurus - Janet Poley

url: http://hdl.handle.net/1813/3755
date: 2006-11-07
creator: Frierson, Eleanor G.
viewed: 1477
title: The National Agricultural Library Customer Information Needs Survey
abstract: The panel discussed the purpose, process, results and implications of the National Agricultural Library (NAL) Customer Information Needs Assessment survey executed in 2006. There were more than 6,000 respondents to the survey, whose results will produce data about agricultural information needs that are expected to be relevant not only to NAL but also to the wider agricultural information community.

url: http://hdl.handle.net/1813/3756
date: 2006-11-07
creator: Gardner, Melanie;Straus, Cynthia
viewed: 288
title: Implementing the NAL Thesaurus in a Knowledge Repository
abstract: Michigan State University (MSU) Extension currently runs an information management program called the Knowledge Repository (KR). In order to make the KR a useful tool, both for MSU and for others, a decision was made to use the NAL Thesaurus (NALT) as the controlled vocabulary in metadata records for the KR. The NALT is a tool specifically designed for use with agricultural-based information systems and is updated each year. Accommodations have been made to update the thesaurus in the KR to refresh the terms. The system also allows uncontrolled vocabulary to assist discovery of information in KR. The combination allows for broader searching. Although the NALT has been implemented in this instance at MSU, another way to consume the NALT is through the NALT Web Services. Presenters will discuss the MSU implementation of the NALT and the NALTws.

url: http://hdl.handle.net/1813/3757
date: 2006-11-07
creator: Alvare, Luz Marina;Ballantyne, Peter
viewed: 352
title: Information Remix: the next generation of agricultural information
abstract: This panel discussed new developments in long standing international services. The topics included the new AGRIS, initiatives by the CGIAR, and the long range plan for IAALD in the professional

community.

url: http://hdl.handle.net/1813/3758
date: 2006-11-08
creator: Foote, Robert H.
viewed: 619
title: Credits for Animal Reproduction DVD
abstract: Credits for DVD “Animal Reproduction”.

url: http://hdl.handle.net/1813/3759
date: 2006-11-08
creator: Foote, Robert H.
viewed: 536
title: Animal Reproduction DVD: Introduction
abstract: This is the Introduction to the DVD: “Animal Reproduction: Refelections by Robert H. Foote”.

url: http://hdl.handle.net/1813/3773
date: 2006-11-09
creator: Fluet, Matthew
viewed: 307
title: Monadic and Substructural Type Systems for Region-Based Memory Management
abstract: Committee: Greg Morrisett (Chair), Andrew Myers, Andrew GallowayRegion-based memory management is a scheme for managing dynamically allocated data. A defining characteristic of region-based memory management is the bulk deallocation of data, which avoids both the tedium of malloc/free and the overheads of a garbage collector. Type systems for region-based memory management enhance the utility of this scheme by statically determining when a program is guaranteed to not perform any erroneous region operations.

We describe three type systems for region-based memory management:* a type-and-effect system (a la the Tofte-Talpin region calculus); * a novel monadic type system; * a novel substructural type system. We demonstrate how to successively encode the type-and-effect system into the monadic type system and the monadic type system into the substructural type system. These type systems and encodings support the argument that the type-and-effect systems that have traditionally been used to ensure the safety of region-based memory management are neither the simplest nor the most expressive type systems for this purpose.

The monadic type system generalizes the state monad of Launchbury and Peyton Jones and demonstrates that the well-understood parametric polymorphism of System F provides sufficient encapsulation to ensure the safety of region-based memory management. The essence of the first encoding is to translate effects to an indexed monad, trading the subtleties of a type-and-effect system for the simplicity of a monadic type system.

However, both the type-and-effect system and the monadic type system require that regions have nested lifetimes, following the lexical scope of the program, restricting when data may be effectively reclaimed. Hence, we introduce a substructural type system that eliminates the nested-lifetimes requirement. The key idea is to introduce first-class capabilities that mediate access to a region and to provide separate primitives for creating and destroying regions. The essence of the second encoding is to ``break open'' the monad to reveal its store-passing implementation.

Finally, we show that the substructural type system is expressive enough to faithfully encode other advanced memory-management features.National Science Foundation, Air Force Office of Scientific Research, and Office of Naval Research

url: http://hdl.handle.net/1813/3774
date: 2006-11-10
creator:
viewed: 237
title: Vol. 66, No. 1 - No. 11, 1963 - 1964
abstract: Vol. 66, No. 1 - No. 11, 1963 - 1964

url: http://hdl.handle.net/1813/3775
date: 2006-11-10
creator:
viewed: 238
title: Vol. 67, No. 1 - No. 11, 1964 - 1965
abstract: Vol. 67, No. 1 - No. 11, 1964 - 1965

url: http://hdl.handle.net/1813/3776
date: 2006-11-10
creator:
viewed: 206
title: Vol. 68, No. 1 - No. 11, 1965 - 1966
abstract: Vol. 68, No. 1 - No. 11, 1965 - 1966

url: http://hdl.handle.net/1813/3777
date: 2006-11-10
creator:
viewed: 224
title: Vol. 69, No. 1 - No. 11, 1966 - 1967
abstract: Vol. 69, No. 1 - No. 11, 1966 - 1967

url: http://hdl.handle.net/1813/3778
date: 2006-11-10
creator:
viewed: 289
title: Vol. 70, No. 1 - No. 11, 1967 - 1968
abstract: Vol. 70, No. 1 - No. 11, 1967 - 1968

url: http://hdl.handle.net/1813/3779
date: 2006-11-10
creator:
viewed: 252
title: Vol. 71, No. 1 - No. 11, 1968 - 1969
abstract: Vol. 71, No. 1 - No. 11, 1968 - 1969

url: http://hdl.handle.net/1813/3780
date: 2006-11-10
creator:
viewed: 231
title: Vol. 72, No. 1 - No. 11, 1969 - 1970
abstract: Vol. 72, No. 1 - No. 11, 1969 - 1970

url: http://hdl.handle.net/1813/3781
date: 2006-11-10
creator:
viewed: 580
title: Vol. 73, No. 1 - No. 11, 1970 - 1971
abstract: Vol. 73, No. 1 - No. 11, 1970 - 1971

url: http://hdl.handle.net/1813/3782
date: 2006-11-10
creator:
viewed: 228
title: Vol. 74, No. 1 - No. 11, 1971 - 1972
abstract: Vol. 74, No. 1 - No. 11, 1971 - 1972

url: http://hdl.handle.net/1813/3783
date: 2006-11-10
creator:
viewed: 271
title: Vol. 75, No. 1 - No. 11, 1972 - 1973
abstract: Vol. 75, No. 1 - No. 11, 1972 - 1973

url: http://hdl.handle.net/1813/3784
date: 2006-11-10
creator:
viewed: 308
title: Vol. 76, No. 1 - No. 11, 1973 - 1974
abstract: Vol. 76, No. 1 - No. 11, 1973 - 1974

url: http://hdl.handle.net/1813/3785
date: 2006-11-10
creator:
viewed: 407
title: Vol. 77, No. 1 - No. 10, 1974 - 1975
abstract: Vol. 77, No. 1 - No. 10, 1974 - 1975

url: http://hdl.handle.net/1813/3786
date: 2006-11-10
creator:
viewed: 216
title: Vol. 78, No. 1 - No. 10, 1975 - 1976
abstract: Vol. 78, No. 1 - No. 10, 1975 - 1976

url: http://hdl.handle.net/1813/3787
date: 2006-11-10
creator:
viewed: 207
title: Vol. 79, No. 1 - No. 10, 1976 - 1977

abstract: Vol. 79, No. 1 - No. 10, 1976 - 1977

url: http://hdl.handle.net/1813/3788
date: 2006-11-10
creator:
viewed: 251
title: Vol. 80, No. 1 - No. 10, 1977 - 1978
abstract: Vol. 80, No. 1 - No. 10, 1977 - 1978

url: http://hdl.handle.net/1813/3789
date: 2006-11-10
creator:
viewed: 302
title: Vol. 81, No. 1 - No. 10, 1978 - 1979
abstract: Vol. 81, No. 1 - No. 10, 1978 - 1979

url: http://hdl.handle.net/1813/3790
date: 2006-11-10
creator:
viewed: 222
title: Vol. 82, No. 1 - No. 10, 1979 - 1980
abstract: Vol. 82, No. 1 - No. 10, 1979 - 1980

url: http://hdl.handle.net/1813/3791
date: 2006-11-10
creator:
viewed: 465
title: Vol. 83, No. 1 - No. 10, 1980 - 1981
abstract: Vol. 83, No. 1 - No. 10, 1980 - 1981

url: http://hdl.handle.net/1813/3792
date: 2006-11-10
creator:
viewed: 203
title: Vol. 84, No. 1 - No. 10, 1981 - 1982
abstract: Vol. 84, No. 1 - No. 10, 1981 - 1982

url: http://hdl.handle.net/1813/3793
date: 2006-11-10
creator:
viewed: 206
title: Vol. 85, No. 1 - No. 10, 1982 - 1983
abstract: Vol. 85, No. 1 - No. 10, 1982 - 1983

url: http://hdl.handle.net/1813/3794
date: 2006-11-10
creator:
viewed: 202

title: Vol. 86, No. 1 - No. 10, 1983 - 1984
abstract: Vol. 86, No. 1 - No. 10, 1983 - 1984

url: http://hdl.handle.net/1813/3795
date: 2006-11-10
creator:
viewed: 282
title: Vol. 87, No. 1 - No. 10, 1984 - 1985
abstract: Vol. 87, No. 1 - No. 10, 1984 - 1985

url: http://hdl.handle.net/1813/3796
date: 2006-11-10
creator:
viewed: 370
title: Vol. 88, No. 1 - No. 10, 1985 - 1986
abstract: Vol. 88, No. 1 - No. 10, 1985 - 1986

url: http://hdl.handle.net/1813/3797
date: 2006-11-10
creator:
viewed: 437
title: Vol. 89, No. 1 - No. 10, 1986 - 1987
abstract: Vol. 89, No. 1 - No. 10, 1986 - 1987

url: http://hdl.handle.net/1813/3798
date: 2006-11-10
creator:
viewed: 223
title: Vol. 90, No. 1 - No. 10, 1987 - 1988
abstract: Vol. 90, No. 1 - No. 10, 1987 - 1988

url: http://hdl.handle.net/1813/3799
date: 2006-11-10
creator:
viewed: 465
title: Vol. 91, No. 1 - No. 10, 1988 - 1989
abstract: Vol. 91, No. 1 - No. 10, 1988 - 1989

url: http://hdl.handle.net/1813/3800
date: 2006-11-10
creator:
viewed: 285
title: Vol. 92, No. 1 - No. 10, 1989 - 1990
abstract: Vol. 92, No. 1 - No. 10, 1989 - 1990

url: http://hdl.handle.net/1813/3801
date: 2006-11-10
creator:

viewed: 366
title: Vol. 93, No. 1 - No. 10, 1990 - 1991
abstract: Vol. 93, No. 1 - No. 10, 1990 - 1991

url: http://hdl.handle.net/1813/3802
date: 2006-11-10
creator:
viewed: 349
title: Vol. 94, No. 1 - No. 10, 1991 - 1992
abstract: Vol. 94, No. 1 - No. 10, 1991 - 1992

url: http://hdl.handle.net/1813/3803
date: 2006-11-10
creator:
viewed: 434
title: Vol. 95, No. 1 - No. 10, 1992 - 1993
abstract: Vol. 95, No. 1 - No. 10, 1992 - 1993

url: http://hdl.handle.net/1813/3804
date: 2006-11-10
creator:
viewed: 392
title: Vol. 96, No. 1 - No. 10, 1993 - 1994
abstract: Vol. 96, No. 1 - No. 10, 1993 - 1994

url: http://hdl.handle.net/1813/3805
date: 2006-11-10
creator:
viewed: 382
title: Vol. 97, No. 1 - No. 10, 1994 - 1995
abstract: Vol. 97, No. 1 - No. 10, 1994 - 1995

url: http://hdl.handle.net/1813/3806
date: 2006-11-10
creator:
viewed: 359
title: Vol. 98, No. 1 - No. 10, 1995 - 1996
abstract: Vol. 98, No. 1 - No. 10, 1995 - 1996

url: http://hdl.handle.net/1813/3807
date: 2006-11-13
creator: Comstock, Ruth B.
viewed: 660
title: Rush Seats for Chairs
abstract: Tells you how to remove the old material and lists all of the equipment you'll need to do the job. Described in detail, step by step. Covers seats, backs (different shapes), and how to finish your new work.

url: http://hdl.handle.net/1813/3808

date: 2006-11-13
creator: Westendorf, Bonnie Jo;Birckmayer, Jennifer
viewed: 368
title: BookstartSelected Activities for Babies, Toddlers, and Young Children
abstract: Designed for librarians, extension educators and others who are involved in sharing books with children. Tells how to assess books, choose developmentally appropriate books, how to use books to begin conversations with children, and how to help a child compose a simple book.

url: http://hdl.handle.net/1813/3809
date: 2006-11-13
creator: Neal, Gregory;Krasny, Marianne E.
viewed: 479
title: Insects All around Us
abstract: A complete kit for camp counselors, teachers, group leaders, and parents. Youths 9 to 12 years old learn what makes an insect different from other animals by "building" an insect of their own. Includes a poster (scanned onto 4 pages), game cards, activity sheets, and a 25-page manual.

url: http://hdl.handle.net/1813/3810
date: 2006-11-13
creator: Tomkins, J. P.;Zabadal, T. J.;Pool, R. M.;Jordan, T. D.
viewed: 301
title: Cultural Practices for Commercial Vineyards
abstract: A timeless handbook for commercial growers and backyard enthusiasts alike based on experimental results of 34 years of intensive and productive viticultural research. Vineyard site selection and preparation, planting stock, when and how to plant, trellis systems, growth and fruiting, methods of training, vine size control management, soil covers, fruit and vine maturation, bird damage, and cultivars are all covered in this concise and handy manual. Dozens of photographs, images and charts included.

url: http://hdl.handle.net/1813/3811
date: 2006-11-13
creator: Wilson, Jerridith;Westendorf, Bonnie-Jo;Mabb, Katherine;Birckmayer, Jennifer
viewed: 294
title: Teens as Parents of Babies and Toddlers
abstract: This educator's manual contains 51 workshop outlines, divided into 4 major sections: 1) The social world of teen parents, 2) Babies, 3) Toddlers and two-year olds, and 4) Health and safety. Worksheets, diagrams, lists, illustrations, discussion questions, fact sheets and resources for educators comprise the tools for use in classes and workshops with teen parents. Identifying support networks, dealing with stress and crises, controlling violence, infant and toddler development, feeding, crying, understanding temperaments, play activities, discipline, difficult babies, bedtime problems, language development, separation issues, toilet training, identifying good child care, food activities, recipes, health and safety issues, nutrition, working with doctors, and when to call a doctor are among the topics covered.

url: http://hdl.handle.net/1813/3811
date: 2006-11-13
creator: Wilson, Jerridith;Westendorf, Bonnie-Jo;Mabb, Katherine;Birckmayer, Jennifer
viewed: 294
title: Teens as Parents of Babies and Toddlers
abstract: This educator's manual contains 51 workshop outlines, divided into 4 major sections: 1) The social

world of teen parents, 2) Babies, 3) Toddlers and two-year olds, and 4) Health and safety. Worksheets, diagrams, lists, illustrations, discussion questions, fact sheets and resources for educators comprise the tools for use in classes and workshops with teen parents. Identifying support networks, dealing with stress and crises, controlling violence, infant and toddler development, feeding, crying, understanding temperaments, play activities, discipline, difficult babies, bedtime problems, language development, separation issues, toilet training, identifying good child care, food activities, recipes, health and safety issues, nutrition, working with doctors, and when to call a doctor are among the topics covered.

url: http://hdl.handle.net/1813/3812
date: 2006-11-13
creator: Rossi, Frank S.
viewed: 318
title: 2001 - 2003 Turfgrass Species and Variety Guidelines for New York State
abstract: This Guideline is designed to expedite the selection of turfgrass species and varieties adapted to the myriad uses, growing conditions and expectations in New York State.

url: http://hdl.handle.net/1813/3814
date: 2006-11-13
creator: Aranda, Julieta
viewed: 34
title: Rockefeller New Media Foundation Proposal
abstract: "Come" is an interactive installation, that intends to examine the notion of eugenics and the Influence of genetic research in society. To do that, I am trying to address the relationship between madness and genius, from the perspective of genetic research, the object of this project is to question the possibility to determine behavioral patterns from an individual's DNA structure. If such a thing is possible, then it should be also possible to to the opposite, and determine an individual's DNA structure based on his behaviour and psychological traits.

url: http://hdl.handle.net/1813/3817
date: 2006-11-14
creator:
viewed: 417
title: Web Archive of explore.cornell.edu - Tue, 07 Nov 2006 17:19:28 GMT
abstract: Archive was generated using HTTRACK, an open source product (c) 2006 Xavier Roche & other contributors. The Archive is dated Tue, 07 Nov 2006 17:19:28 GMTThis is a web archive for the Cornell University Web site: explore.cornell.edu. The site was originally created in 2003 using innovated techniques for viewing collections. The main features to observe are the "Digital Library of Kinematics" and the "Wason Collection of East Asia". PLEASE NOTE: since this is an archive some interactive functions will not work properly and searching within the archive has been disabled.

url: http://hdl.handle.net/1813/3819
date: 2006-11-14
creator: Loker, Suzanne
viewed: 524
title: The Cutting Edge Apparel Business Guide
abstract: Archive was generated using HTTRACK, an open source product (c) 2006 Xavier Roche & other contributors. The Archive is dated Tue, 14 Nov 2006 17:57:07 GMT.This is a web archive of the site: instruct1.cit.cornell.edu/courses/cuttingedge which was developed by Dr. Suzanne Loker and is an Interactive Guide

to the Apparel Business.

url: http://hdl.handle.net/1813/3820
date: 2006-11-15
creator: Aranda, Julieta
viewed: 23
title: “Come” (stages of pleasure) Documentation
abstract: “Come” is an interactive installation, that intends to examine the notion of eugenics and the influence of genetic research in society. To do that, I am trying to address the relationship between madness and genius, from the perspective of genetic research, the object of this project is to question the possibility to determine behavioral patterns from an Individual’s DNA structure. If such a thing is possible, then it should be also possible to to the opposite, and determine an individual’s DNA structure based on his behaviour and psychological traits.

url: http://hdl.handle.net/1813/3823
date: 2006-11-15
creator: Beloff, Zoe
viewed: 22
title: Rockefeller New Media Foundation Proposal
abstract: <P> The installation will be a reenactment of five seances held between 1910 and 1914 that took place in Paris with a young medium referred to as Eva C. Just as Eva wreaked havoc on perception of the sitters, in a playful way I as a modern ‘cinematic medium’ aim to reintroduce a sense of magic and the uncanny into the perception of contemporary technology. To conjure up characters from the past, I plan to create life size stereoscopic black and white video projections that appear in different places around a room. Infra-red sensors and software will enable these video phantoms to react to the presence and position of the viewers. </P>

url: http://hdl.handle.net/1813/3824
date: 2006-11-15
creator: Beloff, Zoe
viewed: 26
title: Artist Documentation: The Influencing Machine of Miss. Natalijaa
abstract: THE INFLUENCING MACHINE is an interactive installation based on a case history by the psychoanalyst and early follower of Freud, Victor Tausk. In 1919, Natalija A., a former student of philosophy came to Tausk complaining that a bizarre electrical apparatus, which she believed was operated secretly by physicians in Berlin, was manipulating her thoughts. The project attempts to materialize Natalijars hallucinations for the viewer while at the same time alluding to the development of real influencing machines, in the form of radio and television in pre WWII Germany. The installation consists of a large stereoscopic diagram inspired by the mechanics of early television. (The enclosed red/green diagram is a small demo version.) The participant, wearing 3D glasses, looks down at it. Now they see an actual threedimensional structure. They touch a designated space in this virtual machine with a pointer, all at once movies simulating Natalija’s hallucinations appear as projected video clips on a small screen suspended within the space of the diagram. The user takes the pointer away and the projection vanishes. From the moment they don the glasses, the participant enters into a virtual world invisible to those around them, very much as one would when actually hallucinating, (See enclosed tape for a sample of the video).

url: http://hdl.handle.net/1813/3826
date: 2006-11-15
creator: Bowditch, Rachel

viewed: 30
title: Rockefeller New Media Foundation Proposal
abstract: I propose to create a "cyber-theatre" where a dialog between the "live" and the "virtual" worlds can occur. The Virtual Web: Interactive Global Spectacle allows everyone to become an artist. The "cyber-theatre" provides the opportunity for the "non"-artist, performer, DJ, VJ or cinematographer to create an original composition in collaboration with other global "artists". Participants will be able to explore the resources and tools they may otherwise not have access to experience. In one moment, there are potentially ten " live" artists in c ollaboration, as well as the unlimited number of" virtual/remote" artists creating this universal, global spectacle simultaneously. Each moment will be a collision and chance meeting of sound, image and movement. This becomes a "living" composition and spectacle because each moment is constantly shifting and transforming. The project will take place in three phases. One can interact seven ways with the "cybertheatre". The "cyber-theatre" creates a venue where a universal visual language can be born. Anyone, anywhere on the globe can experience and interact with the Interactive Global Spectacle* This global collaboration emphasizes the importance of communication and dialog between diverse artistic mediums and investigates the discoveries made when visual art, poetry, performance, technology, music, sound and the Internet collide to create a new visual language that crosses language and geographic barriers.

url: http://hdl.handle.net/1813/3828
date: 2006-11-15
creator: Burgess, Martha
viewed: 23
title: Playlist/Scripts: Nocturne, Opus 23
abstract: <P> Once in awhile, you roll the dice, crack open a fortune cookie, read the tea leaves, or consult a horoscope. Knock on wood, a part of you believes. This eerie underbelly of life, the foggy place where the detective abides, is the setting of Nocturne, Opus no 23, "moonlighting" a 5-minute new media work, which I composed digitally. I shot the full (unedited) DV segment on the road, in the middle of nowhere, while listening to Meringue and keeping Ludvig's Moonlight (sonata) in mind. The footage consists of a night highway, in which the passage of traffic cones, stripes in the road and lights from passing vehicles simultaneously set musical timing while fabricating visually intriguing abstractions. Working in a strictly instinctive manner, I placed events, fabricated stories and wove dreams together, using a detective-like technique – with literary allusions, as well as classic conflicts to juxtapose theoretical and aesthetic aspirations with real world conditions and values. </P>

url: http://hdl.handle.net/1813/3829
date: 2006-11-15
creator: Burgess, Martha
viewed: 22
title: Rockefeller New Media Foundation Proposal
abstract: <P> I am applying to the Rockefeller Foundation to develop an interactive DVD / installation project in which I will explore non verbal thought processes by using the computer to visualize thought."!" is about the moment an idea crosses a person's mind. Aptly expressed in cartoons by a light bulb drawn above someone's head, the moment of awakening or realization ? and the act of making a connection or discovery, is not always a verbal process. The computer makes it possible to exist within ! (PUNCTUM). </P> <P> It is a common occurrence for visual artists to form investigations by means of non-verbal thought processes. It is less usual, yet increasingly appropriate, to use the computer to develop a visual, "virtual" thought. </P> <P> This work will document moments of invention, creation, and conception, from cross-cultural, poly-linguistic and inter-disciplinary samplings. The emphasis will be less about a creation itself, and more about the process, impression, surprise and astonishment of inspiration. Moreover, the project will feature

an attempt to exist within the defining moment itself: to capture a twinkling notion. Like my previous work, it will bring together a wide variety of media. </P>

url: http://hdl.handle.net/1813/3832
date: 2006-11-15
creator: Chan, Paul
viewed: 24
title: Rockefeller New Media Foundation Proposal
abstract: <P> Visions from the economy of waste is a collection of interactive media pieces that explores what happens when a human by-product becomes a point of convergence between humans and machines. </P> <P> Visions starts with a simple premise: In the near future, technology finds a way to store data in human feces. Cheaper to produce and infinitely renewable, shit replaces computer hard drives, CD-ROMs, and floppy disks as the data storage option of choice. Technology transforms shit from human waste to digital necessity, and makes it a focal point in the information economy. </P> <P> Each of the nine media art pieces explores a particular facet of the future use value of shit. Each piece is based on a fictional character working and living in the new economy of waste. Each piece is created with a specific media in mind that appropriately expresses, in form, content and interactivity, the narrative arc of the fictional characters. </P> <P> When finished, this project is staged as an installation that resemble an exhibit at a natural history museum, documenting the social, political, and technological genealogy of the shit to come. </P>

url: http://hdl.handle.net/1813/3833
date: 2006-11-15
creator: Chan, Paul
viewed: 31
title: Alternumerics
abstract: <P> Alternumerics explores the intimate relationship between language and interactivity by transforming the simple computer font into an art form that explores the fissure between what we write and we what mean. By replacing the individual letters and numbers (known as alphanumerics) with textual and graphic fragments that signify what is typed in radically different ways, Alternumerics transforms the act of typing into a digital performance and any computer connected to a standard printer into an interactive art making installation. There are five fonts in the Altemumeric collection. </P>

url: http://hdl.handle.net/1813/3835
date: 2006-11-15
creator: Citron, Michelle
viewed: 31
title: Rockefeller New Media Foundation Proposal
abstract: <P> Mixed Greens is a web-based artwork that uses interactivity to tell a story of the complexities of identity. It will be a mixed genre piece using documentary, fiction,sound, and text. Mixed Greens interweaves two identity stories: of my paternal grandfather and his brothers who, as Irish Jews, lived in a “gray area” between Catholics and Protestants, and later negotiated a different set of identity issues as immigrants in Boston; and that of five lesbians, who live at a contemporary edge of assimilation and difference. Mixed Greens is the third piece in what will eventually be a five-piece/fivecourse meal that I call Queer Feast: a mosaic of contemporary lesbian culture played out through its contradictions of class, ethnicity, desire, and the banality of daily existence. The five pieces/courses consist of: Cocktails & Appetizers (2001), a tale of lust and love, voyeurism and the performance of gender; Mixed Greens, a meditation on identity and assimilation; Bread and Butter, a non-linear “memoir” of the twenty-four year relationship of me and my partner; The Main Dish, a social, historical, and political narrative of lesbian culture; and As American As Apple Pie (1999),

occupying the space between melodrama and sitcom, a tale of lesbian family life. This feast crosses many borders - documentary/fiction/melodrama/comedy, memoir/history/myth, ethnicity/race/class - bringing complexity to the media representation of lesbian life and culture. It also uses interactivity to explore the paradoxes of narrative itself. I will use the Rockefeller New Media Fellowship to create Mixed Greens as well as the Queer Feast web site. </P>

url: http://hdl.handle.net/1813/3837
date: 2006-11-15
creator: Goldkrand, Howard;Coleman, Beth
viewed: 27
title: Rockefeller New Media Foundation Proposal
abstract: <P> Our project, Information Portraits, is an exploration of the idea that portraiture is no longer 'still life' but can be a form of dynamic distributed network. The Information Portrait project uses new media as a way to augment, converge, and experience representations of self with our shifting patterns in taste and habit. The Information Portrait project consists of three modes toward production: the mobile media studio (a real object), the space of communication (person-toperson), and interactivity (person-to-media). The media performance is the phase in the project during which the materials that make up the Information Portraits are created. The final aspect of the project is the translation of the material developed out of the performances into networked Information Portraits, which are then exhibited on a Web site. The Information Portraits are, in effect, a mapping of various individuals and their neighborhoods. The gesture is to recreate a context while creating a new media experience. </P>

url: http://hdl.handle.net/1813/3841
date: 2006-11-15
creator: Dron, Alejandro
viewed: 25
title: Rockefeller New Media Foundation Proposal
abstract: <P> Non-Stop is an interactive kinetic sculpture composed of two flat metal structures on wheels. Both elements are elevated from the floor by approximately 3 inches. The larger part is squared, more stable. The smaller one is more open and appears to be less stable. Each part has a different contour and each shape interacts with the other. The entire piece starts and ends its 'dance1 within a 45 square foot area. Throughout its sequence it expands to engage a 90 square foot area. </P> <P> The movements of Non-Stop are preprogrammed by the author and are altered by the participants. If the participant stops moving so does the sculpture. The work can assume various rhythms and forms. This pace can be modified through the participants' movements. Non-Stop follows a cause and effect as well as a random pattern. After many sequences the participants may come to understand which movements are part of the preprogrammed sequence and which are random ones. As the viewers approach and walk around the sculpture they trigger sensors - connected to electronic circuits, microprocessors, motors , and special mechanisms for the wheels - powered by Photo Voltaic Cells. All these components are hidden in the bottom of the sculpture, (see Draft of the mechanics1).</P> <P> Non-Stop is a large-scale participatory work of art. It attempts to create an antienvironment and through its instability helps the participant to confront conventional assumptions about space and social organization.</P>

url: http://hdl.handle.net/1813/3842
date: 2006-11-16
creator: Mwangi, Michael
viewed: 373
title: Identifying Determinants of Antibiotic Resistance in Staphylococcus Aureus

abstract: Staphylococcus (S.) aureus is a leading cause of hospital and community acquired infections. Strains of methicillin resistant S. aureus (MRSA) have emerged that are resistant to all but a few antibiotics, raising the specter of untreatable disease. Indicative of its medical importance, considerable data has been collected on S. aureus, including the whole genomic sequences of several strains with different resistance phenotypes, a diversity of transcriptome data, and a vast assortment of documented observations concerning the characteristics of mutants. These various types of data were analyzed to identify determinants of resistance to four types of clinically important antibacterial agents rifampin, beta-lactams, vancomycin, and daptomycin that target respectively RNA polymerase, key cell wall synthesis enzymes, a fundamental cell wall precursor, and the cytoplasmic membrane. To elucidate regulatory networks, statistically over-represented patterns representing the binding sites of transcription factors were searched for in genomic sequences. To discover mechanisms of resistance, isogenic isolates displaying progressively increasing levels of resistance were sequenced using the method of whole genome shotgun sequencing. By consulting the large body of literature on S. aureus, it was possible to correlate observed genetic changes with transcriptome and phenotypic changes using various statistical methods. The identified determinants of resistance and their potentially complex pleitropic effects are discussed in some detail.

url: http://hdl.handle.net/1813/3843
date: 2006-11-16
creator: Dron, Alejandro
viewed: 30
title: Fold-Unfold; Croc; Esh; Shin; Ruaj; Tet
abstract: Installation shots of various pieces by Alejandro Dron.

url: http://hdl.handle.net/1813/3845
date: 2006-11-16
creator: Drew, Jesse
viewed: 27
title: Rockefeller New Media Foundation Proposal
abstract: <P> The People's Data Exchange Network (PDEN) is an electronic intervention into the current uncritical acceptance of the Stock Exchange and its Dow Jones, NASDAQ components as a useful indicator of quality of life. As a culture, we are incessantly bombarded by the electronic imagery of the ticker tape and its cryptic pixelated parade of symbols, signs, and numbers. The PSEN will be an electronic jujitsu, using the symbolism of the venerable exchange, with indicators of a perhaps more realistic indication of popular well-being or despair. </P> <P> The PDEN project will consist of a central installation, satellite websites, and a distributed network of moving electronic signage. It will be a project that will involve not only the artist, but a network of public watchdogs, political economists and non-profit organizations. </P>

url: http://hdl.handle.net/1813/3846
date: 2006-11-17
creator: Brynjarsdottir, Hronn
viewed: 1471
title: The Cornell Digital Reading Room Ergonomics Checklist: Development and Evaluation
abstract: Currently there exists no strategy for evaluating digital radiology reading rooms. This is of concern since the number of symptomatic radiologists suffering from work related musculoskeletal problems seems to be on the rise. Work related musculoskeletal complaints have been shown to be related to workstation set up, chair settings, monitor placement and other issues related to the computer workstation. Due to the visually intensive nature of the work of radiologists working with digital medical images, it is also important to look at factors in the ambient environment, such as lighting. A checklist was developed to evaluate environmental

factors in the work environment of radiologists. The checklist contained 39 questions divided into sections on display screens, input devices, workstation and workstation accessories, chair and ambient conditions. The items in the checklist were taken from checklists and educational material published for example by independent researchers, the Occupational Health and Safety Administration (OSHA) and the Canadian Standards Association. Answer options for each item consisted of factual statements, measurements, rating or a simple description. Some answer options included images for postural comparison. The checklist was not accompanied by a scoring sheet, but items that, if answered in a particular way, could be classified as "Ergonomic Issues" were identified in the checklist instructions and layout. To evaluate the checklist, a mailing survey was sent to practicing radiologists, hospital administrators, ergonomists and other health and safety professionals. In the survey, respondents were asked four questions, both open ended and closed-ended, relating to the usability, layout and overall comprehensiveness of the checklist. The experts were also encouraged to provide general comments on the checklist. Twelve non-factual items or items that required rating or subjective scoring were tested with multiple rater agreement (interrater reliability) and by percent agreement between participants and between participants and an ergonomist. The individual items were tested by asking participants to base their answers based on a series of standardized images depicting a model radiologist performing various tasks, such as reading an image from a computer monitor, use a computer mouse and telephone. Twenty one participants, aged 18-58 years old completed the Interrater reliability - Individual Item Test. Six were male and 15 female. Eight participants were experts, or had background in ergonomics, facility planning and management or similar human-environment relations fields. The Interrater reliability of the items tested was .50 ($p< 0.05$) for the experts, and 0.10 for the novices ($p<0.05$). When the results of participant agreement for individual items were analyzed, four items had consistently lower agreement. Three of these items were modified in accordance with expert feedback and one was excluded from the final version of the checklist. The final version of the checklist contained 43 items. Limitations to this study include the design of the individual item test, not utilizing realistic situation with participants actually observing a radiologist at work, but basing their ratings off images that were not consistent in terms of posture and content. Further limitations also include the limited number of expert feedback received. In spite of the idea that invested experts would provide good feedback, it would prove beneficial to know why some experts chose not to participate. Future research directions include a more comprehensive test of the checklist, both including the entire checklist as well as testing the checklist in actual digital reading rooms. An interesting application of this type of environmental checklist is to adapt it for computer based use, utilizing either portable hospital computer workstations or palm pilots would enable synchronization of information in a centralized facility database as well as instant access to results and possibly feedback. It would be very interesting to see an interactive version of this checklist developed and tested in the future. This is particularly relevant with hospital environments becoming increasingly a digital workplace.

url: http://hdl.handle.net/1813/3847
date: 2006-11-17
creator: Ramos, Camilo
viewed: 254
title: Multi-frequency Radar Studies of the High Latitude Mesosphere
abstract: The radar signature of Polar Mesosphere Summer Echoes (PMSE), which are associated with Noctilucent Clouds (NLC) (the highest clouds over the Earth), has been studied using Medium-Frequency (MF), High-Frequency (HF), and Very-High-Frequency (VHF) radars deployed over the central Alaskan region. The echo morphology at the different frequencies is described in case studies wherein PMSE events were observed concurrently using at least two radar systems. The identity of MF and HF radar echoes as PMSE is resolved for the first time by means of simultaneous measurements made with VHF radars, the reference sensors employed traditionally for PMSE studies. Radar reflectivity estimates, derived from in-situ rocket measurements, suggest that HF radars are optimal for the observation of PMSE edge-dominated

type of scatter. MF radars, on the other hand, show comparable reflectivity values for edge and turbulent scattering components, as may be expected for wider antenna beam systems that are exposed to other echo sources. The VHF scattering calculations validate previous research on PMSE, suggesting an increase of the Schmidt number to maintain irregularities of scale sizes in the order of a few meters or less. A large Schmidt number is not needed at MF/HF frequencies since the wavelengths are larger than the Kolmogorov microscale and mesospheric layers can be sustained at low charging levels. Rocket measurements of mesospheric dust content and simultaneous analyzed MF radar backscattered power profiles show a similar type of structure. Dust particles are produced most likely by meteor trails reaching to the upper mesosphere region and may be related to some non-summer Mesospheric-radar Echoes (ME). On the basis of echo duration and signal strength, we suggest that HF radars are most favorable for PMSE monitoring. MF radars show highly organized PMSE layers quite often but are more susceptible to ionospheric absorption and higher altitude returns associated with geomagnetic activity. However, since a number of MF stations are located at polar or near polar latitudes, including Antarctica, it may be possible to use the PMSE signature studied here to investigate its long-term variability as well as its low latitude boundary. The latter could be an indicator of global change.Advisor: Professor Michael C. Kelley Account Number: E70 8353

url: http://hdl.handle.net/1813/3849
date: 2006-11-20
creator: Feingold, Ken
viewed: 30
title: Rockefeller New Media Foundation Proposal
abstract: This project will take as its primary point of departure my most recent works in which artificially 'intelligent", computerdriven lifelike silicone heads are engaged in improvisational conversations. The conversations which they carry on are neither completely scripted, nor are they random; rather, the software I have written gives each a "personality", a vocabulary, associative habits, obsessions, and other peculiarities, which make their conversations quirky, surprising, and often startling. They also intend to raise questions about computer intelligence and intelligence (and consciousness) itself.

url: http://hdl.handle.net/1813/3850
date: 2006-11-20
creator: Feingold, Ken
viewed: 27
title: "Animal, Vegetable, Mineral" DiagramArtist Installation Diagram
abstract: Artist Installation Diagram

url: http://hdl.handle.net/1813/3852
date: 2006-11-20
creator: Ga, Zhang
viewed: 29
title: Rockefeller New Media Foundation Proposal
abstract: This project proposes to use the Internet as the underlying mechanism to create a global portrait of people, rendered in real time and displayed instantly and simultaneously on various museum websites and grand video walls often seen in cosmopolitan urban centers such as Times Square in New York City, Potsdam Plaza in Berlin, and The Bond in Shanghai.

url: http://hdl.handle.net/1813/3854
date: 2006-11-20
creator: Hargest, Tana

viewed: 28
title: Rockefeller New Media Foundation Proposal
abstract: New Negrotopia is an interactive new media project examining the theme of utopian space and the hegemony of race. The concept for the project comes out of current critical dialogues concerning notions of "post-blackness". New Negrotopia will be presented as a post-race, island resort and amusement park, modeled on theme environment-utopias, such as Disney World, in which the participant is invited to become a tourist through their own racial construction and history.

url: http://hdl.handle.net/1813/3856
date: 2006-11-20
creator: Harvey, Auriea
viewed: 23
title: Rockefeller New Media Foundation Proposal
abstract: "8M is an experimental computer game. It uses computer game technology in an effort to bring the artistic experience of non-linear storytelling closer to the public. Its combination of traditional dramatic methods and innovative design concepts is an attempt to contribute to the conceptual maturity of new media.

url: http://hdl.handle.net/1813/3858
date: 2006-11-20
creator: Jeremijenko, Natalie
viewed: 25
title: Rockefeller New Media Foundation Proposal
abstract: The project provides examples and resources to transform commercially available robotic dog toys into an instrument to explore local material conditions; to intervene with the conception of agents, information and expertise that these toys represent; and to create interpretive mediagenic events around the coordinated release of packs of feral robotic dogs on particular sites of public interest.

url: http://hdl.handle.net/1813/3860
date: 2006-11-20
creator: Jevbratt, Lisa
viewed: 23
title: 2003 Rockefeller New Media Foundation Proposal
abstract: The Infome Imager is a software for creating visualizations of the World Wide Web. The software allows the user to create "crawlers" (software robots, which could be thought of as automated Web browsers) that gather data from the Web, and it provides methods for visualizing the collected data. Some of the functionality of the Infome Imager software is similar to a search engine such as Google, but with some significant differences. Those differences shifts the software's functionality from being merely a tool for finding information on the Web to an art project which is generating new understandings of the Web. The Infome Imager crawler collects "behind the scenes** data such as the length of a page, when a page was created, what network the page resides on, the colors used in a page and other design elements of a page etc. It scratches on the surface and glances down into the subconscious of the Web in hopes to reveal its inherent structure, in order to create new understandings of its technical, aesthetic and political functionalities.

url: http://hdl.handle.net/1813/3861
date: 2006-11-20
creator: Jevbratt, Lisa
viewed: 27

title: 2003 Rockefeller New Media Foundation --Supplementary Material
abstract: List of completed works by Lisa Jevbratt.

url: http://hdl.handle.net/1813/3863
date: 2006-11-20
creator: Jones, Warren
viewed: 20
title: Rockefeller New Media Foundation Proposal
abstract: My proposal is to trace the visual coupling between two people by following the movements of one person's eyes as they touch another. I want to record that touch and re-create the drawing that takes shape at the point of contact, where the expression on one person's face emerges in the eyes of another. I will create an installation for the re-viewing of personal vision by mapping the gaze of different emotions.

url: http://hdl.handle.net/1813/3864
date: 2006-11-20
creator: Jones, Warren
viewed: 26
title: Attentional Funnels: Analyzing Normative Pattens of Visual Scanning and Quantifying Salience inJones' Supplementary Material
abstract: The following 3 pages show my work on developing data analytic methods for quantifying salience in naturalistic viewing and measuring deviation from normative patterns of visual scanning. These analyses will enable a deeper understanding of how the actions of visual observers shape what they see.

url: http://hdl.handle.net/1813/3866
date: 2006-11-20
creator: Kurgan, Laura
viewed: 26
title: Rockefeller New Media Foundation Proposal
abstract: Using the highest-resolution satellite imagery available to anyone outside the U.S. or Russian military or intelligence community, I am interested in creating digital images of the monochrome landscapes which represent some of the most vulnerable sites of the 21st century. The landscapes look familiar, even stereotyped - blue (the Atlantic Ocean), green (the Cameroon rain forest), yellow (the Iraqi desert), and white (the Alaskan tundra). But they are produced with instruments and materials (commonplace and yet still extraordinary ones) that in their very construction call into question the material which constitutes a landscape. These landscapes, these images, ask profound questions about their own future -- and ours --even as they adopt the formal strategies of the most abstract, non-referential, 'aesthetic' of the last century's museum pieces.

url: http://hdl.handle.net/1813/3868
date: 2006-11-20
creator: Legrady, George
viewed: 26
title: Rockefeller New Media Foundation Proposal
abstract: "Sensing Data in Metaphorical Space" is the marriage of "Pockets Full of Memories" (PFOM) with "Sensing Speaking Space" (SeSpsp). The concept is to create an artwork that deals with archive construction and intervention through technological means of data collection followed by interaction using the motion sensing vision technologies of the (SeSpsp) project, a real-time feedback environment where visualization and sound are generated by the presence and movement of spectators within a public space. This interaction is implemented to a large number of digitized data objects as exemplified by the" (PFOM) installation where

an archive of over 3300 objects had been created at the Pompidou Center during the summer of 2000. (see projects in portfolio or further information at http://www.georgelegrady.com)

url: http://hdl.handle.net/1813/3869
date: 2006-11-20
creator: Legrady, George
viewed: 23
title: "Pocket Full of Memories" -- Artist Documentation
abstract: Conceived as an installation on the topic of the archive and memory, "Pockets full of Memories" was exhibited on the main floor of the Centre Pompidou from April 10 to September 3, 2001. During this time, 20000 visitors came to view the installation and contributed over 6000 objects in their possession, digitally scanning and describing them. This information was stored in a database and organized by an algorithm that positioned objects of similar value near each other in a two-dimensional map. The map of objects was projected in the gallery space and also accessible online at www.pocketsfullofmemories.com where individuals in the gallery and at home could review the objects and add comments and stories to any of the them.

url: http://hdl.handle.net/1813/3870
date: 2006-11-20
creator: Legrady, George
viewed: 26
title: Sensing Speaking Space: Artist Documentation
abstract: "Sensing Speaklng Space" is an interactive installation that explores the interplay between states of order, noise, randomness, multiple layerings and subtle changes that build up over time and in response to the spectators' movements sensed through a custom camera tracking system.

url: http://hdl.handle.net/1813/3871
date: 2006-11-20
creator: Legrady, George
viewed: 23
title: Projects : 1973-2003
abstract: Legrady project documentation-- 1973-2003

url: http://hdl.handle.net/1813/3873
date: 2006-11-20
creator: Levin, Golan
viewed: 11
title: 2003 Rockefeller New Media Foundation Proposal
abstract: I propose a new corpus of kinetic artworks and related performances to be developed around highly miniaturized robotic machinery. My objective is to produce a series of seemingly-organic optomechanical systems that are small enough, and flat enough, to fit within standard 35-millimeter slide cases. The tiny motors, ligatures and optical components of these machines will be programmed to exhibit an expressive variety of lively audiovisual behaviors under both autonomous (independent) and remote (interactive) control. The machines will be projected large by a conventional slide projector, while the nearly inaudible sounds of their moving joints will be greatly amplified using special microphones and optoelectronic transducers.

url: http://hdl.handle.net/1813/3874
date: 2006-11-20
creator: Spaulding, Eliza;Petukhova, Tatyana

viewed: 555
title: Oversized Chinese Posters/Conservation Project
abstract: The article's focus is on the research findings and conservation treatment of "The Boxer War Rebellion Posters," including an analysis of the posters' paper and notes on the relevant papermaking and printing methods. Storage of these historically significant artifacts is also described in the article.

url: http://hdl.handle.net/1813/3875
date: 2006-11-21
creator: Basu, Kaushik
viewed: 396
title: Fuzzy Revealed Preference Theory
abstract: JEL Classification 022,024

url: http://hdl.handle.net/1813/3876
date: 2006-11-21
creator: Basu, Kaushik
viewed: 748
title: Implicit interest rates, usury and isolation in backward agriculture
abstract: The unusually high interest rates...

url: http://hdl.handle.net/1813/3877
date: 2006-11-21
creator: Basu, Kaushik
viewed: 315
title: Utility Measurement
abstract: Oskar Lange's attempt...

url: http://hdl.handle.net/1813/3878
date: 2006-11-21
creator: Basu, Kaushik
viewed: 349
title: Industrial Organization Theory and Development Economics
abstract: There are two broad ways...

url: http://hdl.handle.net/1813/3879
date: 2006-11-21
creator: Basu, Kaushik
viewed: 536
title: Rural Credit and Interlinkage
abstract: This paper is concerned with the modern...

url: http://hdl.handle.net/1813/3880
date: 2006-11-21
creator: Basu, Kaushik
viewed: 407
title: Stackelberg equilibrium in oligopoly
abstract: This paper shows that in a model of...

url: http://hdl.handle.net/1813/3881
date: 2006-11-21
creator: Basu, Kaushik
viewed: 372
title: Isolated and proximate illiteracy
abstract: Traditionally, a society's...

url: http://hdl.handle.net/1813/3882
date: 2006-11-21
creator: Basu, Kaushik
viewed: 266
title: Punctuality: A cultural trait as equilibrium
abstract: A people's culture...

url: http://hdl.handle.net/1813/3883
date: 2006-11-21
creator: Basu, Kaushik
viewed: 404
title: Globalisation and Babool Gum
abstract: An academic travels through...

url: http://hdl.handle.net/1813/3884
date: 2006-11-21
creator: Basu, Kaushik
viewed: 420
title: Global Labour Standards and Local Freedoms
abstract: For some time...

url: http://hdl.handle.net/1813/3885
date: 2006-11-21
creator: Basu, Kaushik
viewed: 285
title: Methodological Individualism
abstract: Methodological individualism-a belief...

url: http://hdl.handle.net/1813/3886
date: 2006-11-21
creator: Basu, Kaushik
viewed: 586
title: Paradoxes of Game Theory
abstract: New Palgrave Dictionary

url: http://hdl.handle.net/1813/3887
date: 2006-11-21
creator: Basu, Kaushik
viewed: 517
title: The role of norms and law in economics: An essay on political economy
abstract: The three-hour...

url: http://hdl.handle.net/1813/3888
date: 2006-11-21
creator: Basu, Kaushik
viewed: 463
title: Social norms and the law
abstract: After one eats...

url: http://hdl.handle.net/1813/3889
date: 2006-11-21
creator: Basu, Kaushik
viewed: 378
title: The global child labor problem
abstract: The problem of child labor...

url: http://hdl.handle.net/1813/3890
date: 2006-11-21
creator: Basu, Kaushik
viewed: 397
title: Participatory Equity and Economic Development
abstract: The role...

url: http://hdl.handle.net/1813/3891
date: 2006-11-21
creator: Wiedmann, Martin;McDonough, Patrick;McGann, Patrick;Su, Wan-lin;Warnick, Lorin D;Sukhnanand, Sharinne S;Alcaine, Samuel D
viewed: 192
title: Ceftiofur-Resistant Salmonella Strains Isolated from Dairy Farms Represent Multiple Widely Distributed Subtypes That Evolved by Independent Horizontal Gene Transfer
abstract: Salmonella enterica is a gram-negative, rod shaped bacillus, which inhabits the intestines of mammals, reptiles and birds. In the United States, Salmonella is one of the leading causes of food-borne illness, and is typically acquired through the consumption of contaminated food or water. Modern public health practises have lead to a decrease in the number of Salmonella infections, however, there has been rise in the number of infections caused by antimicrobial-resistant Salmonella.
The rise of antimicrobial-resistant Salmonella subtypes, including the appearance of subtypes resistant to ceftriaxone, represents a particular concern. Ceftriaxone is used to treat invasive cases of Salmonella in children, and is closely related to ceftiofur, an antibiotic commonly used to treat diseases of cattle. In order to develop a better understanding of the evolution and transmission of ceftiofur resistance in Salmonella, we characterized ceftiofur resistant and sensitive Salmonella isolates from seven New York dairy farms. A total of 39 isolates from these seven farms were analyzed for evolutionary relatedness (by DNA sequencing of the Salmonella genes fimA, manB, and mdh), antibiotic-resistance profiles, and the presence of blaCMY-2, a beta-lactamase gene associated with resistance to cephalosporins. Our data indicate that (i) resistance to ceftriaxone and ceftiofur were highly correlated with the presence of blaCMY-2; (ii) ceftiofur resistant Salmonella were geographically widespread as shown by their isolation from farms located throughout New York state; (iii) ceftiofur resistant Salmonella isolated from farms represent multiple distinct subtypes and evolutionary lineages as determined by serotyping, DNA sequence typing, and antimicrobial-resistance profiles; and (iv) ceftiofur resistant Salmonella evolved by multiple independent acquisitions of an identical blaCMY-2 allele and by clonal spread of ceftiofur resistant subtypes.

A collection of 179 human and 166 bovine clinical Salmonella isolates obtained from across New York State over the course of one year were characterized using serotyping and multilocus sequence typing (MLST) scheme based on the sequencing of three genes (fimA, manB, and mdh). The 345 isolates were differentiated into 52 serotypes and 75 sequence types (STs). Serotypes and STs were not randomly distributed among human and bovine isolates and selected serotypes and STs were exclusively associated with human and bovine isolates. A number of common STs were geographically widely distributed, including isolates representing the emerging Salmonella serotype 4,5,12:i:-, which was found among human and bovine isolates in a number of counties in New York state. Phylogenetic analyses supported that serotype 4,5,12:i:- is closely related to Salmonella Typhimurium and that Salmonella Newport represents two distinct evolutionary lineages that differ in their frequency in human and bovine isolates. A number of isolates carried two copies of manB (48 isolates) or showed small deletion events in fimA (9 isolates). Our data indicate that (i) serotyping and MLST typing both provide for sensitive subtype discrimination of Salmonella; (ii) bovine and human Salmonella subtypes represent distinct and overlapping populations; (iii) a number of Salmonella clonal groups, including emerging subtype 4,5,12:i:-, are geographically widespread among human and/or bovine populations; (iv) Salmonella Newport represents two distinct phylogenetic lineages that appear to be host specific; and (v) duplication and deletion events in manB and fimA may provide a mechanism for rapid diversification of Salmonella surface molecules.CSREES, USDA, under NYC-478862 and National research Initiative Award 98-35201-6211 (to L. W.). ILSI Future Leader Award (to M.W.). National Institute of Allergy and Infectious Diseases, National Institutes of Health, Department of Health and Human Services, under Contract No. N01-AI-30028.

url: http://hdl.handle.net/1813/3892
date: 2006-11-27
creator: Chalkias, Nikolaos

title: Immobilization of enzymes on inorganic nanoparticles
abstract: Immobilization of avidinylated enzymes (Glucose Oxidase or GOx and Horseradish Peroxidase or HRP) on inorganic particles was accomplished utilizing the affinity of avidin for biotin. We have synthesized biotinylated oxides (layered silicates and iron oxides) via a condensation reaction, and through a simple one step process, we have immobilized enzymes improving their thermal behavior, storage stability and behavior in different pH environments. Furthermore, a profound catalytic activity increase per mass (30-fold) was observed for HRP when immobilized on magnetic iron oxide particles (magnetite particles). This phenomenon proved to be independent of the immobilization steps and was observed even when particles and HRP were simply suspended together in a buffer solution. The activity increase was reversible and could be turned on and off with the addition and subtraction of the magnetic particles (with a Nd magnet). The results were reproduced using different activity assays and different batches of enzyme. Activity assays using particles with increasing magnetic properties showed a proportional increase on the enzymatic activity. The results suggest that the randomly distributed magnetic particles affect the paramagnetic species found in the catalytic cycle of HRP, changing the overall reaction rate. On a different approach modified silicates with immobilized gramicidin were evaluated as delivery vehicles for gramicidin to E. coli bacteria. Also a fluorescent protein immobilized on a biotinylated layered silicate was used to track the uptake of modified silicates to mammalian 9L Glioma cells. Finally, layered silicates and amphiphilic molecules were combined to develop a synthetic biomimetic membrane. The biomimetic membrane has the characteristics of a lipid bilayer membrane with similar thermotropic transitions. To evaluate the membrane's sensing capability, a sensing platform was developed that utilized the biomimetic membrane as the recognition element. The sensing capability was evaluated using saccharin as the analyte, a suspected carcinogen molecule already proven to interact with lipid bilayer membranes in a sensor setup.This work was sponsored in part by the Cornell Nanobiotechnology Center, a Science and Technology Center of the National Science Foundation.

url: http://hdl.handle.net/1813/3893
date: 2006-11-27
creator: Levin, Golan
viewed: 27
title: "The Hidden World of Noise & Voice" Installation Guide
abstract: Brief supplemental documentation of the projcet carried out at ARS Electronica's Furturelab.

url: http://hdl.handle.net/1813/3895
date: 2006-11-27
creator: Lewis, Jason
viewed:
title: Rockefeller New Media Foundation Proposal
abstract: 25 PIECES OF PAPER is a series of twenty-five interactive and dynamic poems investigating one Edward Guthrie. The project title is taken from a rule of thumb in cultural anthropology that holds that every adult person bom and grown to adulthood in the Western world since 1900 has at least twenty-five pieces of paper documenting their existence. These pieces of paper include birth, baptism, marriage and death certificates, tax identification numbers, school diplomas - in short, all manner of official records use to archive our passage from cradle to grave. Edward Guthrie name once appeared on a birth certificate. When he/I was adopted, that name was replaced with mine.

url: http://hdl.handle.net/1813/3897
date: 2006-11-27
creator: Ludin, Diane
viewed: 34
title: Rockefeller New Media Foundation Proposal
abstract: Empire of the Senseless will speak many voices, filling it's databanks with the flexibility of fiction and the micro-mythologies of sequenced Organisms. The Empire's Organism lives and health will be evaluated and animated by the amount of public and economic attention given to it, the more attention and economic investment-the larger and more powerful the Organism. Empire of the Senseless will be an artificial environment of Organisms born in the realm of the senseless - computers that hold them as information objects. Empire of the Senseless will have off-line extensions and engage a shared social space with the assistance of Synthetic Witnesses. Synthetic Witness systems will transmit data collected about them into memories, this will include disputes over proper usage and reflect the discarded local context of an Organism's origin. Synthetic Witnesses will broadcast such data for each Organism. A Synthetic Witness for thai-jasmine rice, A Synthetic Witness for Indian-basmati rice, A Synthetic Witness for Indian-turmeric, a Synthetic Witness for Mexican pozol (a medicinal drink made from corn), etc.

url: http://hdl.handle.net/1813/3899
date: 2006-11-27
creator: Manetas, Miltos
viewed: 27
title: Rockefeller New Media Foundation Proposal
abstract: My proposal, suggests the partial financing of the ElectronicOrphanage, in both its manifestations: the Internet club and the physical space in Los Angeles. I finance the ElectronicOrphanage, entirely by myself, until today but I cannot afford to do that for much longer. The money of the Fellowship will be used to pay the expenses and keep the ElectronicOrphanage happening.

url: http://hdl.handle.net/1813/3900
date: 2006-11-27
creator: Coffman, Charlotte;Buettner, Linda;Greenstein, Doreen
viewed: 278
title: Simple Gifts
abstract: Simple Gifts guides adults to help youth produce items specific for people with Alzheimer's disease. Research shows that people with Alzheimer's may prefer to handle and manipulate things rather than engage in conversation. Sixteen projects ranging from a fleecy muff to a home decorator folder, include detailed instructions and patterns. The program also encourages participants to learn about the disease and become involved in community intergenerational opportunities. If, however, you want to help but are uncomfortable visiting in person, items can be made and delivered to the care facility director ore caregiver. This is a "win-win-win" situation for everyone - the resident, the adult and youth volunteers, and the care facility or caregiver.

url: http://hdl.handle.net/1813/3901
date: 2006-11-27
creator: Devine, Carol M.;Farrell, Tracy J.
viewed: 1230
title: Sisters in HealthA Nutrition Program for Women
abstract: Aims to encourage women, especially those with limited resources, to eat and enjoy more fruits and vegetables. Designed as a flexible series of six 90-minute meetings for groups of approximately ten women, Sisters in Health emphasizes practical ways to prepare quick and tasty fruit and vegetable dishes. Participants enjoy learning as they cook and talk together, sharing their skills and experiences.

url: http://hdl.handle.net/1813/3902
date: 2006-11-29
creator: Engle, Michael
viewed: 299
title: Remythologizing Work: The Role of Archetypal Images in the Humanization of Librarianship
abstract: Adapted from a paper presented at the Fall Conference of the Eastern New York Chapter of the Association of College and Research Libraries, Plattsburgh, NY, 7-8 October 1993.Proposes using the female archetypes in mythology and in fairy tales as a means of understanding the sources of stereotypes in librarianship and dealing with them in a positive way.

url: http://hdl.handle.net/1813/3903
date: 2006-11-29
creator: Herrera Alonso, Rafael
viewed: 217
title: SINGLE COMPONENT NANOCOLLOIDS AND NANOHYBRID MEMBRANES: SYNTHESIS, CHARACTERIZATION AND PROPERTIES
abstract: Surface functionalized nanoparticles have undoubtedly attracted a great deal of interest in the interdisciplinary fields of nanoscience and nanotechnology. In this thesis two different sets of nano-materials based on surface functionalized nanoparticles are presented. First, single component silicon dioxide nanocolloids (SCN) are nanostructures that exhibit liquid-like behavior in the absence of solvents and preserve the nanostructure in the liquid state. SCNs consist of three main components: a core nanoparticle, a charged oligomer tethered to the core nanoparticle and a canopy that acts as the counter charge to the charged oligomer corona. The individual contribution of the constituents of SCN is studied by surface functionalizing silica nanoparticles with 3- (trihydroxysilyl)-1-propanesulfonic acid, followed by a direct

neutralization of the sulfonic protons by a bulky, tertiary poly(ethylene glycol)-tailed amine. By varying the ratio of the constituents, it is established that the suppression of crystalline regions of the canopy is due to confinement effects imposed by the presence of the surface functionalized nanoparticles. It was also found that at temperatures below the melting point of the canopy, the associated molecular motions at short length scales related to the glass transition of the canopy were hindered due to the electrostatic interaction between the canopy and the charged oligomer corona. Finally, the structure of SCNs is characterized by small angle X-ray scattering. Nafion-nanohybrid membranes as proton conducting materials are developed in the second part of this thesis. Nafion membranes are modified with different protonconducting nanoparticles tailored to add proton conductivity and act as barriers to reduce methanol permeability. A preparation method is presented that produces pliant, elastic, and insoluble in water polymer membranes with homogenous distribution of different nanostructures that influence the morphology of the polymer matrix and its transport properties. The resulting materials showed for some cases an 80% reduction of methanol permeability with comparable ionic conductivities than that of Nafion. Characterization of the nanostructure of Nafion nanohybrid membranes is presented in addition to their transport properties proton conductivity and methanol permeability.

url: http://hdl.handle.net/1813/3904
date: 2006-11-30
creator: Murray, Soraya
viewed: 373
title: New Media Anxiety: Art History and the Problem of Modern Technology
abstract: New media forms intensify the effects of modern technology on both artistic production and its canonical scholarly reception. Indeed, advancements in computational technologies may have transcended the perspective of a mechanical era, ushering in new questions of aura and agency as regards new media versus high art. Both compelling and problematic for their largely military-industrial origins, electronics and the digital stretch the limits of art theory, criticism, and practice. This investigation considers the influence of modern technology upon contemporary artistic production, and how scholars assimilate that art into a cogent intellectual history.

Chapter One introduces a historical context for the canonical reception of advanced technological media. Beginning with the problem of photography and its split nature as both a mechanical tool for 'scientific' observation and an expressive medium for an artist's unique vision, I identify the reverberations of this dualism on subsequent artistic movements and advanced technological forms. Surveying the reception of art and technology in the American academy, this chapter chiefly considers the significance of high art/low culture debates to prevailing canonical responses. Chapter Two brings the dimension of commercialism to this discussion, through an examination of its role in defining the artistic avant-garde. By analyzing the so-called collapse between aesthetic and commercial objects under the duress of capitalism, this writing elucidates the western canon's theoretical apprehensions around electronics and the digital. Chapter Two also considers the impact of postmodern identity politics and social reality of globalization, relative to the foregoing discussions. Chapter Three analyzes what ideological discord is stirred in the coming together of the socially-defined minority artist and media art, especially as it relates to global movements in contemporary production. Finally, it offers a model of embodied engagement with electronics and the digital that brings the intellectual vitality of new media studies to the rich legacy of art history.

This exploration offers a language for art that is deeply engaged with media technologies, and a theoretical bridge that links the resources of recent new media scholarship with dominant western art historical discourses. In analyzing the anxious interface of art and technology, this work acknowledges their symbiotic relationship.

url: http://hdl.handle.net/1813/3905
date: 2006-11-30

creator: Dirig, Robert;Klass, Carolyn
viewed: 845
title: Learning About Butterflies
abstract: A project for 4-H Entomology, works well with intermediate or advanced level members. The authors approach butterflies of the Northeast from an inquiring perspective, prompting the reader with questions, some answered and some open-ended. Chapters on butterfly anatomy (male or female, kinds of butterflies) and life history (life cycle, parasitoids, passing the winter, growing butterflies) provide basic information on these beautiful animals; a third chapter summarized their habits, ecology and behavior. A fourth part on butterfly conversation includes a section on gardening to attract butterflies, amplified by appendices listing larval food plants and nectar sources. A section on "Suggested Project for Personal Discovery: indicates many aspects of butterfly study that need further investigation. A chapter on references and resources directs the reader to sources of further information.

url: http://hdl.handle.net/1813/3906
date: 2006-11-30
creator: Torp, Nancy;Cochran, Mon;Cochran, Eva
viewed: 427
title: Choosing High-Quality Child care
abstract: 5 Fact Sheets: What is High-Quality Child Care? Visiting and Interviewing Center Center-Based Child Care Providers, Visiting and Interviewing Family Child Care Providers, Visiting and Interviewing School-Age Child Care Providers, Paying for Child Care.

url: http://hdl.handle.net/1813/3906
date: 2006-11-30
creator: Torp, Nancy;Cochran, Mon;Cochran, Eva
viewed: 427
title: Choosing High-Quality Child care
abstract: 5 Fact Sheets: What is High-Quality Child Care? Visiting and Interviewing Center Center-Based Child Care Providers, Visiting and Interviewing Family Child Care Providers, Visiting and Interviewing School-Age Child Care Providers, Paying for Child Care.

url: http://hdl.handle.net/1813/3909
date: 2006-12-01
creator: Wagenet, R.J.;Porter, K.S.;Trautmann, N.M.
viewed: 997
title: Modern Agriculture: Its Effects on the Environment
abstract: This fact sheet provides an historical perspective on U.S. agriculture, from colonial days through the agricultural revolution and discusses impacts of intensive farming on soil and water resources.

url: http://hdl.handle.net/1813/3910
date: 2006-12-01
creator: Manetas, Miltos
viewed: 31
title: Mirrorsites 98 (paintings of new media electronics in use)
abstract: Book of paintings of new media electronics by Miltos Manetas.

url: http://hdl.handle.net/1813/3911
date: 2006-12-01

creator: Wagenet, R.J.;Porter, K.S.;Trautmann, N.M.
viewed: 305
title: Nitrogen: The Essential Element
abstract: Although nitrogen is an essential element for plant growth, overuse of nitrogen fertilizers leads to groundwater contamination. This fact sheet discusses ways to fertilize crops, not groundwater, and provides information about various forms in which nitrogen appears in plants, soil, and water.

url: http://hdl.handle.net/1813/3912
date: 2006-12-01
creator: Wagenet, R.J.;Trautmann, N.M.;McCasland, M.
viewed: 274
title: Nitrate: Health Effects in Drinking Water
abstract: Nitrate is one of the most common groundwater contaminants in rural areas. This fact sheet summarizes how nitrate affects human health, what types of people are most vulnerable, and what steps can be taken to minimize risk.

url: http://hdl.handle.net/1813/3913
date: 2006-12-04
creator: Manetas, Miltos
viewed: 32
title: "Neen" Poster
abstract: Artist poster.

url: http://hdl.handle.net/1813/3915
date: 2006-12-04
creator: Manovich, Lev
viewed: 30
title: Rockefeller New Media Foundation Proposal
abstract: Soft Cinema OS is an interactive and Open Source version of the already completed project Soft Cinema. We have developed custom software which I use as an authoring tool to generate movies presented in an installation format. I propose to further develop software, document it, and make it available as Open Source; and also to develop an interactive version of software which will allow installation visitors to manipulate the rules controlling movies' generation.

url: http://hdl.handle.net/1813/3917
date: 2006-12-04
creator: McCoy, Jennifer & Kevin
viewed: 27
title: Rockefeller New Media Foundation Proposal
abstract: Soft Rains is a robotic installation that miniaturizes and automates the entire film production process to produce a stylish film-noir tale. We will use custom computer software to control small moving cameras, moving set elements, and recorded dialog so that a short narrative can be projected in front of the viewer as they watch. The small, dollhouse scale set allows the viewer to spatially explore what they experience temporally through the video projection. We are interested in using computer technology to investigate what is called "film magic"- the propensity of even the most sophisticated viewer to understand and, at the same time, be drawn in by illusionistic cinematic effects. Soft Rains will create and reveal these effects simultaneously with their product. Newer media is often used to understand the cultural conventions of older forms. The history of industrialization and mechanization has often succeeded in miniaturizing,

streamlining, and automating complex processes. We are interested in both the mythology of progress this presents and in the inherent pathos of its inhumanity. The title, Soft Rains, is taken from a Ray Bradbury story about an automated house that goes through the motions of serving its family, unaware that a nuclear apocalypse has destroyed its inhabitants. Like Bradbury's house, our robotic set creates its story absent of filmmakers and actors, creating narrative without human presence. Our script is also centered upon a search for human presence in an automated environment. Flashbacks and hallucinogenic imaginings are intercut with this simple narrative gesture. Shadowy interiors and tracking camera movements work together to create a noir-like, expressionistic atmosphere. The robotic set will create classic effects'of the genre like the chase sequence, suspenseful cross-cutting between locations, and point-of-view camera shots.

url: http://hdl.handle.net/1813/3919
date: 2006-12-04
creator: Napier, Marck
viewed: 26
title: Rockefeller New Media Foundation Proposal
abstract: The Assassin's Dilemma is a networked digital artwork in which ten people engage in a surreal stage. A virtual room, displayed on a flat panel computer screen, hangs on the wall in ten homes. The computer screen becomes a stage on which players place the figures and props provided by the work to create a changing "painting". In this shared space, connected by the Internet, each person's actions are visibie to the other participants.

url: http://hdl.handle.net/1813/3921
date: 2006-12-04
creator: Brown, Tommy L.
viewed: 729
title: Recreational Access and Owner Liability
abstract: What are your rights, and how do you exercise them to control recreational use of your property? Explains the extent of your liability to recreationists and how to protect your self against liability suits.

url: http://hdl.handle.net/1813/3922
date: 2006-12-04
creator: Panushka, Christine
viewed: 25
title: Rockefeller New Media Foundation Proposal
abstract: The Orade's Passage will be an interactive, installation piece that seeks to create an imaginary sanctum that invites the audience to interact with animated characters using their voices and bodily movements.

url: http://hdl.handle.net/1813/3924
date: 2006-12-04
creator: Piper, Keith
viewed: 26
title: Rockefeller New Media Foundation Proposal
abstract: 'Bel-shaz-zar' will take the form of a triptych of large scale projections, each one sourced from a networked Apple Macintosh computer. The installation will take as its conceptual start point the Biblical legend of the 'writing on the wall1 which appeared to the Babylonian king Belshazzar heralding the imminent moment of his destruction. Using a series of protocols developed within the programming language 'Lingo1, the computers will use their collective 'awareness1 of 'real time1 and 'elapsed time1 to structure a complex and ever evolving series of visual and textural video montages. These montages will through time construct

a narrative which posits the viewer in an ever shifting space between the memory of historical traumat and the imaging of futurological catastrophe. Drawing on internal data-bases of manipulated imagery, sound and montaged video footage taken from historical archive, contemporary urban space, and the 'post apocalyptic1 urban spaces of popular Science Fiction, the computers will 'cut and paste' sequences and juxtapose them with ongoing textural narrative passages generated by the computers in real time.

url: http://hdl.handle.net/1813/3927
date: 2006-12-04
creator: Quraishi, Imbrahim
viewed: 31
title: Rockefeller New Media Foundation Proposal
abstract: LANDSCAPES is a performance installation loosely based on Heiner Mueller's interpretation of Greek mythology. The piece is embraced within the confines of modem urban-warfare, intermingled in a macabre performative universe while deeply immersed in the paradigms of modem technology.

url: http://hdl.handle.net/1813/3928
date: 2006-12-05
creator: Wagenet, R.J.;Porter, K.S.;Trautmann, N.M.
viewed: 225
title: Groundwater: What it is and How to Protect It
abstract: This fact sheet provides an overview of what groundwater is, how it moves, how it can become contaminated, and what steps can be taken to protect groundwater quality.

url: http://hdl.handle.net/1813/3929
date: 2006-12-05
creator: Wagenet, R.J.;Porter, K.S.;Trautmann, N.M.
viewed: 468
title: Water and the Soil
abstract: Soil/water interactions determine whether a septic system will drain properly, whether a basement will flood, and how successful a farmer?s harvest will be. This fact sheet summarizes how soil composition and management affect movement and storage of water in soil, including discussion of geographic, seasonal, and biological influences.

url: http://hdl.handle.net/1813/3930
date: 2006-12-05
creator: Wagenet, R.J.;Porter, K.S.;Trautmann, N.M.
viewed: 314
title: Pesticides and Groundwater: A Guide for the Pesticide User
abstract: Many factors determine whether a pesticide will leach through soil and become a groundwater contaminant, including the pesticide?s chemical properties, the soil type, the depth to groundwater, and the pesticide management practices. This fact sheet provides ways to determine the level of risk of groundwater contamination and recommended applicator practices to minimize such risk.

url: http://hdl.handle.net/1813/3931
date: 2006-12-05
creator: Fogle, Homer William Jr
viewed: 462
title: Chapter and Alumni Operations Handbook, 2006

abstract: 34 p; appendices (6), bibliography; 28 cm. Electronic reproduction. Original, 5 December 2006. Reference data concerning the Delta Kappa Epsilon Fraternity, the Delta Chi Chapter of Delta Kappa Epsilon at Cornell University, the Delta Chi Association and Cornell University are tabulated. A bibliography of historical studies concerning the Cornell chapter is included.

url: http://hdl.handle.net/1813/3932
date: 2006-12-06
creator: Garner, Clark E.;Comstock, Ruth B.
viewed: 423
title: Cane Seats for Chairs
abstract: Tells you how to remove the old material and lists all of the equipment you'll need to do the job. Described in detail, step by step. Covers seats, backs (different shapes), and how to finish your new work.

url: http://hdl.handle.net/1813/3933
date: 2006-12-06
creator: Stewart, Judy;Lemley, Ann;Wagenet, Linda
viewed: 299
title: Disposal of Household Hazardous Waste
abstract: How to dispose properly of the chemicals we use daily. This fact sheet covers personal care, home care and maintenance, automobile, lawn, and garden care products.

url: http://hdl.handle.net/1813/3934
date: 2006-12-06
creator: Hof, Jessica
viewed: 540
title: VITAMIN AND MINERAL RETENTION AND SENSORY EVALUATION OF EXTRUDED FORTIFIED RICE
abstract: More than 2 billion people suffer from micronutrient malnutrition worldwide. Vitamin A, iron, iodine, and zinc deficiencies are among the leading public health concerns for developing countries, particularly in Sub-Saharan Africa and many parts of Asia. Strict vegetarian diets, lack of diversity in the diet, high rates of infection, and unfavorable socio-economic conditions are risk factors for these deficiency conditions. In India alone, approximately 75% of children under the age of five suffer from iron deficiency, and 57% of children under the age of six suffer from sub-clinical vitamin A deficiency. Micronutrient deficiencies bring adverse consequences to their victims and the economies of the countries in which they live.
Fortification has proven to be an effective long-term nutrition intervention strategy, and rice has emerged as a staple food with much potential as a food fortification vehicle. Rice provides 50% of calories for more than half of the world population. However, a lack of micronutrients in white rice has become a problem for countries with high consumption rates of rice. Low intakes of iron, vitamin A, and iodine are a major concern, while low zinc intake is also a problem. An experimental product, extruded rice kernels manufactured from rice flour fortified with vitamins and minerals, has been proposed as an effective vehicle for delivering a variety of micronutrients to low income populations.
The aims of this study were 1) to select and adapt analytical methods and conduct analyses for vitamin A and vitamin C in the experimental product, as well as measure mineral retention, and 2) to conduct sensory studies to evaluate the acceptability of the experimental product by consumers and compare acceptability by South Asian consumers to that of non-South Asian consumers.
Extruded rice samples fortified with vitamins A and C and iron and zinc were evaluated for their micronutrient retention following extrusion and cooking. The average vitamin A retention in the experimental product after extrusion was 48% for dried kernels and 37% for cooked rice. The average vitamin C retention in the

experimental product after extrusion was 52% for dried kernels and 48% for cooked rice. Iron and zinc retentions both averaged 84% for rice kernels after extrusion (cooked and non-cooked data combined). The vitamin retentions are consistent with studies on vitamin retention in extruded products. However, mineral retention is lower than expected. Larger sample sizes, consistency in analysis methods, and more research are needed to draw further conclusions.

The experimental product was also evaluated for its consumer appeal using consumer acceptance tests. For the acceptability evaluation, two extruded samples of rice (fortified and unfortified extruded rice), and two commercial samples of enriched rice (long-grain white rice) were cooked in a rice cooker and presented to taste panelists. Acceptability of the product was based on a 9-point hedonics test, a just-about-right (JAR) test, and a ranking test. Results suggested greater acceptability by the consumer panel for commercial rice samples. The most sizable difference was seen in the appearance attributes, followed by overall acceptance, and aroma. The addition of vitamins and minerals to extruded rice did not appear to have a large effect on sensory acceptability, with the exception of several appearance attributes. Group differences and group interactions were observed. The South Asian panelist group gave lower scores in several attributes, and the group was generally more critical of (gave lower ratings to) the unfortified extruded rice sample and the parboiled commercial sample than the non-South Asian group. Rice with extruded fortified kernels has potential to be an effective vehicle for fortification in developing countries; however, the challenges in micronutrient retention and acceptability need to be met for optimized utilization.

url: http://hdl.handle.net/1813/3935
date: 2006-12-06
creator: Hu, An-swol
viewed: 328
title: Time Synchronization in Large-scale Networks
abstract: Network time synchronization is an important aspect of sensor network operation. It is often achieved by synchronizing the clock of each node in the network to the clock of some reference node. However, it is well known that synchronization error accumulates over multiple hops. This scalability problem presents a challenge for large-scale, multi-hop sensor networks with a large number of nodes distributed over wide areas.

In this thesis we develop the use of spatial averaging as an approach to mitigating the effects of the scalability problem. We first develop a cooperative synchronization technique using spatial averaging that can achieve "perfect" synchronization in the limit of an infinitely dense network. We show that it is possible to maintain a perfect timing signal with equispaced zero-crossings that occur at integer values of the reference time. Second, we study the benefits of cooperative time synchronization using spatial averaging in networks of finite density. We present a protocol that uses spatial averaging to reduce error accumulation in large-scale networks and show that synchronization performance can be significantly improved by increasing network density.

url: http://hdl.handle.net/1813/3936
date: 2006-12-08
creator: Aboul-Hosn, Kamal
viewed: 472
title: A Proof-Theoretic Approach to Mathematical Knowledge Management
abstract: Mathematics is an area of research that is forever growing. Definitions, theorems, axioms, and proofs are integral part of every area of mathematics. The relationships between these elements bring to light the elegant abstractions that bind even the most intricate aspects of math and science.

As the body of mathematics becomes larger and its relationships become richer, the organization of mathematical knowledge becomes more important and more difficult. This emerging area of research

is referred to as mathematical knowledge management (MKM). The primary issues facing MKM were summarized by Buchberger, one of the organizers of the first Mathematical Knowledge Management Workshop.

-How do we retrieve mathematical knowledge from existing and future sources?
-How do we build future mathematical knowledge bases?
-How do we make the mathematical knowledge bases available to mathematicians?

These questions have become particularly relevant with the growing power of and interest in automated theorem proving, using computer programs to prove mathematical theorems. Automated theorem provers have been used to formalize theorems and proofs from all areas of mathematics, resulting in large libraries of mathematical knowledge. However, these libraries are usually implemented at the system level, meaning they are not defined with the same level of formalism as the proofs themselves, which rely on a strong underlying proof theory with rules for their creation.

In this thesis, we develop a proof-theoretic approach to formalizing the relationships between proofs in a library in the same way the steps of a proof are formalized in automated theorem provers. The library defined in this formal way exhibits five desirable properties: independence, structure, an underlying formalism, adaptability, and presentability. The ultimate goal of mathematical knowledge management is to make the vast libraries of mathematical information available to people at all skill levels. The proof-theoretic approach in this thesis provides a strong formal foundation for realizing that goal.

url: http://hdl.handle.net/1813/3937
date: 2006-12-08
creator: Rudella, Andrea
viewed: 393
title: FUNCTIONAL CHARACTERIZATION OF THE CLP PROTEASE SYSTEM IN ARABIDOPSIS CHLOROPLASTS THROUGH REVERSE GENETICS AND PROTEOMICS
abstract: Proteases play an important role in regulating protein maturation, activity and life-time. The Clp protease system in Arabidopsis thaliana plastids accumulates at relatively high levels and consists of a proteolytic core and associated chaperones. The core is an assembly of five different catalytic ClpP subunits, four non-catalytic ClpR subunits, and two ClpS proteins with unknown function. ClpR,S are unique to photosynthetic organisms. Three ATP-dependent chaperones, ClpC1,C2,D, are expected to deliver substrates to the ClpPRS core. Control of Clp activity is not understood and Clp substrates are unknown.

Arabidopsis T-DNA insertion Clp mutants were isolated and genotyped. Null mutants for ClpP4,P5 are embryo-lethal under both auto- and heterotrophic conditions. Mutants of ClpP3,R4 did not form seedlings under autotrophic conditions but developed albino seedlings under heterotrophic conditions, displaying limited greening under low light. Null mutants for the chaperones ClpC1 and ClpD have pale-green and wild-type phenotypes, respectively. ClpP,R core subunits are likely essential, while there are redundancies in the ClpC,D subfamily. Two mutants with partial loss of gene expression for ClpR1 and ClpR2 (clpr2-1) exhibited pale-green phenotypes, with clpr2-1 having a stronger phenotype.

ClpR2 protein accumulation in clpr2-1 chloroplasts was 5-fold reduced, while the ClpPRS core was 3-fold downregulated, suggesting an induction of core composition heterogeneity. Stromal chaperones were upregulated several fold and ClpC was recruited to the thylakoid membrane. Thylakoid protein homeostasis was unbalanced as deduced from increased accumulation of thylakoid proteases, plastoglobules, protein precursors and degradation products. Clpr2-1 chloroplasts were smaller, with 30% less thylakoids than wild-type. Clearly, ClpR2 is not a redundant member of the Clp family and reduced CLPR2 gene expression has adverse effects on plastid and plant development.

A comparative proteome analysis using differential stable isotope labeling of clpr2-1 and wild-type stroma identified 298 proteins, and 113 were quantified. The Calvin cycle was down-regulated, explaining the slower development of clpr2-1. The most striking response was the high accumulation of the chloroplast protein

translation machinery and chaperones. This suggests that the ClpPRS core complex may be involved in regulation of plastid gene expression, providing a first understanding of the functional role of the Clp family in plastids.This work was supported by the grants from the National Sciece Foundation (NSF, #MCB 0343444) and the US Department of Energy (DOE, DE-FG02-04ER15560) to Klaas Jan van Wijk

url: http://hdl.handle.net/1813/3938
date: 2006-12-08
creator: Producer: Fly on the Wall Productions;Handler, Maddy;Handler, Philip
viewed: 1751
title: Big Red/Meier white: A Cornell story of architect Richard Meier '56
abstract: This video features Cornell-educated architect Richard A. Meier, class of 1956, founder of the architectural firm Richard Meier & Partners Architects. Created in honor of Meier's 50th Reunion in June 2006, the video is illustrated with vintage photos of Meier's days on the hill, his friends in college, his family, and his earliest projects including his first houses. Meier is heard describing why he selected Cornell, telling about his years as an architecture student as well as his friendships with ZBT fraternity brother Marc Meshorer and Profs Arch and Esther Dotson for whom he did an Ithaca house very early in his career. There is spectacular video footage of his most famous work, the billion dollar Getty Center, combined with voice-over from a 1992 Cornell University lecture by Meier in which he describes his architecture. Meier and architect Peter Eisenman '54 describe the origin of The New York Five (The Whites.) Meier's continued connection to Cornell is described with mention of the design of the new Cornell Life Science Technology Building and with brief commentary and appearances from his Cornell architecture classmates, fraternity brothers, and Cornell friends.

url: http://hdl.handle.net/1813/3939
date: 2006-12-11
creator: Cole, Chris;Stewart, Linda;Kara, Bill
viewed: 390
title: Moving to e-Only, Singly and as a Group
abstract: This proposal is for a panel of three speakers to discuss various aspects and implications for converting to e-only journal access. The panel speakers, Bill Kara (Head, E-Resources & Serials Management at Cornell University), Linda Stewart (Life Sciences Bibliographer, Albert R. Mann Library, Cornell University) and Chris Cole (Associate Director of Technical Services, National Agricultural Library) discussed ?e-only? from different perspectives. First, Bill Kara discussed the technical services issues, including staffing, ordering, licensing and record keeping for the conversion of a large number journals in the Cornell University Library to e-only subscriptions. Cornell is currently in the second year of a project with a goal to convert 4,000 current journals to e-only access. Linda Stewart then spoke on Mann Library Collection Development?s approach to selecting journals for e-only access, including the criteria for retaining a journal in print and the impact and feedback the Library has received on its project. Chris Cole then looked at the larger issue of increasing e-only for the library community. His work at NAL to identify active print serial titles in agricultural collections, including identifying duplication and the holders of the last or archival copy. With many libraries actively reviewing their collections and the costs both for materials funding and library staffing and space to maintain print along with the electronic versions, this panel explored some of the major issues and concerns as this trend increasingly unfolds at many libraries.

url: http://hdl.handle.net/1813/3940
date: 2006-12-11
creator: Caruso, Brian
viewed: 390

title: The GlobalAccess2.info Portal: A Flexible Technology For Managing Journal Access Information
abstract: Web-based portals bring together information from many sources and add value to that information by providing a single browsing interface and more consistent display of individual content items. However, designing a portal has typically required developers to pick one or two primary organizing facets at the expense of other valid ones or else face maintenance-intensive cross-referencing between different views of the same information.
A new general-purpose portal technology developed at Mann Library offers greater flexibility for coordinating multiple modes of access to information. Developed originally for the VIVO virtual life science library at Cornell (http://vivo.library.cornell.edu), the Vitro portal technology leverages a flexible ontology structure to link related information and deliver multiple facets or views to a top-level interface. Individual records display in a richly cross-linked structure designed to optimize context for the user while highlighting the original resources gathered together in the portal.
The new http://globalaccess2.info portal provides a common Web presence for a consortium of international programs than provide free or reduced cost access to scholarly journals for developing countries, including AGORA, eIFL, HINARI, INASP, and TEEAL. Resources are equally discoverable by country, by program, by donor agency, by publisher, and by topic area, meeting the needs of diverse users including librarians in the developing world who are potential program participants, staff at the programs themselves, donor agencies, publishers reviewing availability of their own and other services, and librarians in the developing world who have partners in developing countries. A free-text search facility brings up individual entries along with any relevant donor, publisher, program, or country information, allowing users to navigate via multiple independent paths depending on their needs. Detailed content listings at the individual journal level are maintained on the program?s own Web sites and linked at the page level from the common portal.
Over the last 7 months the system that supports both globalaccess2.info and VIVO has been rewritten to promote maintainability and with the hope of releasing the source for use by other institutions. The system is written in Java and runs on the Apache Tomcat servlet container. MySQL is used for back end storage and Lucene is used for full text indexing.

url: http://hdl.handle.net/1813/3944
date: 2006-12-11
creator: Simon, John F. Jr
viewed: 27
title: Rockefeller New Media Foundation Proposal
abstract: The project will be to develop a new style in my software artwork that will combine video elements with programmed computer graphics. My interest is to explore the developing interconnections and dependencies between a human's daily cycle and the programmed loops of computer systems.

url: http://hdl.handle.net/1813/3945
date: 2006-12-11
creator: Simon, John F. Jr
viewed: 15
title: Art Report 2001--Supplementary Material
abstract: Artist documentation from 2001.

url: http://hdl.handle.net/1813/3946
date: 2006-12-11
creator: Simon, John F. Jr
viewed: 21
title: Completed Works Summaries --Supplementary Material

abstract: A summary of works completed by artist.

url: http://hdl.handle.net/1813/3947
date: 2006-12-11
creator: Simon, John F. Jr
viewed: 25
title: Installation Shots-- Supplementary Material
abstract: Two slides documenting artist installation.

url: http://hdl.handle.net/1813/3948
date: 2006-12-11
creator: Zazueta, Fedro
viewed: 290
title: Agriculture, Environmental Science, and Information Technology
abstract: Professor Zazueta is the Director of the Office of Academic Technology (OAT) at University of Florida (UFL), which provides information technology services in support of the academic mission of the University, including teaching, research, extension and outreach. At OAT, Dr. Zazueta has overseen the successful deployment of one of the nation?s largest enterprise level course management systems, a state-wide video transport infrastructure, grid-based high performance computing resources, and institution of a faculty training program focused on technology. Zazueta has taught and developed UFL courses at the undergraduate and graduate level, including web-based courses and distance education courses using multimedia, and helped launch the Agricultural Information Technology Minor. His reach extends to the international level, where he provides agricultural and biological engineering consultation and participates in university exchanges. In the 1990s, Zazueta led the creation of the IFAS Software Support Office, later folded into the IFAS Office of Information Technology, which was instrumental in accelerating the adoption of information technology by agricultural audiences in Florida.
Professor Zazueta is currently Chair of the Education Division of the American Society of Agricultural and Biological Engineers (ASABE) and Chair of the Information and Communication Technologies Technical Section of the International Commission of Agricultural Engineers (CIGR).
Zazueta received his Ph.D. in Agricultural Engineering from Colorado State University, and both his M.S. (Water Use and Conservation) and B.S. (Civil Engineering) at the Instituto Tecnol?gico y de Estudios Superiores de Monterrey, M?xico.

url: http://hdl.handle.net/1813/3949
date: 2006-12-11
creator: MacDonald, Karen;Duran, Nancy
viewed: 342
title: Information Sources for Food Studies Research: Food, Culture and Society
abstract: Food studies is highly interdisciplinary across both science and social science fields. It can include anything pertaining to food and eating from how food is grown to when and how it is eaten to who eats it and with whom and the nutritional quality. Relevant publications are scattered throughout the literature and across academic fields for both current and historical work. In order to truly cover the literature it is necessary to search multiple indexes to the literature. Research in food habits published in the agricultural literature is often as useful as studies of food habits in anthropology or sociology studies. This paper addresses some of the major indexes across disciplines that have citations related to food studies.

url: http://hdl.handle.net/1813/3950
date: 2006-12-11

creator: Pancheshnikov, Yelena
viewed: 306
title: Citation patterns in the biological sciences: a comparison of faculty publications and student theses at a research university
abstract: Abstract of presentation given at USAIN 2006.

url: http://hdl.handle.net/1813/3951
date: 2006-12-11
creator: Merrill, Margaret
viewed: 927
title: Impact of Globalization on Rural Communities: Social & Economc Impacts
abstract: Globalization is a hackneyed word and it means different things to different people. For some people globalization is primarily a synonym for global business. Globalization can be viewed as the integration of inputs and outputs into global markets, the sharing of information and knowledge, and the promulgation of rules governing such integration. There are many factors involved in the process of globalization. Transnational corporations are a key factor in the globalization process. The World Trade Organization, International Monetary Fund, and the World Bank do play a role in the process of globalization. The positive and negative affects of globalization and the groups that resist and support globalization are many. Some of the intense effects of globalization can be seen on rural communities, both in developed and developing countries. Corporate globalization has impacted the rural communities in several ways.
These impacts can be categorized into economic, social, political, environmental, and cultural. Of all the rural communities, farmers and rural women are said to be most affected. This panel discussion presents an overview of impacts of globalization on rural communities with special reference to farmers and rural women.

url: http://hdl.handle.net/1813/3952
date: 2006-12-11
creator: Poley, Janet;Gardner, Melanie;Hutchinson, Barbara
viewed: 771
title: NDLA Panel Session III: USAIN White Paper & AgNIC Strategic Planning Report
abstract: Session III: Getting Started. The session included a brief presentation on the recommendations developed in the USAIN White Paper, and the AgNIC Executive Board strategic planning session results; followed by a brainstorming session to help get the National Digital Library for Agriculture initiative started. The brainstorming sessions considered topics such as: what is the role of AgNIC; how will the initiative be funded; how can we involve our international partners; who else should be involved; discussion on the objectives and specific strategies.

url: http://hdl.handle.net/1813/3953
date: 2006-12-11
creator: Mangstl, Anton
viewed: 388
title: Importance of Agricultural Information in the Global Context
abstract: Dr. Mangstl is a specialist in Information and Knowledge Management as well as Agronomy. Prior to joining FAO in 1996, he was Director of the Centre for Agricultural Documentation and Information (ZADI) Bonn, Germany. Earlier, he was Deputy to the Head of the Working Group on Crop Production and Informatics, Center for Life and Food Sciences in Agriculture, Freising-Weihenstephan (Germany).
Dr. Mangstl serves as Director, Library and Documentation Systems Division, General Affairs and Information Department, for the Food and Agriculture Organization of the United Nations (FAO). He is the FAO Focal

Point for participation in the World Summit on the Information Society (WSIS) and related follow-up (C.7 ICT Applications, E-Agriculture).

Dr. Mangstl is in charge of the World Agricultural Information Centre (WAICENT), established by FAO in recognition of the intrinsic value of information in fighting global hunger and achieving food security. Through the WAICENT framework, FAO is able to effectively disseminate the Organization?s vast wealth of information on food and agriculture. The work of Dr. Mangstl?s Division on WAICENT includes capacity building and partnership initiatives which promote best practices in information management, sharing information management systems and tools, e-learning modules for capacity building through the Information Management Resource Kit (IMARK) initiative and proactively participating in FAO?s interdepartmental WAICENT Committee.

Dr. Mangstl has been involved in the Organization?s latest endeavour to effectively transform FAO into a Knowledge Organization. This transformation allows the Organization to learn from and give a voice to the agricultural community regarding a wide range of issues affecting Food Security and Agricultural Production today.

In 2001, Dr. Mangstl was awarded Honorary Professor by the National Agriculture University of Ukraine, Prof. h.c. (UA).

Further information: http://www.fao.org/gi/gil/about_en.asp - GIL Divisional Website, http://www.fao.org/rdd/ - Bridging the Rural Digital Divide, http://www.imarkgroup.org/ - IMARK, http://www.fao.org/KnowledgeForum/index_en.htm - Knowledge Forum

url: http://hdl.handle.net/1813/3955
date: 2006-12-12
creator: Calderone, Nicholas W.;Morse, Roger A.
viewed: 283
title: Honey Bee Pest Management Fact Sheet Set
abstract: This set of 4 fact sheets includes black & white, and full color photographs to aid in identification. Disease distribution, sources of infection, identification and diagnosis, life cycles, and methods of control are covered. One fact sheet describes sample collection protocols and related diagnostic services. (1991-1998)

1) Identification and Control of American Foulbrood in Honey Bees
2) Biology and Control of Tracheal Mites of Honey Bees
3) Management of Varroa Jacobsoni in the Northeast
4) Sampling for Laboratory Diagnosis of Honey Bee Mites and Diseases

url: http://hdl.handle.net/1813/3956
date: 2006-12-12
creator: Comstock, Ruth B.
viewed: 298
title: Splint Seats for Chairs
abstract: Tells you how to remove the old material and lists all of the equipment you'll need to do the job. Described in detail, step by step. Covers seats, backs (different shapes), and how to finish your new work.

url: http://hdl.handle.net/1813/3957
date: 2006-12-12
creator: Sailor, Jessica
viewed: 322
title: OPTIMIZATION OF LIPOSOME-ENHANCED HIGH THROUGHPUT BIOASSAYS
abstract: High throughput analysis is important for the rapid screening or quantitative analysis of large number of samples Microtiter plates provide an excellent platform for high throughput assays and have been used

for decades in immunological and nucleic acid assays. Work focused here on the adaptation of nucleic acid bioassays with liposome amplification in a microtiter plate format with two main objectives: (1) optimization of protein-liposome coupling chemistry and (2) optimization of DNA immobilization in microtiter plates. The protein streptavidin was coupled to COOH-labeled liposomes using 1-ethyl-3-(3-dimethylaminopropyl) carbodiimide*HCl (EDC) chemistry. This procedure was optimized with respect to liposome encapsulation efficiency (total lipid concentration over encapsulated dye concentration) and binding efficiency. For the optimization of DNA probe immobilization in microtiter plates, five different plate types were investigated; medium binding, high binding, NeutrAvidin coated, and two different types of amine binding. Assay protocols for each plate were developed in addition to the ability to immobilize DNA probes and the effect on both the target sequence hybridization and liposome binding. In all cases, data was recorded using a fluorescence plate reader or dynamic light scattering.

Optimal conditions for the coupling of streptavidin to COOH-labeled liposomes were determined as 66% liposomes in MES buffer at pH 7 and a streptavidin concentration of 0.05 mol% of the liposome phospholipid concentration. A coupling time of 15 minutes was sufficient. In the case of the DNA probe immobilization in microtiter plates, a probe concentration of 1 to 50 nM enabled target sequence hybridization in all plates, with a maximum signal to noise ratio (S:N) at about 50 nM. In the case of DNA-labeled liposomes only the NeutrAvidin plates generated a signal, with a maximum S:N of about 400:1. In contrast, for streptavidin-labeled liposomes, the NeutrAvidin plates generated no signal, but the high-binding adsorption plates generated a maximum S:N of about 80:1 (in all cases at 50 nM of target sequence). The covalent binding plates generated a S:N of only 5:1 to 10:1. Following from these results, it is recommended that the NeutrAvidin plate be used with DNA-labeled liposomes to perform a specific test and that the high binding adsorption plate be used with streptavidin-labeled liposomes to achieve a universal assay format.

url: http://hdl.handle.net/1813/3958
date: 2006-12-12
creator: Farnsworth, Andrew
viewed: 285
title: Ecological and Evolutionary Characteristics of Flight-Calls of the Wood-Warblers (Parulidae)
abstract: Many songbirds produce simple, species-specific flight-calls. Some fundamental features of flight-calls remain poorly known, including their functions and variability. I reviewed available information on flight-calls and studied: 1) relationships between calling and weather; 2) seasonal flight-call use in warblers; 3) inter- and intraspecific variation in warbler flight-calls; 4) methods for analyzing flight-calls; and 5) relationships between warbler flight-calls and ecological and evolutionary characteristics.

I examined relationships among call counts, weather, and bird density. I studied flight-calling in warblers during migratory and non-migratory periods. I recorded flight-calls from captive warblers to evaluate inter- and intraspecific differences and quantify variance among species, individuals, and ages and between sexes. I compared three methods to assign calls to caller using discriminant analysis: 1) spectrographic cross-correlation (SPCC); 2) energy-distribution (ED) measurements; and 3) classification tree analysis (CTA) of ED measurements. I used a multi-locus phylogeny to quantify the extent of phylogenetic signal in flight-call spectrographic characteristics. I employed a quantile regression and null model approach to compare interspecific phylogenetic divergence with corresponding spectrographic differences.

I found that: 1) call counts correlated with bird density and weather, but not with weather alone after controlling for density; 2) warblers use flight-calls most extensively during migration, but not exclusively; 3) variation in flight-call properties is greatest among species, with subtle variation among individuals and ages and between sexes; 4) SPCC data yielded the lowest misclassification rates and may best represent individual differences; and 5) in phylogenetically controlled and uncontrolled analyses many energy distribution and syllable structure measurements associated with phylogeny, vegetation density and vegetation height but not with migration strategy, wintering distribution, or morphological characteristics.

Flight-calls are probably more functional as species identifiers than as individual identifiers, and such functions may extend beyond migratory periods. Additionally, phylogenetic and ecological effects occur in flight-calls, and evolutionary histories of structural and signal properties may differ. Species recognition may be important in the evolution of syllable structure, whereas adaptation to environment may be important in the evolution of spectral and temporal properties. Incorporating individual-specific information and meteorological data into acoustic monitoring protocols could increase dramatically the power of these methods.

url: http://hdl.handle.net/1813/3959
date: 2006-12-12
creator: Wilkins, Khristi
viewed: 176
title: Movement, Survival Rate Estimation, and Population Modelling of Eastern Tundra Swans, Cygnus columbianus columbianus
abstract: The Eastern Population (EP) of tundra swans (Cygnus columbianus columbianus) winters in the eastern United States and breeds from the North Slope of Alaska to the eastern side of Hudson Bay in Canada. EP swans were marked on the wintering grounds in Maryland, North Carolina, Pennsylvania, and Virginia in order to study movements, habitat use, survival, and population structure. Swans were marked with individually coded neck collars (n=1,471), USFWS leg-bands (n=3,504), and satellite-tracked radio transmitters (n=43) from February 1997?March 2002. Location information was collected from February 1997?March 2003 via ground observers, recapture, recovery of dead birds, or satellite location. Satellite-tracked EP tundra swans spent approximately 7 months each year on breeding or wintering grounds, and about 5 months of each year in migration. Significant time spent in migration highlights the importance of migratory habitats to this population. No sub-populations were identifiable based on the exclusive use of migratory pathways, Bird Conservation Regions, wintering grounds, or breeding grounds. Movement rates between states on the wintering grounds (Maryland, North Carolina, Pennsylvania, and Virginia) ranged from 0.00 to 0.46, but were rarely different from 0.25 ($P<0.05$), which suggested that exchange between states caused significant mixing of the population within and between years. Indirect survival rates of marked adult swans ranged 66?84% depending on analytical method or marker type, but were statistically similar (95% confidence intervals overlapped). Use of neck collars in operational marking program is not recommended for future studies due to the cost and difficulty of collecting representative data. To investigate the necessity of annual survival rate estimates, I used data from operational monitoring programs (Mid-Winter Index [MWI], winter ground Production Survey, number of hunting permits, retrieved swan harvest) to develop a model of EP tundra swan dynamics. The model provided reasonable and precise predictions of population size, harvest, and survival. The model can help to predict and understand the effects of harvest on population size. Analyses did not detect density-dependence in recruitment and suggested that a population size goal of at least 80,000 swans can be sustained at current or slightly decreased levels of harvest.U.S. Geological Survey, Cornell University, U.S. Fish and Wildlife Service, North Carolina Wildlife Resources Commission, Pennsylvania Game Commission, Maryland Department of Natural Resources Wildlife Heritage Service, Virginia Department of Game and Inland Fisheries

url: http://hdl.handle.net/1813/3960
date: 2006-12-12
creator: Pandian, Jagadheep
viewed: 229
title: 6.7 GHz Methanol Masers: Properties, Associations and Tracers of Galactic Structure
abstract: The 6.7 GHz transition of methanol is the strongest of methanol masers, and is the second strongest maser transition ever observed in the Milky Way. There is strong theoretical and observational evidence

that the masers trace an early phase of massive star formation. The lack of association of these masers with other astronomical objects such as low-mass young stellar objects (YSOs) and late type stars, and their high brightness temperatures makes them excellent tools to detect and study massive star formation across our Galaxy. The preponderance of massive stars along the spiral arms of galaxies also imply the potential utility of these methanol masers to study the spiral structure of our Galaxy.

In this dissertation, we present a study of 6.7 GHz methanol masers and their properties based on the Arecibo Methanol Maser Galactic Plane Survey (AMGPS), a sensitive blind survey carried out with the Arecibo radio telescope. To carry out this study, we built a receiver for Arecibo that could process signals between 6 and 8 GHz. The high sensitivity of the cooled receiver and the large collecting area of Arecibo made AMGPS the most sensitive blind survey to date for 6.7 GHz methanol masers, and resulted in the detection of 86 methanol masers, 48 of which are new detections.

The distribution of methanol masers as a function of Galactic latitude and the statistics of their multi-wavelength counterparts show our data to be consistent with the hypothesis of 6.7 GHz methanol masers being associated with massive YSOs. Using the detection statistics of AMGPS, we estimate the minimum number of methanol masers in the Galaxy to be 1125. The l-v diagram of the AMGPS sample shows the tangent point of the Carina-Sagittarius spiral arm to be around 49.6 degrees, and suggests occurrence of massive star formation along the extension of the Crux-Scutum arm. A Gaussian component analysis of methanol masers shows the mean line-width to be 0.38 km/s which is more a factor of two larger than what is reported in the literature. We also find no evidence that faint methanol masers have different properties than their bright counterparts.National Astronomy and Ionosphere Center

url: http://hdl.handle.net/1813/3962
date: 2006-12-13
creator: Sobell, Nina
viewed: 26
title: Rockefeller New Media Foundation Proposal
abstract: The Brain Streaming Project presents the means for people to connect and collaborate with one another by using only their brain waves. This non-verbal communication will be represented as a continuously evolving aural and visual expression, accessible to anyone logging on. The Brain Streaming Project will premiere with a one-hour international performance at physical and virtual locations including pocket computers and cellphones at www.brainstrearn.org. The transformed photo booth installations for the premiere performance will remain at each location for participation for the duration of the Fellowship term. For the duration of the performance, participants will be connected to electroencephalographs that amplify and identify their brain waves. The individual logon and brainwave data will be sent to the project server over the Internet, and entered into the server's database. The server then streams this information to the project's Web page, along with sounds and images that change dynamically as new input is received and viewed on touch screen monitors inside the booths, and on the Web. Brain Streaming is a metaphor for universal human consciousness. It reflects our similarities through the transformation of our converging thought patterns into the creation of a collaborative virtual collage.

url: http://hdl.handle.net/1813/3964
date: 2006-12-13
creator: Stern, Eddo
viewed: 28
title: Rockefeller New Media Foundation Proposal
abstract: GodsEye is an installation consisting of eight hybridized computers/sculptures that make up a techno-/neo-medieval landscape built around the functional hardware elements of the computer desktop environment: keyboard, mouse, monitor, tower, etc. GodsEye conflates post-industrial computer technology with magical-

medieval themes generated by a nostalgic cultural fantasy of a Utopian preindustrial moment.

url: http://hdl.handle.net/1813/3965
date: 2006-12-13
creator: Stern, Eddo
viewed: 26
title: Excerpt from: "A Touch of Medieval: Neomedievalism, Magic and ComputerRockefeller Supplementary Material
abstract: Essay Excerpt

url: http://hdl.handle.net/1813/3966
date: 2006-12-13
creator: Stern, Eddo
viewed: 28
title: Work SamplesRockefeller Supplementary Material
abstract: Work Samples (includes "GodsEye elements" and doc of installations "Sheik Attack," "Tekken Torture Tournament," and "Cockfight Arena")

url: http://hdl.handle.net/1813/3968
date: 2006-12-13
creator: Stevenson, Vance
viewed: 23
title: Rockefeller New Media Foundation Proposal
abstract: The proposed installation will consist of a set pseudo- living objects, each capable of interacting with both each other and the viewer. These objects will be identical and consist of both sensors and speakers enclosed in a ball-like form with a wire umbilical cord to a central controlling computer. The objects will communicate with an ever evolving language that is diverted from the sounds the surrounding objects make and the sounds of the gallery itself. The objects will be able to be "taught" by people directly interacting with them. This will create a "language" that will build from day to day, with a continually changing set of phonemes and sounds diverted from the real world. Each object will develop a personality that will determine how it deals with both input and interaction. Factors that will influence the development of the personality include time of day / routine, type and frequency of interactions, and the personality of the surrounding objects.

url: http://hdl.handle.net/1813/3970
date: 2006-12-13
creator: Pape, Dave;Anstey, Josephine
viewed: 26
title: 2004 Rockefeller New Media Foundation Proposal
abstract: This project is a virtual reality drama, The Trial The Trail, to be presented in an immersive virtual reality system. Imagine Tarkovsky's Stalker, crossed with Alice Through the Looking Glass, crossed with Monty Python and the Holy Grail. Now imagine embarking on a guided journey through this warped yet familiar landscape. As you proceed your actions and interactions are logged, interpreted psychologically, and used to determine the outcome of your quest. The underlying question for this project is: Can virtual reality be as powerful a medium for fiction as novels, plays, film? VR immerses the user in a 3D audio/visual environment which she navigates and interacts with in real time. In fiction, the reader/viewer identifies with a protagonist who is dealing with a challenging situation. It has proven very difficult to bring the two together and make the user the protagonist, navigating a dramatic situation that is rich emotionally, psychologically, sociologically, politically. This project builds on the lessons we learnt creating a previous virtual fiction, The

Thing Growing, and continues our explorations and experimentations in the field of virtual fiction.

url: http://hdl.handle.net/1813/3972
date: 2006-12-13
creator: Bookchin, Natalie
viewed: 28
title: Rockefeller New Media Foundation Proposal
abstract: I am applying with a series of two projects that I am developing in collaboration with Jacqueline Stevens, a political theorist and author of Reproducing the State (Princeton University Press, 1999) and designer and artist Cynthia Madasky. The first, AgoraXchange, will be a dynamic and accessible online community whose diverse participants will discuss, collaborate, and contribute ideas concerning the game design, the aesthetics, and the politics of the second part of the project, Citizen's Dilemma. Citizen's Dilemma, will be an online multiplayer world that will offer a tangible political alternative to our current world order. In Citizen's Dilemma, all the world's nation-states have been replaced by countries in which political status is no longer determined by birth, and the legal order no longer rewards materialism. We have chosen to use the hugely popular and dynamic form of the online multiplayer game because of its potential for extraordinary detail and elaboration, active and sustained player investment and participation, and timeliness and accessibility as both a medium and social forum.

url: http://hdl.handle.net/1813/3974
date: 2006-12-13
creator: Eshkar, Shelley
viewed: 24
title: 2004 Rockefeller New Media Foundation Proposal
abstract: Taking visual inspiration from architectural models and children's ant farms, Habitat is a digital moving image installation that portrays in motion a vast multitude of synthetic figures negotiating their shared urban environment. The virtual urban environment and human tides are constantly in flux, developingforward in time and regressing in time; cycles of construction, demolition, alteration, and egress overlap in almost musical patterns.

url: http://hdl.handle.net/1813/3977
date: 2006-12-13
creator: Snibbe, Scott Sona
viewed: 23
title: 2004 Rockefeller New Media Foundation Proposal
abstract: I will create two interactive narrative video works comprised of large projections that react to and interact with viewers. Each work presents a silhouette narrative of a prominent Christian Scientist. The first work concerns the events surrounding Mary Baker Eddy's discovering and founding Christian Science in the 1860s. The second presents moments in the life of the American surrealist and Christian Science practitioner Joseph Cornell between 1930 and 1950. The Christian Science faith is best known for it's belief in the power of the mind, and the mind's ability to heal the body of illness - a belief that echoes the ideas of interdependence, emergence and emptiness, that inform my work. Both pieces will be synthetically constructed narratives. The projected imagery will be silhouette performances in the tradition of 19th century magic lantern and shadow theatre. These performances, however, will be algorithmically generated, so that their specific actions and movements are always slightly different. These movements will be rooted in live recordings made on a soundstage and in animations, but will primarily exist as computer models. Viewers will interact with a work when they walk between a projector and a projection on the screen. Viewers' own shadows will instantly become an integral part of the projected scene. They will feel an immediate sense

of presence at a phenomenal level, through the reaction of snow, rain, and scenery to their shadows. Their movements and actions will also have a narrative effect, advancing each work from scene-to-scene in ways that reflect viewers' physical behavior.

url: http://hdl.handle.net/1813/3979
date: 2006-12-13
creator: Vasulka, Steina
viewed: 27
title: 2004 Rockefeller New Media Foundation Proposal
abstract: I propose to use the Rockefeller fellowship to develop and expand two parallel tracks: One is life performances Controlling Laser Disk, Quick Time Movies or Camera input with my 5 string MIDI Violin, the other is audience interactive installations. The two activities use similar software, namely "Imageline" "Isadora" and "Jitter." They develop along similar lines of implementation, but use different tool configuration. The Midi Violin Performances are highly scored with mainly pre-recorded image material and depend on innovative, continuously evolving Tools. What started in the 70s as applying my acoustic violin to image control evolved to digital signal control and eventually to digital image processing. As the tools evolve, so does the performance, gradually getting more portable but more equipment demanding. The interactive installations engage a single camera to multiple computer platforms, from 3 to seven. In the first tape sample, there is a demo of a single camera, 3 projectors and 3 computers, in the second a single camera feeds seven computers, applying different software for seven monitors.

url: http://hdl.handle.net/1813/3981
date: 2006-12-15
creator: Dove, Toni
viewed: 28
title: 2004 Rockefeller New Media Foundation Proposal
abstract: Spectropia is an evening-length interactive media event. Projected on multiple screens, it is performed by two players with the participation of audience members at museums, festivals and public spaces. (A feature film and a home interaction version - combining WD and Internet delivery - will also be created.) Spectropia is a time travel drama set in the future and in NYC, 1931, after the stock market crash. It uses the metaphor of supernatural possession to explore new constructions of subjectivity and the anxieties brought on by consumer culture and emerging technologies. Unlike traditional movies, Spectropia is "performed" interactively using a unique mix of motion sensors, speech recognition and synthesis, and vocal triggers. Audience members, assisted by trained performer/tutors, can use physical cooperation to spontaneously unfold dialogue between onscreen characters; speak to the characters and have them respond; navigate through cinematic spaces; move a character's body; and alter and create the soundtrack. Spectropia has been supported by the Greenwall Foundation, Rockefeller Foundation MAP Fund, Langlois Foundation, LEF Foundation, NECA, NYFA, NEA, the ISA at Arizona State University, and The Banff Centre for the Arts.

url: http://hdl.handle.net/1813/3983
date: 2006-12-15
creator: Easterling, Keller
viewed: 24
title: 2004 Rockefeller New Media Foundation Proposal
abstract: Offshore, an exhibition and website, is the fictional media counterpoint to a non-fiction book I have just completed titled Terra Incognita. Terra Incognita, travels around the world looking at formulaic spatial products in difficult political situations. While generally considered to be politically immune formats of neoliberal magistrates and their business counterparts, these products are also the tools of rogue nations,

cults, and other impresarios. Far from banal, they can become political pawns and even instruments of aggression, storing new myths, desires and symbolic capital in a complex spatial cocktail. Terra Incognita visits six such cocktails: tourism in North Korea, fantastic forms of sovereignty in commercial and religious franchises, high-tech agricultural formations in, automated global ports, microwave urbanism in India's IT enclaves and the global industry of building implosion. These runaway stories, found in the international pages of the newspapers and the global news wires, create something like footnoted fiction in a book of political misadventures.

url: http://hdl.handle.net/1813/3985
date: 2006-12-15
creator: Wodiczko, Krzysztof
viewed: 24
title: 2004 Rockefeller New Media Foundation Proposal
abstract: This project seeks to examine and develop the technical and artistic means to 'embody' public statues, though the technique of statue projection and animation. This will be possible through especially designed lightweight attachments to the statues, which will support the necessary video- and sound-projection equipment. Images of a statue-animator's face, features or hands will be projected onto the statue's own face, features or hands. The animator's voice, also transmitted to the statue, will thus create a speaking statue, a new communication medium. Unlike the public media we are accustomed to, the animator, animating herself, will publicly engage the other users present, speaking out on any subject they might be concerned about. The animated statue will thus become a vocal - evocative and provocative - agonist, encouraging both onlookers and other participants to respond and develop their own dialogue in real time. Response and dialogue will be possible thanks to the microphones available on the ground that allow the passers-by and any other potential interlocutors to address, interrupt, and question the animated statue while standing before it. A video mini-camera at the statue's head or shoulder will permit the animator to see and hear those speaking to the statue. A particular interlocutor from the crowd may be encouraged to replace the animator, the process continuing in turn as the discussion evolves.

url: http://hdl.handle.net/1813/3988
date: 2006-12-15
creator: Erickson, Christa
viewed: 31
title: 2004 Rockefeller New Media Foundation Proposal
abstract: Transformers will be an installation of absurd devices, which act as a caricature and critique of the promise of new technologies and cultural obsessions with youth, immortality, wealth, health, sexuality, and beauty. Just as more technologies are marketed as 'personal', this piece will be a collection of personalized Rube-Goldberg-like helper/self-help devices organized like a cross between a gym and a tech tradeshow. Devices will be hybrid forms of visceral materials, quasi-familiar objects, and technologies, with a visual aesthetic that aims for the horrifically beautiful. All devices will operate in a personalized way. Some devices will interact with external data from the Internet and some will require the viewer's bodily participation to operate. I hope Transformers will reflect the humor, anxiety, and social transformation that our cultural faith in such real devices and technologies represents.

url: http://hdl.handle.net/1813/3989
date: 2006-12-15
creator: Hall, Gerod
viewed: 378
title: The Effect of Within-host Virus Population Growth and Interspecific Competition on Aphid Transmission

and Population Structure of Barley Yellow Dwarf Virus
abstract: Barley yellow dwarf virus (BYDV) (Luteoviridae) species PAV and PAS are ecologically similar in that they share aphid vectors and host species, but in agricultural fields in New York State we found that the prevalence of PAV was three times greater than that of PAS. To determine if differences in within-host population growth rate affect vector transmission efficiency, disease spread and the distribution of virus types in the host community, this study evaluated the biological characteristics of PAV and PAS species isolates in common agricultural hosts and the outcome of competitive interactions between species in mixed infections. In singly infected plants, PAS population size was 20% greater than that of PAV at 8 days post inoculation (DPI), but by 33 DPI the population size of PAV was 10% greater than that of PAS. In doubly infected plants, by 33 DPI the population size of PAV was 40% greater than that of PAS.
There was no difference in the transmission efficiency of PAV and PAS by Rhopalosiphum padi from singly infected plants at 30 DPI. But when transmission assays were performed 60 DPI, the transmission success of PAV was significantly greater than that of PAS. The greater transmission efficiency of PAV at late stages of infection did not translate to greater spread of PAV isolates in barley, oat or wheat plots in the field experiment. In the field, the susceptibility of plants significantly declined 18 days post plant emergence, suggesting that the development of resistance as plants matured may have arrested virus spread before asymmetry in the distribution of PAV and PAS could occur. In general, disease spread further in wheat than oat or barley plots. Taken together these results suggest that the identity of host species and vector population dynamics in relation to the availability of susceptible hosts are key determinants of the disease prevalence in the host community. Virus multiplication within hosts may influence the relative abundance of PAV and PAS in natural populations if there is a greater likelihood of virus transmission at different stages of host infection.

url: http://hdl.handle.net/1813/3991
date: 2006-12-18
creator: Ferrera-Balanquet, Raul
viewed: 25
title: 2004 Rockefeller New Media Foundation Proposal
abstract: "Traveling Corners/Esquinas Rodantes" explores the virtual and the physical results of a nomadic movement and an informational cartography where immigrants from Yucatan, Mexico operate in the context of a transnational US urban metropolitan enclave such as Los Angeles, at the same time; maintain tides with their native land. The project must be understood as a network narrative where the physical and the virtual components create the "whole". In the physical space, there is an installation consisting of: 1) a network linking an interactive kiosk with a hardware, DVD projector, four computers and an internet site; 2) an iron cast/DVD installation surrounded by the four computers; 3) digital graphics/photographs; 4) a performing space; 5) an audio station; 6) DVD with monitors, 3 a model of an imagined territory called "Futura T'ho"; 8) artworks created by the collaborating artists; 9) an artist book and 10) the simulacrum of a tourist shop. The virtual space consisting of a CD-Rom, an interactive DVD and series of Internet based elements (game, chat, multimedia display, database, live stream, QTime movies, informational website and flash animation).

url: http://hdl.handle.net/1813/3993
date: 2006-12-18
creator: Jones, Jennie C.
viewed: 25
title: 2004 Rockefeller New Media Foundation Proposal
abstract: Dizzy Atmosphere: Sonic Suspension and Modernist Music is an interactive installation that investigates the interplay between abstract visual art and the cultural resonance and autonomy of the modernist jazz movement. A form of revisionist history, this notion has already been explored via

multidisciplinary pieces that incorporate wall drawing, animation, sound and works on paper. Expanding on my current practice this project will employ the use of a chandelier-like sonic suspension device that utilizes sound as a form of atmospheric or ambient 'light.'Dizzy Atmosphere will shower the listener with an audio experience that is at oncetranscendental, educational, challenges the learned behavior of how we listen, and is interactive by allowing the participant to control experiential time. The audio piece itself will be based on the methodology of musical improvisation, harmonics, and counter-melody coupled with the visual aesthetics of minimalism and formalism. It is my intent to highlight the existence and contribution of early African American abstraction, I attempt a marriage of art history, black history and technology within the domain of the abstract languages they constructed.

url: http://hdl.handle.net/1813/3995
date: 2006-12-18
creator: Obrecht, Gigi;Karam, David
viewed: 29
title: 2004 Rockefeller New Media Foundation Proposal
abstract: Our proposal is to create an essentially invisible installation that generates music from movement. We propose an installation that will transform body motions into music, while remaining essentially invisible. We will create a play space for social interaction through sound/movement exploration, in which motion detectors record and translate the gestures of one or multiple participants into musical phrases. Different types of movement will elicit different types of sonic response: For example, gestural repetition will be registered and given back as rhythmic patterns. As "players" explore the space like a musical instrument, they find they can engage in a non-linguistic communication. In the absence of visual focus, participants interact with each other instead of with a surface or object. The possibilities for play are not limited by the person's age, education or cultural bias.

url: http://hdl.handle.net/1813/3997
date: 2006-12-18
creator: Martinez, Daniel J.
viewed: 25
title: 2004 Rockefeller New Media Foundation Proposal
abstract: My interest is in synthetic intelligence, the osculating space between the machine phylum and artificial intelligence that desires qualities of becoming human. War in the age of intelligent machines incorporated into the strategies of contemporary desire. The aesthetic questions of the possible compression of paradox and contradiction into the cyborg that simulates human behavior and presence through an exploration of its strange loops of chaos and social dysfunction. To stand in the presence of the intelligent machines and wonder if we abandoned beauty and enlightenment.

url: http://hdl.handle.net/1813/3999
date: 2006-12-18
creator: Merhi, Yucef
viewed: 25
title: 2004 Rockefeller New Media Foundation Proposal
abstract: Poet in New York is an interactive non-linear documentary that explores the intersection of new media and poetry, showing the journey of a young Latin American poet in the streets and landscapes of New York. Inspired in the book "Poet in New York" by Federico Garcia Lorca, this project attempts to exhibit the romantic intensity and urban poetics of the most desired city of our time. From Harlem to the Brooklyn Bridge, walking around the alleys of Chinatown and the piers of the West Village, New York turns into a multidimensional city, where each corner portrays a vivid poetic experience, described by Lorca as 'poetic

facts'. The film will be rendered on real-time using a G5 computer, combining 89 short videos, 34 spoken poems and 13 musical compositions, all centered in the figure and daily events of a 26 years old poet in New York. As a result, the viewer will experience a multimedia film filled with emotive scenes, juxtaposing the bucolic interior of the poet and the metropolitan surface of the city. All the content will be combined using a random-based algorithm which comprises 39.338 possible ways to contemplate the movie.

url: http://hdl.handle.net/1813/4001
date: 2006-12-18
creator: Rubin, Ben
viewed: 29
title: 2004 Rockefeller New Media Foundation Proposal
abstract: In September, 2003, I received a commission from the Minneapolis Public Library to develop a public artwork for their New Central Library. The library is designed by Cesar Pelli & Associates; it is currently under construction and is scheduled to open in 2006. The library's commission calls for a project that will use light to "enhance the public's experience of the library." My goal in this work is to create a place where visitors can experience the library as a living ecosystem where books, ideas, and people flow through, exchanging and transacting with each other. Books and periodicals are constantly being taken down from shelves and re-shelved, checked out and returned, searched for and found, acquired and de-acquisitioned. As with earlier works I've made, such as Listening Post (2002), 917: a code without an area (2000), and Passing Through (1996), this piece will be concerned with the movements and dynamics of people and ideas within a specific information system. A library is a place alive with text, some of it sleeping between the pages of shelved books, some of it at play in the minds of readers, some of it at work in electronic card catalog inquiries, lending system transactions, and so on. My piece will explore ways in which these words can be captured on the fly and channeled through an artwork that will reveal the way that words are coursing through the veins of the library. My aspiration is to make a piece that will evoke the ways that language passes through the consciousness of those reading in the library, not unlike the interior voices heard by the angel in Wim Wenders' film Wings of Desire as he walks through the quiet library in Berlin.

url: http://hdl.handle.net/1813/4003
date: 2006-12-18
creator: Wight, Gail
viewed: 26
title: 2004 Rockefeller New Media Foundation Proposal
abstract: I have recently been invited to create a piece for an exhibit called 'The Brides of Frankenstein' curated by Marcia Tanner for the San Jose Museum of Art, California. This exhibit would coincide with a Bay Area Cyber Art Festival to open in late 2005. I'11 be creating a series of portraits for this exhibit, based on seven women who were practicing science just prior to and during the time of Mary Shelley's Frankenstein. These portraits would also engage the current phenomenon of automatons - spectacular constructions of artificial humans. I believe that as social constructs, as spectacles, and as "monsters," women scientists of the eighteenth and nineteenth centuries shared much in common with these automatons. Most importantly, both were objects of a belief system that saw them as impostors, as threats, and as something less than fully human. These portraits would involve interactive video, incorporating audio with moving and still imagery accessed by touch screen, set into automaton-like armatures. They would be slightly larger than life, yet would evoke an ephemeral quality of existence. Hybrids of the human and mechanical, they would investigate eighteenth and nineteenth century concepts about women, science, machines, and their convergence.

url: http://hdl.handle.net/1813/4004
date: 2006-12-18

creator: Wight, Gail
viewed: 27
title: Rockefeller New Media Foundation --Supplementary Material
abstract: 12 installation slides: 1-2: "Kings Play Cards..." interactive computer projection. 2003. (installation & main screen) 3-4: "Linnaeuus Unbound" large chart with video activated by touch screen. 2001. 5-8: "Meditations on Evolution" interactive cd-rom. 2002. (main screen & three details) 9: "Star Struck" sculpture with motorized robot & video. 2001. 10: "Future Flight" sculpture with video & audio. 2000. 11: "Honey" interactive sculpture with ultrasonic sensors & sound 1999. 12: "A Tale of Two Slimes" sculpture with book & time-lapse video. 1996.

url: http://hdl.handle.net/1813/4005
date: 2006-12-18
creator: Dove, Toni
viewed: 27
title: Rockefeller New Media Foundation --Supplementary Material
abstract: Installation stills

url: http://hdl.handle.net/1813/4007
date: 2006-12-18
creator: Miranda Zuniga, Ricardo
viewed: 29
title: 2004 Rockefeller New Media Foundation Proposal
abstract: A food vending cart located in New York City and a game arcade located in Managua, Nicaragua will be employed to establish communication between participants. Both the food cart and the arcade will present the user with a 3D video game; a chat room; and a web cam image. The 3D game will be an on-screen wrestling match that employs the history between Nicaragua and the United States to define the match, a history of intervention and resistance. Although the game will offer at least four characters for the player to choose from, each character will be modeled after specific physical stereotypes from Nicaragua and the U.S. and each character will feature moves/abilities pertaining to the history of that stereotype. Although the game will simulate a wrestling match, it will alternate between free-style wrestling and gift giving depending on the moves made by the user and the capabilities programmed into the game's characters. On screen, as well as playing the 3D game, the players will be able to chat with one another and view one another via web cams (if turned on). Along with the 3D video game, the NYC food-vending cart will feature a typical Nicaraguan meal. Once people play the game they will be awarded with a typical Nicaraguan plate of carne asada, rice and beans, fried green plantain and fried cheese. The meal is punctuated by two cups of coffee: the first is exported coffee which is made from the best bean cultivated in Nicaragua and the second is coffee available in the country, of much poorer quality. The arcade game installed in Nicaragua will be continually available over a period of time and users will have the choice of playing an online competitor in real-time or playing against the computer, when no other player is available. The arcade's exterior will be handcrafted from wood, mimicking traditional Nicaraguan furniture craft. Due to possible connectivity problems in Nicaragua, a project alternative is enclosed.

url: http://hdl.handle.net/1813/4008
date: 2006-12-18
creator: Jevbratt, Lisa
viewed: 26
title: 2004 Rockefeller New Media Foundation Proposal
abstract: The Infome Imager is a software for creating visualizations of the World Wide Web. The software

allows the user to create "crawlers" (software robots, which could be thought of as automated Web browsers) that gather data from the Web, and it provides methods for visualizing the collected data. Some of the functionality of the Infome Imager software is similar to a search engine such as Google, but with some significant differences. Those differences shifts the software's functionality from being merely a tool for finding information on the Web to an art project which is generating new understandings of the Web. The lnfome lmager crawler collects "behind the scenes" data such as the length of a page, when a page was created, what network the page resides on, the colors used in a page and other design elements of a page etc. It scratches on the surface and glances down into the subconscious of the Web in hopes to reveal its inherent structure, in order to create new understandings of its technical, aesthetic and political functionalities.

url: http://hdl.handle.net/1813/4009
date: 2006-12-18
creator: Wodiczko, Krzysztof
viewed: 28
title: Rockefeller New Media Foundation --Supplementary Material
abstract: 10 slides: 1-2: Bunker Hill Monument Projection, Bunker Hill,
Massachusetts. 1998. 3-4: City Hall Tower Projection, Krakow, Poland, 1996. 5: Lenin Monument, Lenninplatz, East Berlin, 1990. 6: Hirshhorn Museum, Washington D.C., 1988. 7: AEgis, 1998-1999. 8: Porte-Parole (Mouth Piece), 1993-1994. 9-10: Alien Staff, 1992-1996.

url: http://hdl.handle.net/1813/4010
date: 2006-12-18
creator: Miranda Zuniga, Ricardo
viewed: 26
title: Rockefeller New Media Foundation --Supplementary Material
abstract: Text descriptions and color diagrams of installations "NexumATM," "Public Broadcast Cart," and "Vagabonds."

url: http://hdl.handle.net/1813/4011
date: 2006-12-18
creator: Rubin, Ben
viewed: 26
title: Rockefeller New Media Foundation --Supplementary Material
abstract: Installation photos

url: http://hdl.handle.net/1813/4012
date: 2006-12-19
creator: Birckmayer, Jennifer
viewed: 282
title: A Day in Day Care: A Program for Two-Year-Olds
abstract: Choosing a good day care program for a two-year-old is a puzzling problem for many parents. Teachers and caregivers, too, wonder about the kinds of activities that are most appropriate for very young children. The following description of a safe and interesting day care program for 2-year-olds can be used by parents as a guide to selecting good day care; it can also be used by a day care center to stimulate discussion about program planning and implementation. The first section focuses on a chronological order of events from how to manage early arrivals, to snack time, story time, nap time, through to the end-of-day routines, and several other activities in between. The second section deals with selecting equipment, floor plans, and organization. Although the program described here is not perfect, it would meet New York State Department

of Social Services day care licensing standards. The most important clue to the quality of a day care program is found in the feelings and the relationships of the people who participate in the program. If parents feel comfortable in the center and trust the caregivers, if caregivers feel valued loved, and if children feel relaxed, happy, and accepted, the foundation for good care exists. 12 illustrations, 3 floor plan diagrams, a short list of suggested books, and a list of educational equipment by area supplement this informative guide.

url: http://hdl.handle.net/1813/4012
date: 2006-12-19
creator: Birckmayer, Jennifer
viewed: 282
title: A Day in Day Care: A Program for Two-Year-Olds
abstract: Choosing a good day care program for a two-year-old is a puzzling problem for many parents. Teachers and caregivers, too, wonder about the kinds of activities that are most appropriate for very young children. The following description of a safe and interesting day care program for 2-year-olds can be used by parents as a guide to selecting good day care; it can also be used by a day care center to stimulate discussion about program planning and implementation. The first section focuses on a chronological order of events from how to manage early arrivals, to snack time, story time, nap time, through to the end-of-day routines, and several other activities in between. The second section deals with selecting equipment, floor plans, and organization. Although the program described here is not perfect, it would meet New York State Department of Social Services day care licensing standards. The most important clue to the quality of a day care program is found in the feelings and the relationships of the people who participate in the program. If parents feel comfortable in the center and trust the caregivers, if caregivers feel valued loved, and if children feel relaxed, happy, and accepted, the foundation for good care exists. 12 illustrations, 3 floor plan diagrams, a short list of suggested books, and a list of educational equipment by area supplement this informative guide.

url: http://hdl.handle.net/1813/4013
date: 2006-12-19
creator: Williamson, James
viewed: 522
title: An Evaluation of Best Practices for Effective Public Outreach in Government-issued Methylmercury Fish Consumption Advisories
abstract: Over the last two decades, the United States government agencies responsible for public health have expressed a desire for more research on how to improve risk communication within state and federal fish advisory programs. This charge to risk communication researchers led to the development of a variety of best practices that offer potential solutions to many of the major barriers to effective public outreach. However, numerous studies suggest that government agencies have been resistant to adopting the targeted, interactive risk communication strategies proposed by researchers and that these best practices may have a limited impact in shaping government policy. To date, little is known about the degree to which best practices from the risk communication literature are present in government-issued fish consumption advisories. Further, some health and environmental agencies have expressed that they would be more amenable to adopting the recommendations of risk communication researchers if they were practical and accessible. In order to address these issues, a list of 125 best practices for effective advisory design were compiled from the risk communication literature and adapted into a practical coding scheme that was used to evaluate a sample of 221 government-issued methylmercury advisories. The results of this evaluation revealed a series of gaps between risk communication research and agency practice that are largely driven by conflicting objectives and the inability of many risk communication studies to adequately define effective risk communication. Evaluation is discussed as a means to strengthen ties between risk communication researchers and agency fish advisory programs. Moreover, connections are drawn between the findings of this study and other risk

contexts, raising the possibility that the outsider status of risk communication researchers is less problematic than originally thought.

url: http://hdl.handle.net/1813/4014
date: 2006-12-20
creator: Merhi, Yucef
viewed: 26
title: Rockefeller New Media Foundation --Supplementary Material
abstract: 10 installation slides: 1: The Poetic Clock, 1997. LED Screen Installation. 2: The Poetic Machine, 1998. Computer Installation, Custom Software. 3-4: Atari Poetry I, 2001. VCS ATARI 2600, TV Screen. 5: Poetic Words, 2001. 3 Portable Spinning LED Devices. Slide: Poetic Dialogues, 2002. Internet Project, http://www.poeticdialogues.com 7: Mission Taliban, 2002. Computer Game, Custom Software. 8: Wizart, 2000. Intemet Project, http://www.wizart.org 9-10: Maximum Security, 2002. Hacking on Paper.

url: http://hdl.handle.net/1813/4015
date: 2006-12-20
creator: Martinez, Daniel J.
viewed: 26
title: Rockefeller New Media Foundation --Supplementary Material
abstract: Curriculum Vitae for 2000-2003.

url: http://hdl.handle.net/1813/4016
date: 2006-12-20
creator: Levy, La TaSha
viewed: 185
title: Inciting the Counter-Revolution: Black Neoconservatives in the Post-Civil Rights Era
abstract: Black neoconservatism is one of the most contested political ideologies of the Post-Civil Rights era. As a challenge to mainstream Black political thought, Black neoconservatism enjoys a particular celebrity as the bold new voice in American racial discourse. This thesis critically analyzes Black neoconservative ideology as a counter-discourse: a direct opposition to the liberalism of the 1960s and the legacy of the Civil Rights and Black Power eras.

The emergence of Black neoconservatives as a significant collective in the Post-Civil Rights era correlates with the rise of the New Right in American politics since the election of Ronald Reagan in 1980. The New Right has forcefully disputed the philosophy and strategy of civil rights legislation and the traditional quest for racial equality and justice. Black neoconservatives play an increasingly significant ideological role in conservative politics and public debate in the Post-Civil Rights period. Furthermore, their racial identity lends credence to the New Right's attack on social policy that disproportionately benefits Black people in general and the Black poor particularly. Black neoconservatives dissent from the prevailing convention that racism and White supremacy have become subtle, but nevertheless remain formidable. They insist that civil rights legislation, government intervention and liberal programs have created a pathological dependency among African Americans. Black neoconservatives contend that this dependency is the true cause for the debilitating conditions of the Black underclass and the slow progress among African Americans. Essentially, Black neoconservatives blame the Black Power era for instilling a sense of entitlement among African Americans, and they charge civil rights leaders with profiting from the manipulation of racism.

The core of Black neoconservative critiques is their presumption that African Americans subscribe to a victim-oriented identity that exaggerates the saliency of racism in order to evoke white guilt. They argue that welfare and affirmative action are two bankrupt policies that perpetuate victimization and dependency among African Americans and impede racial progress. As such, Black neoconservatives maintain that self-

help and personal responsibility are the only solutions to the nation's enduring race problems.
Black neoconservatives are presumed to be marginal voices among the vast majority of African Americans. Nonetheless, they are gaining wider currency in the American racial discourse to ultimately shape racial attitudes and change public policy. Furthermore, this thesis posits that Black neoconservatives have taken a political posture that negates the legacy of Black liberation struggles in the United States, which is grounded in an emphasis on Black identity and opposition to racism. Although Black neoconservatives claim their ideology is rooted in the philosophy of Booker T. Washington, this thesis explores the ideology of archconservative George S. Schuyler as a prototypical progenitor of Black neoconservatism. The thesis details the political positions of Black neoconservatives by examining the works of Thomas Sowell, John McWhorter, Shelby Steele, Star Parker, Stephen Carter, Ward Connerly and Glenn Loury.

url: http://hdl.handle.net/1813/4018
date: 2006-12-20
creator: Holmer, Jamie
viewed: 213
title: Exploring Effective Education of Family Child Care Providers about Issues Related to Indoor Environmental Pollutants: Training Workshop vs. Printed Material
abstract: Currently, approximately 6 million children have asthma and close to half a million children suffer from elevated blood lead levels, making asthma and lead exposure among the most pertinent health issues facing children in the United States. With a rapidly growing number of children being cared for in child care programs, it is essential for child care providers to be able to maintain a healthy environment. The present study was designed to test the effectiveness of educating family child care providers about indoor environmental pollutants using two low-cost, widely distributable educational treatments. The two educational treatments, a peer educator-led training workshop (n = 14) and a printed, self-study guidebook received in the mail (n = 17), were assessed by measuring participant knowledge of indoor pollutants as well as exposure-reducing behaviors, both before and after the educational treatment. As hypothesized, both treatment groups (N = 31) showed significant improvement in general knowledge of indoor pollutants; improvement on both lead knowledge $t(30) = -2.908$, $p < .01$ and asthma knowledge $t(30) = -2.839$, $p < .01$ post-treatment scores were statistically significant. The second hypothesis that there would be a significant improvement in both treatment groups on child care providers' exposure-reducing behaviors was not confirmed. The third and fourth hypotheses that the workshop treatment group would show significantly more improvement on both knowledge and exposure-reducing behavior than the guidebook treatment group were also not confirmed. This study's findings that the guidebook treatment was as equally effective as the training workshop treatment, suggests that there is great potential for creating positive change in family child care providers' exposure-reducing behavior and knowledge of indoor environmental pollutants using a simple, low-cost method, such as an educational guidebook.Smith Lever funds from the Cooperative State Research, Education, and Extension Service, U.S. Department of Agriculture, under Agreement No. 2005-06-081

url: http://hdl.handle.net/1813/4019
date: 2006-12-20
creator: Obrecht, Gigi;Karam, David
viewed: 28
title: Rockefeller New Media Foundation --Supplementary Material
abstract: 12 page self-published pamphlet.

url: http://hdl.handle.net/1813/4020
date: 2006-12-20
creator: Jones, Jennie C.

viewed: 30
title: Rockefeller New Media Foundation --Supplementary Material
abstract: 10 slides. 1: Methodical Birds. Tape, audio and suspended headset. Paris, 2002. 2-3: A/V, an Installation at Triple Candie. Wall drawing with various tapes. New York, 2003. 4: Head-Set #1. Ink on paper. 2002. 5: All Blues. Wall drawing & audio piece. Milan, 2002. 6-10: Listening to Modernism. Ink and collage on paper. 2003.

url: http://hdl.handle.net/1813/4021
date: 2006-12-20
creator: Vittum, Morrill;Shallenberger, Robert;Lee, Chang (Cy)
viewed: 527
title: Free sugars in fruits and vegetables
abstract: With the rapidly developing role of individual specific sugars in metabolic processes, it is becoming increasingly imperative that the specific sugars in foods be identified and their concentration tabulated. The specific purpose of this study was to identify and determine the concentration of the major free sugars which occur in common foods of plant origin.

url: http://hdl.handle.net/1813/4022
date: 2006-12-20
creator: College of Human Ecology
viewed: 410
title: Human Ecology 34:1, May 2006, Leading Toward a Better World
abstract: Leading Toward a Better WorldLeading Toward a Better World

url: http://hdl.handle.net/1813/4023
date: 2006-12-20
creator: College of Human Ecology
viewed: 386
title: Human Ecology 34:2, November 2006, Technology and Innovation
abstract: Technology and Innovation

url: http://hdl.handle.net/1813/4024
date: 2006-12-20
creator: Earle, Corey Ryan
viewed: 383
title: Blanche Hazard - An Overlooked Pioneer
abstract: Capstone presentation.

url: http://hdl.handle.net/1813/4025
date: 2006-12-20
creator: Free, G.
viewed: 137
title: Soil Management for Vegetable Production on Honeoye Soil with Special Reference to the Use of Hardwood Chips
abstract: Soil management practices for satisfactory production of specific crops or combination of crops can often be adjusted for improvement from the standpoint of sound scientific principles and economics. Recognition of the management problem involved is the obvious first step to be taken. It is the purpose of this bulletin to present and discuss the results of this evaluation of management systems over a 15-year period.

url: http://hdl.handle.net/1813/4026
date: 2006-12-20
creator: Ferrera-Balanquet, Raul
viewed: 27
title: Rockefeller New Media Foundation --Supplementary Material
abstract: We have stated earlier that we have chosen, for the construction of the framework of the project- its structural foundations- four specific socio-cultural, historical and technological contexts. Three of these contexts are the concept of Mobile Cinema, developed by the Cuban Film Institute during 1960's; the Traveling Circus and Arcade Video Games as popular cultural forms, and the use of new media technologies in "Latino Territories" at the beginning of the XXI Century.

url: http://hdl.handle.net/1813/4027
date: 2006-12-20
creator: Reichenbach, Kristen Paulene Lantz
viewed: 512
title: Numerical Analysis and Experimental Study of Fiber Bundles and Multi-core Photonic Crystal Fibers for use in Endoscopes
abstract: Flexible endoscopes for confocal and multiphoton imaging have the potential to revolutionize the medical field by obviating the need for invasive biopsies; however, these high expectations can be achieved only by reducing endoscope size and by improving image resolution. In this dissertation, methods for enhancing the performance of current endoscopes are explored by studying the properties of multi-core fibers using numerical modeling and experimental analysis. Numerical simulation tools are based on the normal mode expansion of the fields, coupled mode theory, and the multipole method.
Image fibers (multi-core step-index fibers commonly used in fiber endoscopes) have small, closely spaced cores that are predicted through basic theoretical analysis to be strongly coupled. These image fibers are explained to successfully transmit images because of nonuniformities in their cross-section that reduce inter-core coupling. The wavelength, average core size, and degree of variation in core size determine the strength of coupling between adjacent cores, such that fibers with smaller cores at longer wavelengths require more nonuniformity in order for reliable image transmission. Guidelines are given for assessing the performance of image fibers in a particular system. In addition, due to the random nature of this effect, strong core coupling can be observed experimentally, demonstrating that the quality of images from current endoscopes is still compromised by crosstalk.
Multi-core photonic crystal fibers (PCFs) are a potential alternative for use in flexible endoscopes. PCFs achieve tighter mode confinement than image fibers and are therefore predicted to allow higher core densities with less crosstalk and, ultimately, improved image contrast and resolution. The fabrication of these fibers, however, typically introduces nonuniformities into the photonic crystal cladding. Random nonuniformities in the air hole size and location are shown to reduce the coupling length and the coupling efficiency. When the air holes are large, variations in the lattice of less than 1% are sufficient to cause essentially independent core propagation. Nonuniformities are also shown to increase the core birefringence although the dispersion and loss of PCFs are rather robust to variations. Understanding the characteristics of core coupling is a first step towards improving the design of current endoscopes.

url: http://hdl.handle.net/1813/4028
date: 2006-12-20
creator: Erickson, Christa
viewed: 24
title: Rockefeller New Media Foundation --Supplementary Material

abstract: 10 slides. 1-5: Mnemonic Devices, 2000. 6-8: Dis-ease, 2003. 9-10: Dataskins, 2001.

url: http://hdl.handle.net/1813/4029
date: 2006-12-20
creator: Wasike, Aggrey
viewed: 203
title: The Left Periphery, Wh-in-situ and A-bar Movement in Lubukusu and other Bantu Languages
abstract: This study examines the structure of the left periphery, wh-in-situ and A-bar movement in Lubukusu, Kiswahili and Runyoro. It is shown in the study that these languages do not show an argument-adjunct asymmetry. With the exception of 'why', wh-adjuncts can occur in-situ in Islands just like wh-arguments. In addition, Lubukusu in-situ wh-adjuncts, except 'why' give rise to an intervention effect, just like wh-arguments. The unique behavior of 'why' does not reflect an argument-adjunct asymmetry. Rather, it follows from the fact that 'why' is base generated in the left periphery. To the extent that there is no argument-adjunct asymmetry, there is little reason to postulate LF-phrasal movement, contrary to Huang (1982). Secondly, it is shown in the study that 'how' has a syntax that is distinct from that of other wh-phrases. For instance, only 'how' obligatorily agrees with the subject. I argue that this is due to the status of 'how' as a functional head that lacks interpretable phi-features. The fact that 'why' but not 'when' and 'where' also lacks interpretable phi-features suggests that the referential ~ non-referential adjunct distinction should be captured in terms of these features. Thirdly, it is shown that wh-phrases can be in-situ in an object Complex NP, but not in a subject Complex NP. I attribute this restriction to Fiengo and Higginbotham's (1981) specificity condition. Fourthly, the study highlights the differences between relativization of subjects and non-subjects. For instance, while the former triggers wh-agreement, the latter doesn't. These differences are attributed to the location of the feature that drives movement under relativization. In the case of subjects, this feature is located in Fin, but in non-subjects, it is located in Force. The former triggers movement to Spec of FinP, the latter, movement to Spec of ForceP through Spec of PredP. A related issue is the structure of the left periphery. The study shows that the left periphery is more complex than is currently assumed. In addition to the functional projections in Rizzi's 1997 structure, two new projections, PredP and PronP are required. Graduate School, Cornell University; Department of Linguistics, Cornell University; Institute for African Development, Cornell University

url: http://hdl.handle.net/1813/4030
date: 2006-12-20
creator: Peck, N.;MacDonald, Gregory;Cantliffe, Daniel
viewed: 215
title: The potentiometric determination of nitrate and chloride in plant tissue
abstract: Several extracting solutions were evaluated for their effectiveness in determining NO3- potentiometrically with a selective nitrate ion electrode, and the results were compared with a standard phenoldisulfonic acid method. The nitrate electrode proved to be highly satisfactory for determining NO3- in plant tissue, and is apparently as accurate as the phenoldisulfonic acid method when Al2(SO4)3 +10 mg per ml NO3-N is the extracting solution.

url: http://hdl.handle.net/1813/4031
date: 2006-12-20
creator: Wooster, G.;Moyer, J.;Saravacos, G.
viewed: 156
title: Concentration of liquid foods in a pilot-scale falling film evaporator
abstract: This report contains the experimental work and results obtained in the evaporation of water, apple and grape juices, and soymilk. The emphasis is on the physical and engineering aspects of evaporation;

i.e., evaporation rates, fluid flow, heat transfer, and scale formation. The chemical and quality changes are not covered in this report, and it is recognized that further work on specific products is needed in this direction. The pilot-scale evaporator can be considered as an experimental chemical reactor, in which time and temperature may influence the rates of various chemical reactions.

url: http://hdl.handle.net/1813/4032
date: 2006-12-20
creator: Rehkugler, G.;Millier, W.;Markwardt, E.;Shepardson, E.
viewed: 159
title: Mechanical Harvesting of Fruits and Vegetables
abstract: From the mid to the late 1950's, it became increasingly apparent that the New York State fruit and vegetable industry would have to mechanize more, if not all, operations to remain competitive with other producing areas. While other farm operations in general had reduced their labor requirement to 33 percent of that used in 1940, fruit and vegetable farms had reduced labor to only 57 percent of the 1940 requirement.

url: http://hdl.handle.net/1813/4033
date: 2006-12-20
creator: Robinson, W.;Stoewsand, Gilbert
viewed: 244
title: Review of grape and wine toxicity research
abstract: The first report of a systematic investigation of toxic substances present in wine was by Leuch in 1895 (9), in which free sulfite was administered in 40-50 mg doses in wine to 150 Swiss human volunteers. Ten per cent complained of gastric distress, increased salivation, and diarrhea. (Sulfite is used in the manufacture of wines for its bacteria-cidal and fungicidal effects.) Investigations of toxicity of wines from that time have centered around the development of liver cirrhosis caused by etha-nol consumption, pesticide residues from vineyard sprayings, and histamine formation in certain wines. Histamine development has been associated with bacterial production occurring when unsanitary conditions are present during wine making, and not with the species of grape. White wines, in general, seem to contain less histamine than red wines (11).

url: http://hdl.handle.net/1813/4034
date: 2006-12-20
creator: Becker, Robert
viewed: 306
title: Tipburn and other internal disorders
abstract: Internal tipburn has been an economic problem in the United States and northern Europe for at least the last 25 years, often causing severe losses to growers and processors. While it has perhaps always occurred in a minor degree, the problem has apparently become more severe in recent years, probably because more intensive production practices are being used to obtain high yields.

url: http://hdl.handle.net/1813/4035
date: 2006-12-20
creator: Gordon, C.;Moore, L.;Cornell University;Coppock, C.;Loosli, J.;Merrill, W.;Shipe, W.;Wright, M.;Reid, J.;Morrow, D.;Tyrrell, H.;Trimberger, G.
viewed: 324
title: Effects of Liberal Concentrate Feeding on Health, Reproductive Efficiency, Economy of Milk Production, and Other Related Responses of the Dairy Cow
abstract: An increasing supply of grain at lower prices has encouraged dairymen to feed more concentrates to cows bred for high production. Some dairymen have experienced phenomenal changes in levels of production

resulting from liberal grain feeding, but most of these were due to a change from low to moderate, or from moderate to high rates of grain feeding. Many such situations involved individual cows of exceptional appetite and unusual tolerance to digestive stress, as well as special catering by an expert dairyman.

url: http://hdl.handle.net/1813/4036
date: 2006-12-20
creator: Forshey, C.
viewed: 149
title: Predicting harvest size of McIntosh apples
abstract: A major factor in establishing the price of apples is the size of the fruit. An accurate estimate of final fruit size in mid-summer would be of inestimable value to the commercial fruit grower. On the basis of such information, cultural practices, such as irrigation and hand fruit thinning could be altered to improve final fruit size. Such an estimate would also provide guidance in the harvesting of the crop and in its disposition.

url: http://hdl.handle.net/1813/4038
date: 2006-12-21
creator: Mack, G.
viewed: 223
title: Pesticide Register
abstract: Pesticide chemicals have proliferated enormously in the last 25 years. From a few inorganic chemical and botanical poisons, the industry has developed over 1,000 different chemical pesticides. Most of these are synthetic organic chemicals with confusing names and complex structures. The PESTICIDE REGISTER is intended to bridge the gap between trademarked, generic, and preferred names by indexing and cross referencing.

url: http://hdl.handle.net/1813/4039
date: 2006-12-21
creator: LaBelle, R.;Huehn, W.;Downing, D.
viewed: 923
title: Handling of red tart cherries for processing- a review
abstract: There appears to be considerable interest now in handling cherries from tree to pitting line exclusively in half-ton pallet tanks in order to reduce rehandling damage to the fruit. The development of this operation has covered quite a time span, and it was felt desirable to bring the important facts together.

url: http://hdl.handle.net/1813/4040
date: 2006-12-21
creator: Cross, Joshua
viewed: 331
title: Nanofluidic Channels for Biological Separations
abstract: Nanofluidic channels are used to separate DNA molecules by length and applications of the channels to other biomolecules are discussed. The problem of separating DNA and biomolecules by length, charge, or other physical characteristics has consumed a tremendous amount of time and resources over the latter half of the twentieth century and the beginning of the twenty-first century. Micro- and nanofluidic structures afford the opportunity to increase separation effectiveness while decreasing the cost of analysis. Additionally, owing to their simplicity, micro- and nanofluidic devices offer the possibility of modeling molecular motion through confining environments from fundamental physical principles.
Three nanofluidic devices for separating biomolecules by length are discussed herein. A description of their

physical operation is given, and results indicating their effectiveness are presented. Important concepts in molecular biology, polymer physics, and electrophoresis are presented, as well as a review of the trend toward miniaturization of traditional separation techniques. The physical effects manifest in the nanofluidic devices described herein are most easily leveraged in the microchip format, so the details of the fabrication processes used to manufacture these devices are also presented.

url: http://hdl.handle.net/1813/4041
date: 2006-12-21
creator: Wright, M.J.;Waldron, J.K.;Shields, E.J.;Seaney, R.R.;Reid, W.S.;Pardee, W.D.;Klausner, S.D;Ferguson, G.A;Cox, W.J.;Bergstrom, W.G.
viewed: 446
title: Cornell Field Crops and Soils Handbook
abstract: A companion to the Cornell Guide for Integrated Field Crop Management, this handbook serves as a resource reference and contains expanded background information, research findings, and the reasoning behind the recommendations for climate, soil management, soil fertility, grain and forage crop production. This reference also includes a section on integrated pest management for weeds, insects, and diseases.

url: http://hdl.handle.net/1813/4042
date: 2006-12-21
creator: Iredale, H.;Saravacos, G.
viewed: 321
title: Physical treatments of food processing wastewaters
abstract: This report describes some experimental work and results obtained on the physical treatments of food processing wastewaters at the Geneva Food Research Laboratory during the period 1969-1971. Typical wastewaters from local fruit and vegetable processing industries were used, and the methods investigated were: evaporation, distillation, reverse osmosis, and carbon adsorption.

url: http://hdl.handle.net/1813/4043
date: 2006-12-21
creator: Young, Douglas
viewed: 619
title: Soul as Structure: Plato and Aristotle on the Harmonia Theory
abstract: We are conscious beings who think, understand, feel and perceive. We are also material beings composed out of ordinary material stuff. Determining the precise connections between the psychological and the material remains problematic. The harmonia theory is one of the first attempts to frame this as a problem about composite objects. The theory itself is simple: the soul is the harmonia of the material parts of the body. But what a harmonia is and what the theory amounts to are matters of much dispute. I argue that a harmonia is best understood as the structure of the body's material parts.
Plato introduces the theory in the Phaedo, and Aristotle mentions it in On the Soul. In both instances it is roundly criticized. Given that Plato thinks the soul is independent of the body, it is not surprising that he rejects the harmonia theory. However, he has been described as "extraordinarily obtuse" for arguing against the view, since doing so seems to undermine his arguments for a tripartite soul. Aristotle's rejection has been thought equally perplexing, since his own positive view (that the soul is the form of a living body) looks very much like a version of the harmonia theory.
Looking closely at the harmonia theory helps clarify persistent misunderstandings of the view and the reasons Plato and Aristotle reject it. This avenue offers insight into Plato's and Aristotle's positive theories about the soul and its relation to matter. In addition, their rejections of the theory shed light on how they understand the relation between parts and wholes.

The problems lying behind the ancient debate about the harmonia theory are not just historically significant, but also resonate with contemporary discussions about material composition and the metaphysics of mind. Plato articulates a version of the harmonia theory which is perhaps the first expression of a supervenience thesis about the mental, but the precise sort of supervenience at issue hasn't been well understood. But most importantly, whether wholes and souls are causally relevant and whether conscious beings are mereologically simple are issues at the heart of the debate, both ancient and modern.

url: http://hdl.handle.net/1813/4044
date: 2006-12-21
creator: Petrova, Margarita
viewed: 355
title: LEADERSHIP COMPETITION AND THE CREATION OF NORMS: A CROSS-NATIONAL STUDY OF WEAPONS RESTRICTIONS
abstract: The dissertation explores the processes through which new norms develop in the field of international humanitarian law. In contrast to most studies in International Relations that examine processes of norm diffusion and socialization, the current work focuses on the early stages of norm emergence. Based on the comparison of two cases of norms against weapons that have a severe negative impact on civilians - antipersonnel landmines and cluster munitions - and several country cases, including the US, France, Belgium, Norway and Canada, the thesis develops a model of the dynamics of norm development that emphasizes the linkages among domestic and international processes aimed at norm creation. The model involves scale shifts from the international level where consensus-decision making stalls progress toward adopting new prohibitory norms, to the domestic arena of different countries where nongovernmental organizations (NGOs) mobilize national support, and then back to the international level where national mobilizations help propel a new negotiating process out of the consensus-based forum. Whereas most empirical studies on norm development and the literature on "new diplomacy" examine NGO activities and negotiation processes at the international level, the thesis pays particular attention to the domestic developments and NGO campaigns, which have been a precondition for a more robust international process. The study argues that the success of norm creation depends first on the initial framing of the problem by NGOs, and second on their ability to foster among states a dynamic called "leadership competition" in which a number of countries consecutively adopt more progressive positions in support of weapons bans. The study emphasizes the important role of individual entrepreneurship and links between NGOs and state decision-makers in promoting new norms regarding weapons restrictions.
Whereas models of norm diffusion focus on the exertion of pressure on states to accept widely recognized norms through the "mobilization of shame," in the current cases support for a newly emerging norm is generated through the "mobilization of pride" and appeals to state identity and ambitions to play important international roles. Thus, the study identifies new processes and dimensions in the creation of norms that have been neglected by the existing literature.Peace Studies Program, Cornell University, the German Marshall Fund of the United States, the Institute for European Studies, Cornell University, the Landesstiftung Baden-Wuerttemberg

url: http://hdl.handle.net/1813/4045
date: 2006-12-21
creator: Olson, Gerald;Frittont, Daniel
viewed: 169
title: Depth to the Apparent Water Table in 17 New York Soils from 1963 to 1970
abstract: When a pit is dug in soil, it commonly happens that at a certain depth, water seeps from the soil to form a shallow pool at the bottom; at this point, the pit is said to have reached the water table. When the pit is dug below this point, the water surface in it will equilibrate to the water table level. Soil below this

level will be saturated and the water under pressure. Above this level, the soil will be unsaturated and the water under tension.

url: http://hdl.handle.net/1813/4046
date: 2006-12-21
creator: Morrow, Robert
viewed: 396
title: Natural Vacuum and the flow of maple sap
abstract: In 1967, Blum (1) reported that 43 percent more sap was obtained from closed tubing installations on slopes than from open or vented tubing. He associated this increase with the natural vacuum created in the closed tubing. Gains in sap yield from natural vacuum are especially important, since the collection of sap is the most costly and least profitable phase of making maple sirup. Moreover, sap costs for a tubing network are mostly fixed costs; increased sap flow from natural vacuum represents added profit with little or no added cost. Recently, Laing et al. (6) showed that sap produced with high vacuum differed little in chemical composition from sap produced without vacuum; both yielded sirup of comparable high quality.

url: http://hdl.handle.net/1813/4047
date: 2006-12-21
creator: Cain, John
viewed: 205
title: Slotting saw pruning of hedgerow apples improves production and quality
abstract: Semi-dwarf and dwarf apple trees have many production advantages, the most important of which is bearing at an earlier age and greater production per unit of space in the orchard. The latter is probably due to the fact that the smaller the tree the more surface is exposed to sunlight per unit of tree volume. Thus, more reserve photo-synthate is available for fruit production above that used for tree growth.

url: http://hdl.handle.net/1813/4048
date: 2006-12-21
creator: Tashiro, H.
viewed: 149
title: The European chafer, a continuing lawn problem in New York
abstract: Since the discovery of the European chafer, Amphimallon majalis (Razoumowsky), in Newark (Wayne County), New York during 1940, this serious insect pest of lawns has spread to many areas of the State (Fig. 1). Isolated infestations occur in the adjoining and nearby states of Connecticut, Massachusetts, New Jersey, Ohio, Pennsylvania, and Rhode Island. It is present also in the Canadian province of Ontario along the Niagara frontier.

url: http://hdl.handle.net/1813/4049
date: 2006-12-21
creator: Dethier, B.;Canfield, N.;Vittum, M.;Hopp, R.
viewed: 226
title: Regional phenological studies with Persian lilac (Syringa persica)
abstract: Plants can be observed methodically year after year and dates can be recorded when certain distinguishable growth stages, such as opening of leaf buds or appearance of first flowers, occur. These plants may be considered as special, highly sensitive meteorological instruments that integrate the composite effect of weather factors such as temperature, rainfall, humidity, wind, and sunshine in their growth response. Using indicator plants that are genetically alike and observing them at numerous locations creates a network that supplements the cooperative weather observations of the National Weather Service. From the annual

phenological reports, average dates for certain events can be established. Data can then be related to these averages for purposes of monitoring and characterizing individual seasons.

url: http://hdl.handle.net/1813/4050
date: 2006-12-21
creator: Houghton, G.;Ledford, R.;Sherbon, J.;Herrington, B.
viewed: 125
title: Composition of Milk in New York State
abstract: A prime reason for research on the composition of milk is that milk and milk products are vitally important in human nutrition. In addition to milk and milk products being directly consumed, milk components are included in numerous convenience food formulations. Further, the price of fluid milk in New York, now partially determined by its fat content, may, or should be, revised to reflect the nutritional value of milk proteins.

url: http://hdl.handle.net/1813/4051
date: 2006-12-21
creator: Cummins, James
viewed: 213
title: Tree-raising on the fruit farm- an essay on management
abstract: "Should I raise the trees myself to replant the North Hill block, or should I borrow the money to buy trees from the nursery?" Many commercial apple growers are asking themselves questions of this sort as they are faced with the large cash investments required for high density plantings. This essay is designed to aid the orchardist in objectively answering such questions. Consideration will be given to some of the tactics of using the nurseryman's skills, to the economics of raising trees on the fruit farm, and to the management factors leading to the final decision on tree purchase or tree raising.

url: http://hdl.handle.net/1813/4052
date: 2006-12-21
creator: LaDue, E.;Casler, G.
viewed: 264
title: Environmental, economic, and physical considerations in liquid handling of dairy cattle manure
abstract: Liquid systems to handle the manure from dairy cattle have been proposed both as economically efficient methods of handling and to alleviate some of the environmental problems associated with the manure. With enough storage capacity to eliminate spreading on frozen ground, a liquid system would tend to reduce runoff of manure during the winter and spring, thereby reducing loss of nutrients and organic matter, which should be of benefit to both farmers and the rest of society.

url: http://hdl.handle.net/1813/4053
date: 2006-12-21
creator: Einset, John
viewed: 269
title: Lakemont and Suffolk Red seedless grapes named
abstract: A major objective in breeding dessert grapes has been to combine the seedless character available in certain grapes of Mediterranean origin with sufficient cold hardiness and disease resistance from our American grapes so that the resulting varieties will be suited for New York conditions. Two major seedless sorts have been found to be the best sources of the seedless character in this program initiated some 50 or more years ago.

url: http://hdl.handle.net/1813/4054
date: 2006-12-21
creator: Robinson, W.;Einset, John
viewed: 146
title: Cayuga White, the first of a Finger Lakes series of wine grapes for New York
abstract: A changing and expanding grape industry has recently brought about considerable interest in variety evaluation and improvement. This is especially true in the Northeast and Great Lakes area where relatively few pure vinifera or European varieties of grapes are grown. Increasing attention is being given to varieties that will produce premium quality dry table wines of distinctive character. This implies pleasant and characteristic aroma and flavor in wines that are an appropriate accompaniment to a meal.

url: http://hdl.handle.net/1813/4055
date: 2006-12-21
creator: Lamb, Robert
viewed: 308
title: Brighton and Eden-- two new peach varieties
abstract: New York State, on the northern edge of the peach growing area, needs improved varieties of peaches. The best commercial varieties, presently available, are too subject to injury by low winter temperatures to bear full crops every year in most of the fruit growing areas of the State. For this reason, the primary objective of the peach breeding program at the New York State Agricultural Experiment Station is increased resistance to low winter temperatures; that is, increased hardiness.

url: http://hdl.handle.net/1813/4056
date: 2006-12-21
creator: Ourecky, Donald
viewed: 293
title: Holiday Strawberry
abstract: Strawberry breeding in the United States began in the middle of the nineteenth century. Most of the varieties released at that time were from private breeders. About 1920, the U.S.D.A. and several land-grant colleges initiated the first large scale breeding programs. Since strawberries vary greatly in their regional adaptation, diverse breeding programs were established. Today, we have specific varieties adapted to various regions. What is a good variety in one region may be of no value in New York.

url: http://hdl.handle.net/1813/4057
date: 2006-12-21
creator: Way, Roger
viewed: 436
title: Jonamac- a new apple from Geneva
abstract: Because of this good performance over a 17-year period both in Experiment Station trials and in commercial orchards, Jonamac is introduced as a Mclntosh-type dessert apple, ripening about 8 days before Mclntosh. It is not suitable for processing. Having better red color and better eating quality than Mclntosh, it appears to be best suited to replace some of the Mclntosh apples that are now harvested immature and put onto the market before they are ripe. Jonamac has been suggested as a replacement for Mclntosh. It is offered as a worthy new apple that should be eminently useful both to the commercial grower and to the home gardener.

url: http://hdl.handle.net/1813/4058
date: 2006-12-21

creator: Watson, John
viewed: 153
title: Seneca Plum named
abstract: Seneca is therefore a large, attractive, firm, good quality fruit that should serve well the need of better quality plums for home garden and local market use. The name commemorates the Indians of the area who for many years tilled the soil and harvested the crops before being displaced by the white man.

url: http://hdl.handle.net/1813/4059
date: 2006-12-21
creator: Casler, George;Cuykendall, Charles
viewed: 465
title: Forage and Grain Programs for Dairy Farms with Varying Cow-Land Ratios
abstract: Forage crops, the major feed components on most dairy farms, comprise 25 to 30 percent of the cost of milk production (6). Thus, many economic factors must be considered in deciding what forages to grow, the form in which to harvest them, and the supplements needed.

url: http://hdl.handle.net/1813/4060
date: 2006-12-21
creator: Quintero, Esther
viewed: 514
title: Gender and the Evaluation of Job Applicants in Natural Settings
abstract: Researchers have pointed out that occupational sex segregation will not be fully understood until detailed data are collected on natural (Biernat & Fuegen 2001) and non-scripted interactional settings (Ridgeway & Correll 2004) which are central to gender and employment (Ridgeway 1997). This paper makes a direct contribution to this goal by applying experimentally established theory to a natural environment that involves the live interaction of applicants and evaluators who are recruiting them for jobs.

Gender status theories argue that gender systematically shapes the way men and women are perceived in evaluative and task oriented contexts when gender differentiates actors in the setting (Correll & Ridgeway 2003; Foschi 2000). Specifically, Status Characteristics Theory (SCT) predicts that, in such settings, men will have an advantage over women because individuals hold higher performance expectations for men than for women (Berger et al. 1977; Foschi 1989.) In other words, because there are broadly shared cultural beliefs implying that men at better at the things that count, specific men will also appear more skilled than specific and equally competent women. If these mechanisms are at play in hiring settings, the implication is that employers will be more likely to hire the male applicant even when the female applicant is equally qualified.

Although hiring contexts are almost never accessible to researchers, this project identifies and takes advantage of a unique setting that (1) permits direct observation and data collection on real hiring decisions made in the course of direct interaction and (2) meets the scope conditions of SCT.

The context of this study is the Spanish exam system that is used to recruit candidates to fill important government jobs. Women are currently underrepresented in these positions filling only about 30% of them. Exams to become a government employee in Spain are public and involve the face to face interaction of evaluators and job applicants. Applicants go through a series of qualifying testing rounds; those who succeed at all stages are automatically hired. This setting is exceptional in that: (1) is accessible for direct observation and data collection, (2) the event of interest (i.e. exam) repeats sufficiently so as to evaluate theory-driven claims statistically, and (3) exams are fairly structured, which deems the lack of strict controls less problematic.

I examine quantitative pass/fail exam data and information gathered from direct observation of exam sessions. I use SCT and draw from (and extend) Ridgeway?s ideas about gender and social interaction to make the following predictions. First, following SCT, I predict that (1) male (female) applicants will be advantaged

(i.e. pass at higher rates) in exams involving skills typically perceived as neutral (feminine). Second, I extend Ridgeway?s discussion of gender and interaction, by arguing that (2) the degree of applicant-evaluator interaction will shape the magnitude of prediction one. In other words, larger differences in passing rates between male and female applicants will be observed at exams involving a greater degree of applicant-evaluator interaction than at those exams characterized by minimal interaction. Both hypotheses were confirmed empirically thereby suggesting that (a) SCT appropriately explains the outcome of interest, and (b) the degree of interaction shapes the size of SCT?s predictions. The results of my work suggest that the mechanisms discovered in controlled environments are at play in actual hiring settings. Second, my results also suggest that it may be useful to conceptualize interaction as a continuous measure shaping the size of SCT?s predictions.

url: http://hdl.handle.net/1813/4061
date: 2006-12-21
creator: Kearns, Trevor
viewed: 420
title: Aquatelos
abstract:

url: http://hdl.handle.net/1813/4062
date: 2006-12-21
creator: Wheeler, W. P.;New York State Agricultural Experiment Station.
viewed: 138
title: Bulletin: Number 242: The Importance of Mineral Matter and the Value of Grit for Chicks
abstract: 24 pages, 1 article*The Importance of Mineral Matter and the Value of Grit for Chicks* (Wheeler, W. P.) 22 pages

url: http://hdl.handle.net/1813/4063
date: 2006-12-21
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 130
title: Bulletin: Number 242, Edition popular: Ash and Grit for Growing Chicks
abstract: 7 pages, 1 article*Ash and Grit for Growing Chicks* (Hall, F. H.) 5 pages

url: http://hdl.handle.net/1813/4064
date: 2006-12-21
creator: Taylor, O. M.;Clark, V. A.;Beach, S. A.;New York State Agricultural Experiment Station.
viewed: 121
title: Bulletin: Number 243: Spray Mixtures and Spray Machinery
abstract: 83 pages, 1 article*Spray Mixtures and Spray Machinery* (Beach, S. A.; Clark, V. A.; Taylor, O. M.) 81 pages

url: http://hdl.handle.net/1813/4065
date: 2006-12-21
creator: Jordan, W. H.;New York State Agricultural Experiment Station.
viewed: 257
title: Bulletin: Number 244: Director's Report for 1903
abstract: 24 pages, 1 article*Director's Report for 1903* (Jordan, W. H.) 22 pages

url: http://hdl.handle.net/1813/4066
date: 2006-12-21
creator: Hart, E. B.;Van Slyke, L. L.;New York State Agricultural Experiment Station.
viewed: 143
title: Bulletin: Number 245: Chemical Changes in the Souring of Milk and their Relations to Cottage Cheese
abstract: 36 pages, 1 article*Chemical Changes in the Souring of Milk and their Relations to Cottage Cheese* (Van Slyke, L. L.; Hart, E. B.) 34 pages

url: http://hdl.handle.net/1813/4067
date: 2006-12-21
creator: Nicholson, J. F.;Harding, H. A.;New York State Agricultural Experiment Station.
viewed: 171
title: Bulletin: Number 249: A Swelling of Canned Peas Accompanied by a Malodorous Decomposition
abstract: 18 pages, 1 article*A Swelling of Canned Peas Accompanied by a Malodorous Decomposition* (Harding, H. A..; Nicholson, J. F.) 16 pages

url: http://hdl.handle.net/1813/4068
date: 2006-12-21
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 237
title: Bulletin: Number 249, Edition popular: A Pea Canners' Problem Solved
abstract: 7 pages, 1 article*A Pea Canners' Problem Solved* (Hall, F. H.) 5 pages

url: http://hdl.handle.net/1813/4069
date: 2006-12-21
creator: New York State Agricultural Experiment Station.
viewed: 160
title: Bulletin: Number 25: The New York State Fertilizer Control and Fertilizer Analysis
abstract: 42 pages, 1 article*The New York State Fertilizer Control and Fertilizer Analysis* 39 pages

url: http://hdl.handle.net/1813/4070
date: 2006-12-21
creator: Hart, E. B.;Patten, A. J.;New York State Agricultural Experiment Station.
viewed: 285
title: Bulletin: Number 250: The Nature of the Principal Phosphorus Compound in Wheat Bran
abstract: 10 pages, 1 article*The Nature of the Principal Phosphorus Compound in Wheat Bran* (Patten, A. J.; Hart, E. B.) 8 pages

url: http://hdl.handle.net/1813/4071
date: 2006-12-21
creator: Prucha, M. J.;Stewart, F. C.;Harding, H. A.;New York State Agricultural Experiment Station.
viewed: 139
title: Bulletin: Number 251: Vitality of the Cabbage Black Rot Germ on Cabbage Seed
abstract: 21 pages, 1 article*Vitality of the Cabbage Black Rot Germ on Cabbage Seed* (Harding, H. A.; Stewart, F. C.; Prucha, M. J.) 19 pages

url: http://hdl.handle.net/1813/4072

date: 2006-12-21
creator: Andrews, W. H.;Van Slyke, L. L.;Jordan, W. H.;New York State Agricultural Experiment Station.
viewed: 162
title: Bulletin: Number 252: Report of Analyses of Commercial Fertilizers for the Spring and Fall of 1903
abstract: 81 pages, 1 article*Report of Analyses of Commercial Fertilizers for the Spring and Fall of 1903* (Jordan, W. H.; Van Slyke, L. L.; Andrews, W. H.) 78 pages

url: http://hdl.handle.net/1813/4073
date: 2006-12-21
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 132
title: Bulletin: Number 245, Edition popular: The Chemistry of Cottage Cheese
abstract: 10 pages, 1 article*The Chemistry of Cottage Cheese* (Hall, F. H.) 8 pages

url: http://hdl.handle.net/1813/4074
date: 2006-12-21
creator: Woodworth, H. O.;Beach, S. A.;Parrott, P. J.;New York State Agricultural Experiment Station.
viewed: 137
title: Bulletin: Number 247: The Lime-Sulphur-Soda Wash for Orchard Treatment
abstract: 27 pages, 1 article*The Lime-Sulphur-Soda Wash for Orchard Treatment* (Parrott, P. J.; Beach, S. A.; Woodworth, H. O.) 25 pages

url: http://hdl.handle.net/1813/4075
date: 2006-12-21
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 175
title: Bulletin: Number 247, Edition popular: Sulphur Sprays for Orchard Trees
abstract: 11 pages, 1 article*Sulphur Sprays for Orchard Trees* (Hall, F. H.) 9 pages

url: http://hdl.handle.net/1813/4076
date: 2006-12-21
creator: Clark, V. A.;Beach, S. A.;New York State Agricultural Experiment Station.
viewed: 138
title: Bulletin: Number 248: New York Apples in Storage
abstract: 74 pages, 1 article*New York Apples in Storage* (Beach, S. A.; Clark, V. A.) 72 pages

url: http://hdl.handle.net/1813/4077
date: 2006-12-21
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 167
title: Bulletin: Number 248, Edition popular: Keeping Quality of Apples
abstract: 11 pages, 1 article*Keeping Quality of Apples* (Hall, F. H.) 9 pages

url: http://hdl.handle.net/1813/4078
date: 2006-12-21
creator: Lowe, V. H.;New York State Agricultural Experiment Station.
viewed: 304
title: Bulletin: Number 122: The Pistol-Case-Bearer

abstract: 17 pages, 1 article*The Pistol-Case-Bearer* (Lowe, V. H.) 15 pages

url: http://hdl.handle.net/1813/4079
date: 2006-12-21
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 1236
title: Bulletin: Number 122, Edition popular: A Peculiar Insect Enemy of the Apple
abstract: 9 pages, 1 article*A Peculiar Insect Enemy of the Apple* (Hall, F.H.) 7 pages

url: http://hdl.handle.net/1813/4080
date: 2006-12-21
creator: Andrews, W. H.;Van Slyke, L. L.;New York State Agricultural Experiment Station.
viewed: 187
title: Bulletin: Number 190: Report on Analyses of Paris Green and Other Insecticides in 1900
abstract: 10 pages, 1 article*Report on Analyses of Paris Green and Other Insecticides in 1900* (Van Slyke, L. L.; Andrews, W. H.) 8 pages

url: http://hdl.handle.net/1813/4081
date: 2006-12-21
creator: Jenter, C. G.;Jordan, W. H.;New York State Agricultural Experiment Station.
viewed: 427
title: Bulletin: Number 192: The Substitution of Soda for Potash in Plant Growth
abstract: 26 pages, 1 article*The Substitution of Soda for Potash in Plant Growth* (Jordan, W. H.; Jenter, C. G.) 24 pages

url: http://hdl.handle.net/1813/4082
date: 2006-12-21
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 349
title: Bulletin: Number 192, Edition popular: Can Plants Use Soda in Place of Potash?
abstract: 10 pages, 1 article*Can Plants Use Soda in Place of Potash?* (Hall, F. H.) 8 pages

url: http://hdl.handle.net/1813/4083
date: 2006-12-21
creator: Taylor, O. M.;New York State Agricultural Experiment Station.
viewed: 125
title: Bulletin: Number 218: Variety Test of Strawberries
abstract: 17 pages, 1 article*Variety Test of Strawberries* (Taylor, O. M.) 15 pages

url: http://hdl.handle.net/1813/4084
date: 2006-12-21
creator: New York State Agricultural Experiment Station.
viewed: 143
title: Bulletin: Number 218, Edition popular: Strawberries in 1902
abstract: 4 pages, 1 article*Strawberries in 1902* 2 pages

url: http://hdl.handle.net/1813/4085
date: 2006-12-21

creator: Hart, E. B.;Van Slyke, L. L.;New York State Agricultural Experiment Station.
viewed: 129
title: Bulletin: Number 219: Some of the Compounds Present in American Cheddar Cheese
abstract: 16 pages, 1 article*Some of the Compounds Present in American Cheddar Cheese* (Van Slyke, L. L.; Hart, E. B.) 14 pages

url: http://hdl.handle.net/1813/4086
date: 2006-12-21
creator: New York State Agricultural Experiment Station.
viewed: 206
title: Bulletin: Number 22: Pig Feeding Experiments Without Milk
abstract: 13 pages, 1 article*Pig Feeding Experiments Without Milk* 11 pages

url: http://hdl.handle.net/1813/4087
date: 2006-12-21
creator: Eustace, H. J.;Stewart, F. C.;New York State Agricultural Experiment Station.
viewed: 573
title: Bulletin: Number 220: Two Unusual Troubles of Apple Foliage
abstract: 25 pages, 1 article*Two Unusual Troubles of Apple Foliage* (Stewart, F. C.; Eustace, H. J.) 23 pages

url: http://hdl.handle.net/1813/4088
date: 2006-12-21
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 136
title: Bulletin: Number 363, Edition popular: The Price Control Factor in the Pure Milk Problem
abstract: 8 pages, 1 article*The Price Control Factor in the Pure Milk Problem* (Hall, F. H.) 6 pages

url: http://hdl.handle.net/1813/4089
date: 2006-12-21
creator: Smith, G. A.;Wilson, J. K.;Ruehle, G. L.;Harding, H. A.;New York State Agricultural Experiment Station.
viewed: 150
title: Bulletin: Number 365: The Effect of Certain Dairy Operations upon the Germ Content of Milk
abstract: 39 pages, 1 article*The Effect of Certain Dairy Operations upon the Germ Content of Milk* (Harding, H. A.; Ruehle, G. L.; Wilson, J. K.; Smith, G. A.) 37 pages

url: http://hdl.handle.net/1813/4090
date: 2006-12-21
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 238
title: Bulletin: Number 365, Edition popular: Some Unessential Dairy Refinements
abstract: 8 pages, 1 article*Some Unessential Dairy Refinements* (Hall, F. H.) 7 pages

url: http://hdl.handle.net/1813/4091
date: 2006-12-21
creator: New York State Agricultural Experiment Station.
viewed: 175

title: Bulletin: Number 366: Inspection of Feeding Stuffs
abstract: 124 pages, 1 article*Inspection of Feeding Stuffs* 122 pages

url: http://hdl.handle.net/1813/4092
date: 2006-12-21
creator: Stewart, F. C.;New York State Agricultural Experiment Station.
viewed: 120
title: Bulletin: Number 367: The Persistence of the Potato Late-Blight Fungus in the Soil
abstract: 7 pages, 1 article*The Persistence of the Potato Late-Blight Fungus in the Soil* (Stewart, F. C.) 5 pages

url: http://hdl.handle.net/1813/4093
date: 2006-12-21
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 189
title: Bulletin: Number 367, Edition popular: Does Winter Kill Potato Blight in the Soil?
abstract: 2 pages, 1 article*Does Winter Kill Potato Blight in the Soil?* (Hall, F. H.) 1 page

url: http://hdl.handle.net/1813/4094
date: 2006-12-21
creator: Hodgkiss, H. E.;Parrott, P. J.;New York State Agricultural Experiment Station.
viewed: 130
title: Bulletin: Number 368: The False Tarnished Plant-Bug as a Pear Pest
abstract: 32 pages, 1 article*The False Tarnished Plant-Bug as a Pear Pest* (Parrott, P. J.; Hodgkiss, H. E.) 30 pages

url: http://hdl.handle.net/1813/4095
date: 2006-12-21
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 135
title: Bulletin: Number 368, Edition popular: A Pear-Deforming Plant-Bug
abstract: 8 pages, 1 article*A Pear-Deforming Plant-Bug* (Hall, F. H.) 6 pages

url: http://hdl.handle.net/1813/4096
date: 2006-12-21
creator: Gloyer, W. O.;Stewart, F. C.;New York State Agricultural Experiment Station.
viewed: 160
title: Bulletin: Number 369: The Injurious Effect of Formaldehyde Gas on Potato Tubers
abstract: 37 pages, 1 article*The Injurious Effect of Formaldehyde Gas on Potato Tubers* (Stewart, F. C.; Gloyer, W. O.) 35 pages

url: http://hdl.handle.net/1813/4097
date: 2006-12-21
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 190
title: Bulletin: Number 369-370, Edition popular: Some Faults in Formaldehyde Disinfection of Potatoes
abstract: 10 pages, 1 article*Some Faults in Formaldehyde Disinfection of Potatoes* (Hall, F. H.) 8 pages

url: http://hdl.handle.net/1813/4098
date: 2006-12-21
creator: New York State Agricultural Experiment Station.
viewed: 119
title: Bulletin: Number 37: Investigation of Cheese
abstract: 71 pages, 1 article*Investigation of Cheese* 70 pages

url: http://hdl.handle.net/1813/4099
date: 2006-12-21
creator: Gloyer, W. O.;New York State Agricultural Experiment Station.
viewed: 216
title: Bulletin: Number 370: The Efficiency of Formaldehyde in the Treatment of Seed Potatoes for Rhizoctonia
abstract: 15 pages, 1 article*The Efficiency of Formaldehyde in the Treatment of Seed Potatoes for Rhizoctonia* (Gloyer, W. O.) 15 pages

url: http://hdl.handle.net/1813/4100
date: 2006-12-21
creator: Stewart, F. C.;New York State Agricultural Experiment Station.
viewed: 276
title: Bulletin: Number 123: Spraying Potatoes on Long Island in the Season of 1896
abstract: 30 pages, 1 article*Spraying Potatoes on Long Island in the Season of 1896* (Stewart, F. C.) 27 pages

url: http://hdl.handle.net/1813/4101
date: 2006-12-21
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 147
title: Bulletin: Number 123, Edition popular: Does It Pay to Spray Potatoes?
abstract: 8 pages, 1 article*Does It Pay to Spray Potatoes?* (Hall, F. H.) 6 pages

url: http://hdl.handle.net/1813/4102
date: 2006-12-21
creator: Sirrine, F. A.;New York State Agricultural Experiment Station.
viewed: 156
title: Bulletin: Number 188: Spraying for Asparagus Rust
abstract: 56 pages, 1 article*Spraying for Asparagus Rust* (Sirrine, F. A.) 54 pages

url: http://hdl.handle.net/1813/4103
date: 2006-12-21
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 401
title: Bulletin: Number 188-189, Edition popular: Protecting Asparagus
abstract: 14 pages, 1 article*Protecting Asparagus* (Hall, F. H.) 12 pages

url: http://hdl.handle.net/1813/4104
date: 2006-12-21
creator: Sirrine, F. A.;New York State Agricultural Experiment Station.

viewed: 135
title: Bulletin: Number 189: A Little-Known Asparagus Pest
abstract: 8 pages, 1 article*A Little-Known Asparagus Pest* (Sirrine, F. A.) 6 pages

url: http://hdl.handle.net/1813/4105
date: 2006-12-21
creator: New York State Agricultural Experiment Station.
viewed: 199
title: Bulletin: Number 19: A Method for the Determination of Fat in Milk and Cream
abstract: 15 pages, 1 article*A Method for the Determination of Fat in Milk and Cream* 13 pages

url: http://hdl.handle.net/1813/4106
date: 2006-12-21
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 395
title: Bulletin: Number 220, 227, Edition popular: Apple Troubles in 1902
abstract: 12 pages, 1 article*Apple Troubles in 1902* (Hall, F. H.) 10 pages

url: http://hdl.handle.net/1813/4107
date: 2006-12-21
creator: Hedrick, U. P.;New York State Agricultural Experiment Station.
viewed: 151
title: Bulletin: Volume 355: Grape Stocks for American Grapes
abstract: 40 pages, 1 article*Grape Stocks for American Grapes* (Hedrick, U. P.) 38 pages

url: http://hdl.handle.net/1813/4108
date: 2006-12-21
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 132
title: Bulletin: Number 355, Edition popular: New York Grapes on New Roots
abstract: 11 pages, 1 article*New York Grapes on New Roots* (Hall, F. H.) 9 pages

url: http://hdl.handle.net/1813/4109
date: 2006-12-21
creator: Jordan, W. H.;New York State Agricultural Experiment Station.
viewed: 283
title: Bulletin: Number 356: Director's Report for 1912
abstract: 49 pages, 1 article*Director's Report for 1912* (Jordan, W. H.) 47 pages

url: http://hdl.handle.net/1813/4110
date: 2006-12-21
creator: Stewart, F. C.;New York State Agricultural Experiment Station.
viewed: 138
title: Bulletin: Number 357: An Experiment on the Control of Currant Cane Necrosis by Summer Pruning
abstract: 12 pages, 1 article*An Experiment on the Control of Currant Cane Necrosis by Summer Pruning* (Stewart, F. C.) 10 pages

url: http://hdl.handle.net/1813/4111

date: 2006-12-21
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 132
title: Bulletin: Number 357, Edition popular: Pruning Fails to Control a Currant Disease
abstract: 2 pages, 1 article*Pruning Fails to Control a Currant Disease* (Hall, F. H.) 1 page

url: http://hdl.handle.net/1813/4112
date: 2006-12-21
creator: Jordan, W. H.;New York State Agricultural Experiment Station.
viewed: 288
title: Bulletin: Number 358: Studies in Plant Nutrition: I.
abstract: 22 pages, 1 article*Studies in Plant Nutrition: I.* (Jordan, W. H.) 20 pages

url: http://hdl.handle.net/1813/4113
date: 2006-12-21
creator: Corson-Rikert, Jon;Cline, John
viewed: 312
title: e-Clips
abstract: Presented at the Metadata Working Group forum, December 15, 2006.

url: http://hdl.handle.net/1813/4114
date: 2006-12-21
creator: Hartzell, F. Z.;New York State Agricultural Experiment Station.
viewed: 112
title: Bulletin: Number 359: The Grape Leaf-Hopper
abstract: 29 pages, 1 article*The Grape Leaf-Hopper* (Hartzell, F. Z.) 27 pages

url: http://hdl.handle.net/1813/4115
date: 2006-12-21
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 193
title: Bulletin: Number 359, Edition popular: Controlling Grape Leaf-Hoppers in 1912
abstract: 6 pages, 1 article*Controlling Grape Leaf-Hoppers in 1912* (Hall, F. H.) 5 pages

url: http://hdl.handle.net/1813/4116
date: 2006-12-21
creator: New York State Agricultural Experiment Station.
viewed: 151
title: Bulletin: Number 36: Small Fruits
abstract: 20 pages, 1 article*Small Fruits* 18 pages

url: http://hdl.handle.net/1813/4117
date: 2006-12-21
creator: Jordan, W. H.;New York State Agricultural Experiment Station.
viewed: 137
title: Bulletin: Number 360: Studies in Plant Nutrition. II.
abstract: 28 pages, 1 article*Studies in Plant Nutrition. II.* (Jordan, W. H.) 25 pages

url: http://hdl.handle.net/1813/4118
date: 2006-12-21
creator: Howe, G. H.;Hedrick, U. P.;New York State Agricultural Experiment Station.
viewed: 156
title: Bulletin: Number 361: Apples: Old and New
abstract: 59 pages, 1 article*Apples: Old and New* (Hedrick, U. P.; Howe, G. H.) 57 pages

url: http://hdl.handle.net/1813/4119
date: 2006-12-21
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 165
title: Bulletin: Number 361, Edition popular: The Best Apples for New York State
abstract: 12 pages, 1 article*The Best Apples for New York State* (Hall, F. H.) 11 pages

url: http://hdl.handle.net/1813/4120
date: 2006-12-21
creator: Munn, M. T.;New York State Agricultural Experiment Station.
viewed: 118
title: Bulletin: Number 362: Seed Tests Made at the Station during 1912
abstract: 29 pages, 1 article*Seed Tests Made at the Station during 1912* (Munn, M. T.) 27 pages

url: http://hdl.handle.net/1813/4121
date: 2006-12-21
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 294
title: Bulletin: Number 362, Edition popular: Does the Farmer Get Pure Seeds?
abstract: 10 pages, 1 article*Does the Farmer Get Pure Seeds?* (Hall, F. H.) 8 pages

url: http://hdl.handle.net/1813/4122
date: 2006-12-21
creator: Brew, J. D.;Harding, H. A.;New York State Agricultural Experiment Station.
viewed: 125
title: Bulletin: Number 363: The Financial Stimulus in City Milk Production
abstract: 16 pages, 1 article*The Financial Stimulus in City Milk Production* (Harding, H. A.; Brew, J. D.) 14 pages

url: http://hdl.handle.net/1813/4123
date: 2006-12-21
creator: Paddock, Wendell;New York State Agricultural Experiment Station.
viewed: 182
title: Bulletin: Number 124: Anthracnose of the Black Raspberry
abstract: 17 pages, 1 article*Anthracnose of the Black Raspberry* (Paddock, Wendell) 14 pages

url: http://hdl.handle.net/1813/4124
date: 2006-12-21
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 134
title: Bulletin: Number 124, Edition popular: Preventive Treatment of Raspberry Anthracnose

abstract: 8 pages, 1 article*Preventive Treatment of Raspberry Anthracnose* (Hall, F. H.) 6 pages

url: http://hdl.handle.net/1813/4125
date: 2006-12-21
creator: Smith, Geo. A.;New York State Agricultural Experiment Station.
viewed: 131
title: Bulletin: Number 184: The Influence of the Temperature of Curing upon the Commercial Quality of Cheese
abstract: 11 pages, 1 article*The Influence of the Temperature of Curing upon the Commercial Quality of Cheese* (Smith, Geo. A.) 9 pages

url: http://hdl.handle.net/1813/4126
date: 2006-12-21
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 139
title: Bulletin: Number 184, Edition popular: Cold-Cured Cheese
abstract: 4 pages, 1 article*Cold-Cured Cheese* (Hall, F. H.) 2 pages

url: http://hdl.handle.net/1813/4127
date: 2006-12-21
creator: Paddock, Wendell;New York State Agricultural Experiment Station.
viewed: 167
title: Bulletin: Number 185: The New York Apple-Tree Canker (second report)
abstract: 15 pages, 1 article*The New York Apple-Tree Canker (second report)* (Paddock, Wendell) 13 pages

url: http://hdl.handle.net/1813/4128
date: 2006-12-21
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 177
title: Bulletin: Number 185, Edition popular: Plant Diseases due to Rhizoctonia
abstract: 11 pages, 1 article*Plant Diseases due to Rhizoctonia* (Hall, F. H.) 9 pages

url: http://hdl.handle.net/1813/4129
date: 2006-12-21
creator: Stewart, F. C.;Duggar, B. M.;New York State Agricultural Experiment Station.
viewed: 192
title: Bulletin: Number 186: The Sterile Fungus Rhizoctonia as a Cause of Plant Diseases in America
abstract: 30 pages, 1 article*The Sterile Fungus Rhizoctonia as a Cause of Plant Diseases in America* (Duggar, B. M.; Stewart, F. C.) 28 pages

url: http://hdl.handle.net/1813/4130
date: 2006-12-21
creator: Jordan, W. H.;New York State Agricultural Experiment Station.
viewed: 153
title: Bulletin: Number 187: Commercial Fertilizers for Potatoes III.
abstract: 20 pages, 1 article*Commercial Fertilizers for Potatoes III.* (Jordan, W. H.) 18 pages

url: http://hdl.handle.net/1813/4131
date: 2006-12-21
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 185
title: Bulletin: Number 187, Edition popular: Profitable Potato Fertilizing III.
abstract: 7 pages, 1 article*Profitable Potato Fertilizing III.* (Hall, F. H.) 5 pages

url: http://hdl.handle.net/1813/4132
date: 2006-12-21
creator: Sirrine, F. A.;Eustace, H. J.;Stewart, F. C.;New York State Agricultural Experiment Station.
viewed: 184
title: Bulletin: Number 221: Potato Spraying Experiments in 1902
abstract: 31 pages, 1 article*Potato Spraying Experiments in 1902* (Stewart, F. C.; Eustace, H. J.; Sirrine, F. A.) 29 pages

url: http://hdl.handle.net/1813/4133
date: 2006-12-21
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 123
title: Bulletin: Number 221, Edition popular: Shall Potato Growers Spray?
abstract: 7 pages, 1 article*Shall Potato Growers Spray?* (Hall, F. H.) 5 pages

url: http://hdl.handle.net/1813/4134
date: 2006-12-21
creator: Andrews, W. H.;Van Slyke, L. L.;New York State Agricultural Experiment Station.
viewed: 193
title: Bulletin: Number 222: Report of Analyses of Paris Green and Other Insecticides in 1902
abstract: 6 pages, 1 article*Report of Analyses of Paris Green and Other Insecticides in 1902* (Van Slyke, L. L.; Andrews, W. H.) 4 pages

url: http://hdl.handle.net/1813/4135
date: 2006-12-21
creator: Beach, S. A.;New York State Agricultural Experiment Station.
viewed: 118
title: Bulletin: Number 223: Investigations Concerning the Self-Fertility of the Grape, 1900-1902
abstract: 26 pages, 1 article*Investigations Concerning the Self-Fertility of the Grape, 1900-1902* (Beach, S. A.) 24 pages

url: http://hdl.handle.net/1813/4136
date: 2006-12-21
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 408
title: Bulletin: Number 223-224, Edition popular: Grape Pollen and Pollination
abstract: 10 pages, 1 article*Grape Pollen and Pollination* (Hall, F. H.) 8 pages

url: http://hdl.handle.net/1813/4137
date: 2006-12-21
creator: Hall, F. H.;New York State Agricultural Experiment Station.

viewed: 203
title: Bulletin: Number 350, Edition popular: Some New Apples from Known Parents
abstract: 12 pages, 1 article*Some New Apples from Known Parents* (Hall, F. H.) 10 pages

url: http://hdl.handle.net/1813/4138
date: 2006-12-21
creator: New York State Agricultural Experiment Station.
viewed: 1054
title: Bulletin: Number 351: Inspection of Feeding Stuffs
abstract: 133 pages, 1 article*Inspection of Feeding Stuffs* 131 pages

url: http://hdl.handle.net/1813/4139
date: 2006-12-21
creator: Munn, M. T.;New York State Agricultural Experiment Station.
viewed: 118
title: Bulletin: Number 352: Lime-Sulphur vs. Bordeaux Mixture as a Spray for Potatoes, II.
abstract: 11 pages, 1 article*Lime-Sulphur vs. Bordeaux Mixture as a Spray for Potatoes, II.* (Munn, M. T.) 9 pages

url: http://hdl.handle.net/1813/4140
date: 2006-12-21
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 165
title: Bulletin: Number 352, Edition popular: Lime-Surphur Not a Good Potato Spray
abstract: 2 pages, 1 article*Lime-Surphur Not a Good Potato Spray* (Hall, F. H.) 1 page

url: http://hdl.handle.net/1813/4141
date: 2006-12-21
creator: Harding, H. A.;Smith, G. A.;New York State Agricultural Experiment Station.
viewed: 127
title: Bulletin: Number 353: Milking Machines: Effect of the Machine Method of Milking upon the Milk Flow
abstract: 38 pages, 1 article*Milking Machines: Effect of the Machine Method of Milking upon the Milk Flow* (Smith, G. A.; Harding, H. A.) 36 pages

url: http://hdl.handle.net/1813/4142
date: 2006-12-21
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 120
title: Bulletin: Number 353, Edition popular: Machine Milking Does Not Affect Milk Flow
abstract: 11 pages, 1 article*Machine Milking Does Not Affect Milk Flow* (Hall, F. H.) 9 pages

url: http://hdl.handle.net/1813/4143
date: 2006-12-21
creator: New York State Agricultural Experiment Station.
viewed: 1898
title: Bulletin: Number 354: Report of Analyses of Samples of Commercial Fertilizers Collected by the Commissioner of Agriculture during 1912

abstract: 122 pages, 1 article*Report of Analyses of Samples of Commercial Fertilizers Collected by the Commissioner of Agriculture during 1912* 120 pages

url: http://hdl.handle.net/1813/4144
date: 2006-12-21
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 270
title: Bulletin: Number 125: Tomato Forcing: Methods of Training and Benching
abstract: 10 pages, 1 article*Tomato Forcing: Methods of Training and Benching* (Hall, F. H.) 8 pages

url: http://hdl.handle.net/1813/4145
date: 2006-12-21
creator: Wheeler, W. P.;New York State Agricultural Experiment Station.
viewed: 131
title: Bulletin: Number 126: Feeding Experiments with Chicks and Capons
abstract: 22 pages, 1 article*Feeding Experiments with Chicks and Capons* (Wheeler, W. P.) 20 pages

url: http://hdl.handle.net/1813/4146
date: 2006-12-21
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 239
title: Bulletin: Number 183, Edition popular: Dairy Disagreeables Busy the Bacteriologists
abstract: 9 pages, 1 article*Dairy Disagreeables Busy the Bacteriologists* (Hall, F. H.) 7 pages

url: http://hdl.handle.net/1813/4147
date: 2006-12-21
creator: Smith, G. A.;Harding, H. A.;New York State Agricultural Experiment Station.
viewed: 166
title: Bulletin: Number 225: Control of Rusty Spot in Cheese Factories
abstract: 29 pages, 1 article*Control of Rusty Spot in Cheese Factories* (Harding, H. A.; Smith, G. A.) 27 pages

url: http://hdl.handle.net/1813/4148
date: 2006-12-21
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 141
title: Bulletin: Number 225, Edition popular: Rusty Spot and a Remedy
abstract: 7 pages, 1 article*Rusty Spot and a Remedy* (Hall, F. H.) 5 pages

url: http://hdl.handle.net/1813/4149
date: 2006-12-21
creator: Eustace, H. J.;Stewart, F. C.;New York State Agricultural Experiment Station.
viewed: 215
title: Bulletin: Number 226: Raspberry Cane Blight and Raspberry Yellows
abstract: 44 pages, 1 article*Raspberry Cane Blight and Raspberry Yellows* (Stewart, F. C.; Eustace, H. J.) 42 pages

url: http://hdl.handle.net/1813/4150

date: 2006-12-21
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 175
title: Bulletin: Number 226, Edition popular: Two New Raspberry Diseases
abstract: 11 pages, 1 article*Two New Raspberry Diseases* (Hall, F. H.) 9 pages

url: http://hdl.handle.net/1813/4151
date: 2006-12-21
creator: Eustace, H. J.;New York State Agricultural Experiment Station.
viewed: 384
title: Bulletin: Number 227: A Destructive Apple Rot Following Scab
abstract: 34 pages, 1 article*A Destructive Apple Rot Following Scab* (Eustace, H. J.) 31 pages

url: http://hdl.handle.net/1813/4152
date: 2006-12-21
creator: Parrott, P. J.;Lowe, V. H.;New York State Agricultural Experiment Station.
viewed: 116
title: Bulletin: Number 228: San Jose Scale Investigations IV.
abstract: 75 pages, 1 article*San Jose Scale Investigations IV.* (Lowe, V. H.; Parrott, P. J.) 73 pages

url: http://hdl.handle.net/1813/4153
date: 2006-12-21
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 141
title: Bulletin: Number 228, Edition popular: Spraying for the San Jose Scale with the Lime-Sulphur-Salt and Other Washes
abstract: 10 pages, 1 article*Spraying for the San Jose Scale with the Lime-Sulphur-Salt and Other Washes* (Hall, F. H.) 8 pages

url: http://hdl.handle.net/1813/4154
date: 2006-12-21
creator: New York State Agricultural Experiment Station.
viewed: 141
title: Bulletin: Number 34: Comparison of Dairy Breeds of Cattle, with Reference to Production of Butter
abstract: 48 pages, 1 article*Comparison of Dairy Breeds of Cattle, with Reference to Production of Butter* 46 pages

url: http://hdl.handle.net/1813/4155
date: 2006-12-21
creator: New York State Agricultural Experiment Station.
viewed: 104
title: Bulletin: Number 340: Inspection of Feeding Stuffs
abstract: 101 pages, 1 article*Inspection of Feeding Stuffs* 99 pages

url: http://hdl.handle.net/1813/4156
date: 2006-12-21
creator: Jordan, W. H.;New York State Agricultural Experiment Station.
viewed: 327

title: Bulletin: Number 342: Director's Report for 1911
abstract: 22 pages, 1 article*Director's Report for 1911* (Jordan, W. H.) 20 pages

url: http://hdl.handle.net/1813/4157
date: 2006-12-21
creator: Hartzell, F. Z.;New York State Agricultural Experiment Station.
viewed: 334
title: Bulletin: Number 344: The Grape Leaf-Hopper and Its Control
abstract: 21 pages, 1 article*The Grape Leaf-Hopper and Its Control* (Hartzell, F. Z.) 19 pages

url: http://hdl.handle.net/1813/4158
date: 2006-12-21
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 315
title: Bulletin: Number 344, Edition popular: Fighting Leaf-Hoppers in the Vineyard
abstract: 8 pages, 1 article*Fighting Leaf-Hoppers in the Vineyard* (Hall, F. H.) 6 pages

url: http://hdl.handle.net/1813/4159
date: 2006-12-21
creator: Wellington, Richard;New York State Agricultural Experiment Station.
viewed: 136
title: Bulletin: Number 346: Influence of Crossing in Increasing the Yield of the Tomato
abstract: 22 pages, 1 article*Influence of Crossing in Increasing the Yield of the Tomato* (Wellington, Richard) 20 pages

url: http://hdl.handle.net/1813/4160
date: 2006-12-21
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 190
title: Bulletin: Number 346, Edition popular: Crossing Tomatoes to Increase the Yield
abstract: 8 pages, 1 article*Crossing Tomatoes to Increase the Yield* (Hall, F. H.) 7 pages

url: http://hdl.handle.net/1813/4161
date: 2006-12-21
creator: New York State Agricultural Experiment Station.
viewed: 137
title: Bulletin: Number 348: Analyses of Materials Sold as Insecticides and Fungicides
abstract: 16 pages, 1 article*Analyses of Materials Sold as Insecticides and Fungicides* 14 pages

url: http://hdl.handle.net/1813/4162
date: 2006-12-21
creator: Sirrine, F. A.;French, G. T.;Stewart, F. C.;New York State Agricultural Experiment Station.
viewed: 237
title: Bulletin: Number 349: Potato Spraying Experiments, 1902-1911
abstract: 43 pages, 1 article*Potato Spraying Experiments, 1902-1911* (Stewart, F. C.; French, G. T.; Sirrine, F. A.) 41 pages

url: http://hdl.handle.net/1813/4163

date: 2006-12-21
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 280
title: Bulletin: Number 349, Edition popular: Ten Years of Potato Spraying
abstract: 11 pages, 1 article*Ten Years of Potato Spraying* (Hall, F. H.) 9 pages

url: http://hdl.handle.net/1813/4164
date: 2006-12-21
creator: New York State Agricultural Experiment Station.
viewed: 170
title: Bulletin: Number 35: Some of the Most Common Fungi and Insects--with Preventives
abstract: 27 pages, 1 article*Some of the Most Common Fungi and Insects--with Preventives* 25 pages

url: http://hdl.handle.net/1813/4165
date: 2006-12-21
creator: Wellington, Richard;Hedrick, U. P.;New York State Agricultural Experiment Station.
viewed: 176
title: Bulletin: Number 350: An Experiment in Breeding Apples
abstract: 65 pages, 1 article*An Experiment in Breeding Apples* (Hedrick, U. P.; Wellington, Richard) 63 pages

url: http://hdl.handle.net/1813/4166
date: 2006-12-21
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 297
title: Bulletin: Number 126, Edition popular: Ground Grain vs. Whole Grain for Chicks and Capons
abstract: 9 pages, 1 article*Ground Grain vs. Whole Grain for Chicks and Capons* (Hall, F. H.) 7 pages

url: http://hdl.handle.net/1813/4167
date: 2006-12-21
creator: Paddock, Wendell;New York State Agricultural Experiment Station.
viewed: 150
title: Bulletin: Number 127: Strawberries in 1897
abstract: 14 pages, 1 article*Strawberries in 1897* (Paddock, Wendell) 12 pages

url: http://hdl.handle.net/1813/4168
date: 2006-12-21
creator: Page, H. L.;Clark, B. E.;New York State Agricultural Experiment Station.
viewed: 169
title: Bulletin: Number 791: The Quality and Labeling of Seeds in New York as Revealed by Sampling and Testing in 1960
abstract: 61 pages, 1 article*The Quality and Labeling of Seeds in New York as Revealed by Sampling and Testing in 1960* (Clark, B. E.; Page, H. L.) 59 pages

url: http://hdl.handle.net/1813/4169
date: 2006-12-21
creator: New York State Agricultural Experiment Station.
viewed: 161

title: Bulletin: Number 792: Inspection of Commercial Feeds, Fertilizers and Lime Materials Sold in New York State
abstract: 62 pages, 1 article*Inspection of Commercial Feeds, Fertilizers and Lime Materials Sold in New York State* 61 pages

url: http://hdl.handle.net/1813/4170
date: 2006-12-21
creator: Page, H. L.;Clark, B. E.;New York State Agricultural Experiment Station.
viewed: 401
title: Bulletin: Number 793: The Quality and Labeling of Seeds in New York as Revealed by Sampling and Testing in 1961
abstract: 44 pages, 1 article*The Quality and Labeling of Seeds in New York as Revealed by Sampling and Testing in 1961* (Clark, B. E.; Page, H. L.) 42 pages

url: http://hdl.handle.net/1813/4171
date: 2006-12-21
creator: Einset, John;Watson, John;Slate, George L.;New York State Agricultural Experiment Station.
viewed: 171
title: Bulletin: Number 794: Grape Varieties Introduced by the New York State Agricultural Experiment Station 1928-1961
abstract: 48 pages, 1 article*Grape Varieties Introduced by the New York State Agricultural Experiment Station 1928-1961* (Slate, George L.; Watson, John; Einset, John) 46 pages

url: http://hdl.handle.net/1813/4172
date: 2006-12-21
creator: Watson, John;Slate, George L.;New York State Agricultural Experiment Station.
viewed: 316
title: Bulletin: Number 795: New Strawberry Varieties
abstract: 10 pages, 1 article*New Strawberry Varieties* (Slate, George L.; Watson, John) 11 pages

url: http://hdl.handle.net/1813/4173
date: 2006-12-21
creator: Watson, John;Slate, George L.;New York State Agricultural Experiment Station.
viewed: 149
title: Bulletin: Number 796: The Darrow Blackberry and Clyde Purple Raspberry
abstract: 6 pages, 1 article*The Darrow Blackberry and Clyde Purple Raspberry* (Slate, George L.; Watson, John) 6 pages

url: http://hdl.handle.net/1813/4174
date: 2006-12-21
creator: Hulburt, W. C.;Vittum, M. T.;New York State Agricultural Experiment Station.
viewed: 138
title: Bulletin: Number 797: Fertilizer Placement and Rates for Tomatoes
abstract: 21 pages, 1 article*Fertilizer Placement and Rates for Tomatoes* (Vittum, M. T.; Hulburt, W. C.) 18 pages

url: http://hdl.handle.net/1813/4175
date: 2006-12-21

creator: New York State Agricultural Experiment Station.
viewed: 140
title: Bulletin: Number 799: Inspection of Commercial Feeds, Fertilizers, and Lime Materials Sold in New York State
abstract: 75 pages, 1 article*Inspection of Commercial Feeds, Fertilizers, and Lime Materials Sold in New York State* 75 pages

url: http://hdl.handle.net/1813/4176
date: 2006-12-21
creator: Sturtevant, E. Lewis;New York State Agricultural Experiment Station.
viewed: 154
title: Bulletin: Number VIII: Seed corn progress report
abstract: 2 pages, 1 article*Seed corn progress report* (Sturtevant, E. Lewis) 2 pages

url: http://hdl.handle.net/1813/4177
date: 2006-12-21
creator: New York State Agricultural Experiment Station.
viewed: 135
title: Bulletin: Number 80: Alfalfa Forage for Milch Cows
abstract: 54 pages, 1 article*Alfalfa Forage for Milch Cows* 52 pages

url: http://hdl.handle.net/1813/4178
date: 2006-12-21
creator: New York State Agricultural Experiment Station.
viewed: 127
title: Bulletin: Number 800: Crop Response to Irrigation in the Northeast
abstract: 71 pages, 1 article*Crop Response to Irrigation in the Northeast* 66 pages

url: http://hdl.handle.net/1813/4179
date: 2006-12-21
creator: Vittum, M. T.;Dethier, B. E.;New York State Agricultural Experiment Station.
viewed: 318
title: Bulletin: Number 801: The Climate of the Northeast Growing Degree Days
abstract: 88 pages, 1 article*The Climate of the Northeast Growing Degree Days* (Dethier, B. E.; Vittum, M. T.) 84 pages

url: http://hdl.handle.net/1813/4180
date: 2006-12-21
creator: Page, H. L.;Clark, B. E.;New York State Agricultural Experiment Station.
viewed: 1277
title: Bulletin: Number 802: The Quality and Labeling of Seeds in New York as Revealed by Sampling and Testing in 1962
abstract: 44 pages, 1 article*The Quality and Labeling of Seeds in New York as Revealed by Sampling and Testing in 1962* (Clark, B. E.; Page, H. L.) 42 pages

url: http://hdl.handle.net/1813/4181
date: 2006-12-21
creator: New York State Agricultural Experiment Station.

viewed: 120
title: Bulletin: Number 803: Inspection of Commercial Feeds, Fertilizers, and Lime Materials Sold in New York State
abstract: 87 pages, 1 article*Inspection of Commercial Feeds, Fertilizers, and Lime Materials Sold in New York State* 86 pages

url: http://hdl.handle.net/1813/4182
date: 2006-12-21
creator: Page, H. L.;Clark, B. E.;New York State Agricultural Experiment Station.
viewed: 132
title: Bulletin: Number 804: The Quality and Labeling of Seeds in New York as Revealed by Sampling and Testing in 1963
abstract: 43 pages, 1 article*The Quality and Labeling of Seeds in New York as Revealed by Sampling and Testing in 1963* (Clark, B. E.; Page, H. L.) 41 pages

url: http://hdl.handle.net/1813/4183
date: 2006-12-21
creator: New York State Agricultural Experiment Station.
viewed: 120
title: Bulletin: Number 805: Inspection of Commercial Feeds, Fertilizers, and Lime Materials Sold in New York State
abstract: 81 pages, 1 article*Inspection of Commercial Feeds, Fertilizers, and Lime Materials Sold in New York State* 81 pages

url: http://hdl.handle.net/1813/4184
date: 2006-12-21
creator: Provvidenti, R.;Schroeder, W. T.;New York State Agricultural Experiment Station.
viewed: 150
title: Bulletin: Number 806: Evaluating Pisum sativum for Resistance to Pea Mosaic
abstract: 12 pages, 1 article*Evaluating Pisum sativum for Resistance to Pea Mosaic* (Schroeder, W. T.; Provvidenti, R.) 10 pages

url: http://hdl.handle.net/1813/4185
date: 2006-12-21
creator: Newcomer, J. L.;McKee, G. W.;Nittler, L. W.;New York State Agricultural Experiment Station.
viewed: 159
title: Bulletin: Number 807: Principles and Methods of Testing Alfalfa Seed for Varietal Purity
abstract: 51 pages, 1 article*Principles and Methods of Testing Alfalfa Seed for Varietal Purity* (Nittler, L. W.; McKee, G. W.; Newcomer, J. L.) 46 pages

url: http://hdl.handle.net/1813/4186
date: 2006-12-21
creator: Page, H. L.;Clark, B. E.;New York State Agricultural Experiment Station.
viewed: 175
title: Bulletin: Number 808: The Quality and Labeling of Seeds in New York as Revealed by Sampling and Testing in 1964
abstract: 53 pages, 1 article*The Quality and Labeling of Seeds in New York as Revealed by Sampling and Testing in 1964* (Clark, B. E.; Page, H. L.) 51 pages

url: http://hdl.handle.net/1813/4187
date: 2006-12-21
creator: Dominick, B. A., Jr.;Forshey, C. G.;New York State Agricultural Experiment Station.
viewed: 137
title: Bulletin: Number 809: Irrigation of Apples in the Hudson Valley
abstract: 32 pages, 1 article*Irrigation of Apples in the Hudson Valley* (Forshey, C. G.; Dominick, B. A., Jr.) 30 pages

url: http://hdl.handle.net/1813/4188
date: 2006-12-21
creator: New York State Agricultural Experiment Station.
viewed: 131
title: Bulletin: Number 81
abstract: 16 pages, 2 articles*Variety Tests with Blackberries, Dewberries and Raspberries* 11 pages*Raspberry Anthracnose* 3 pages

url: http://hdl.handle.net/1813/4189
date: 2006-12-21
creator: New York State Agricultural Experiment Station.
viewed: 144
title: Bulletin: Number 810: Inspection of Commercial Feeds, Fertilizers, and Agricultural Liming Materials Sold in New York State
abstract: 97 pages, 1 article*Inspection of Commercial Feeds, Fertilizers, and Agricultural Liming Materials Sold in New York State* 97 pages

url: http://hdl.handle.net/1813/4190
date: 2006-12-21
creator: Jordan, T. D.;Shepardson, E. S.;Shaulis, Nelson;New York State Agricultural Experiment Station.
viewed: 196
title: Bulletin: Number 811: The Geneva Double Curtain for Concord Grapes
abstract: 16 pages, 1 article*The Geneva Double Curtain for Concord Grapes* (Shaulis, Nelson; Shepardson, E. S.; Jordan, T. D.) 16 pages

url: http://hdl.handle.net/1813/4191
date: 2006-12-21
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 349
title: Bulletin: Number 127-128, Edition popular: Notes on Small Fruits Grown in 1897
abstract: 7 pages, 1 article*Notes on Small Fruits Grown in 1897* (Hall, F. H.) 5 pages

url: http://hdl.handle.net/1813/4192
date: 2006-12-21
creator: Paddock, Wendell;New York State Agricultural Experiment Station.
viewed: 420
title: Bulletin: Number 128: Variety Tests with Raspberries, Blackberries and Dewberries
abstract: 13 pages, 1 article*Variety Tests with Raspberries, Blackberries and Dewberries* (Paddock, Wendell) 11 pages

url: http://hdl.handle.net/1813/4193
date: 2006-12-21
creator: Van Slyke, L. L.;New York State Agricultural Experiment Station.
viewed: 157
title: Bulletin: Number 129: Report of Analyses of Commercial Fertilizers for the Spring of 1897
abstract: 73 pages, 1 article*Report of Analyses of Commercial Fertilizers for the Spring of 1897* (Van Slyke, L. L.) 71 pages

url: http://hdl.handle.net/1813/4194
date: 2006-12-21
creator: Smith, G. A.;Rogers, L. A.;Harding, H. A.;New York State Agricultural Experiment Station.
viewed: 386
title: Bulletin: Number 183: Notes on Some Dairy Troubles
abstract: 21 pages, 1 article*Notes on Some Dairy Troubles* (Harding, H. A.; Rogers, L. A.; Smith, G. A.) 19 pages

url: http://hdl.handle.net/1813/4195
date: 2006-12-21
creator: Jordan, W. H.;New York State Agricultural Experiment Station.
viewed: 149
title: Bulletin: Number 229: Director's Report for 1902
abstract: 17 pages, 1 article*Director's Report for 1902* (Jordan, W. H.) 15 pages

url: http://hdl.handle.net/1813/4196
date: 2006-12-21
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 241
title: Bulletin: Number 331, Edition popular: Five Important Grape Insects and their Repression
abstract: 16 pages, 1 article*Five Important Grape Insects and their Repression* (Hall, F. H.) 14 pages

url: http://hdl.handle.net/1813/4197
date: 2006-12-21
creator: Jordan, W. H.;New York State Agricultural Experiment Station.
viewed: 114
title: Bulletin: Number 332: Director's Report for 1910
abstract: 28 pages, 1 article*Director's Report for 1910* (Jordan, W. H.) 26 pages

url: http://hdl.handle.net/1813/4198
date: 2006-12-21
creator: French, G. T.;New York State Agricultural Experiment Station.
viewed: 157
title: Bulletin: Number 333: Seed Tests Made at the Station during 1910
abstract: 14 pages, 1 article*Seed Tests Made at the Station during 1910* (French, G. T.) 12 pages

url: http://hdl.handle.net/1813/4199
date: 2006-12-21
creator: Hall, F. H.;New York State Agricultural Experiment Station.

viewed: 266
title: Bulletin: Number 333, Edition popular: Are Our Farm Seeds Pure?
abstract: 4 pages, 1 article*Are Our Farm Seeds Pure?* (Hall, F. H.) 3 pages

url: http://hdl.handle.net/1813/4200
date: 2006-12-21
creator: Schoene, W. J.;New York State Agricultural Experiment Station.
viewed: 142
title: Bulletin: Number 334: Observations on Screening Cabbage Seed Beds
abstract: 26 pages, 1 article*Observations on Screening Cabbage Seed Beds* (Schoene, W. J.) 24 pages

url: http://hdl.handle.net/1813/4201
date: 2006-12-21
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 131
title: Bulletin: Number 334, Edition popular: Screening Seed Beds Controls Cabbage Maggots
abstract: 8 pages, 1 article*Screening Seed Beds Controls Cabbage Maggots* (Hall, F. H.) 6 pages

url: http://hdl.handle.net/1813/4202
date: 2006-12-21
creator: French, G. T.;New York State Agricultural Experiment Station.
viewed: 272
title: Bulletin: Number 335: Spraying to Eradicate Dandelions from Lawns
abstract: 11 pages, 1 article*Spraying to Eradicate Dandelions from Lawns* (French, G. T.) 9 pages

url: http://hdl.handle.net/1813/4203
date: 2006-12-21
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 126
title: Bulletin: Number 335, Edition popular: Spraying Fails to Kill New York Dandelions
abstract: 2 pages, 1 article*Spraying Fails to Kill New York Dandelions* (Hall, F. H.) 1 page

url: http://hdl.handle.net/1813/4204
date: 2006-12-21
creator: Taylor, O. M.;New York State Agricultural Experiment Station.
viewed: 114
title: Bulletin: Number 336: Newer Varieties of Strawberries, and Cultural Directions
abstract: 36 pages, 1 article*Newer Varieties of Strawberries, and Cultural Directions* (Taylor, O. M.) 34 pages

url: http://hdl.handle.net/1813/4205
date: 2006-12-21
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 297
title: Bulletin: Number 336, Edition popular: Growing and Testing Strawberries
abstract: 15 pages, 1 article*Growing and Testing Strawberries* (Hall, F. H.) 13 pages

url: http://hdl.handle.net/1813/4206

date: 2006-12-21
creator: Harding, H. A.;New York State Agricultural Experiment Station.
viewed: 295
title: Bulletin: Number 337: Publicity and Payment Based on Quality as Factors in Improving a City Milk Supply
abstract: 38 pages, 1 article*Publicity and Payment Based on Quality as Factors in Improving a City Milk Supply* (Harding, H. A.) 36 pages

url: http://hdl.handle.net/1813/4207
date: 2006-12-21
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 701
title: Bulletin: Number 337, Edition popular: How a Small City Improved its Milk Supply
abstract: 11 pages, 1 article*How a Small City Improved its Milk Supply* (Hall, F. H.) 9 pages

url: http://hdl.handle.net/1813/4208
date: 2006-12-21
creator: Sirrine, F. A.;French, G. T.;Stewart, F. C.;New York State Agricultural Experiment Station.
viewed: 297
title: Bulletin: Number 338: Potato Spraying Experiments in 1910
abstract: 40 pages, 1 article*Potato Spraying Experiments in 1910* (Stewart, F. C.; French, G. T.; Sirrine, F. A.) 38 pages

url: http://hdl.handle.net/1813/4209
date: 2006-12-21
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 154
title: Bulletin: Number 338, Edition popular: Dry Weather Test Potato Spraying
abstract: 8 pages, 1 article*Dry Weather Test Potato Spraying* (Hall, F. H.) 6 pages

url: http://hdl.handle.net/1813/4210
date: 2006-12-21
creator: Hedrick, U. P.;New York State Agricultural Experiment Station.
viewed: 157
title: Bulletin: Number 339: Is It Necessary to Fertilize an Apple Orchard?
abstract: 49 pages, 1 article*Is It Necessary to Fertilize an Apple Orchard?* (Hedrick, U. P.) 47 pages

url: http://hdl.handle.net/1813/4211
date: 2006-12-21
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 159
title: Bulletin: Number 339, Edition popular: Does the Apple Orchard Need Fertilizers?
abstract: 14 pages, 1 article*Does the Apple Orchard Need Fertilizers?* (Hall, F. H.) 12 pages

url: http://hdl.handle.net/1813/4212
date: 2006-12-21
creator: Emery, F. E.;New York State Agricultural Experiment Station.
viewed: 1251

title: Bulletin: Number 13: Farm Department
abstract: 17 pages, 1 article*Farm Department* (Emery, F. E.) 15 pages

url: http://hdl.handle.net/1813/4213
date: 2006-12-21
creator: Stewart, F. C.;New York State Agricultural Experiment Station.
viewed: 149
title: Bulletin: Number 130: A Bacterial Disease of Sweet Corn
abstract: 20 pages, 1 article*A Bacterial Disease of Sweet Corn* (Stewart, F. C.) 18 pages

url: http://hdl.handle.net/1813/4214
date: 2006-12-21
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 213
title: Bulletin: Volume 182: Sulphur and Lime for Onion Smut
abstract: 8 pages, 1 article*Sulphur and Lime for Onion Smut* (Hall, F. H.) 6 pages

url: http://hdl.handle.net/1813/4215
date: 2006-12-21
creator: New York State Agricultural Experiment Station.
viewed: 171
title: Bulletin: Number 23: Comparative Test of Cows
abstract: 31 pages, 1 article*Comparative Test of Cows* 29 pages

url: http://hdl.handle.net/1813/4216
date: 2006-12-21
creator: Parrott, P. J.;New York State Agricultural Experiment Station.
viewed: 147
title: Bulletin: Number 320: Concentrated Lime-Sulphur Mixtures
abstract: 22 pages, 1 article*Concentrated Lime-Sulphur Mixtures* (Parrott, P. J.) 20 pages

url: http://hdl.handle.net/1813/4217
date: 2006-12-21
creator: Jordan, W. H.;New York State Agricultural Experiment Station.
viewed: 196
title: Bulletin: Number 321: Director's Report for 1909
abstract: 22 pages, 1 article*Director's Report for 1909* (Jordan, W. H.) 20 pages

url: http://hdl.handle.net/1813/4218
date: 2006-12-21
creator: Smith, G. A.;New York State Agricultural Experiment Station.
viewed: 162
title: Bulletin: Number 322: The Individual Animal as the Unit in Profitable Dairying
abstract: 18 pages, 1 article*The Individual Animal as the Unit in Profitable Dairying* (Smith, G. A.) 16 pages

url: http://hdl.handle.net/1813/4219
date: 2006-12-21

creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 189
title: Bulletin: Number 322, Edition popular: Robber Cows in Dairy Herds
abstract: 8 pages, 1 article*Robber Cows in Dairy Herds* (Hall, F. H.) 7 pages

url: http://hdl.handle.net/1813/4220
date: 2006-12-21
creator: Sirrine, F. A.;McMurran, S. M.;French, G. T.;Stewart, F. C.;New York State Agricultural Experiment Station.
viewed: 204
title: Bulletin: Number 323: Potato Spraying Experiments in 1909
abstract: 38 pages, 1 article*Potato Spraying Experiments in 1909* (Stewart, F. C.; French, G.T.; McMurran, S. M.; Sirrine, F. A.) 36 pages

url: http://hdl.handle.net/1813/4221
date: 2006-12-21
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 212
title: Bulletin: Number 323, Edition popular: Potato Spraying Severely Tested
abstract: 8 pages, 1 article*Potato Spraying Severely Tested* (Hall, F. H.) 6 pages

url: http://hdl.handle.net/1813/4222
date: 2006-12-21
creator: New York State Agricultural Experiment Station.
viewed: 106
title: Bulletin: Number 324: Inspection of Feeding Stuffs
abstract: 93 pages, 1 article*Inspection of Feeding Stuffs* 91 pages

url: http://hdl.handle.net/1813/4223
date: 2006-12-21
creator: New York State Agricultural Experiment Station.
viewed: 202
title: Bulletin: Number 325: Report of Analyses of Samples of Commercial Fertilizers Collected by the Commissioner of Agriculture during 1910
abstract: 105 pages, 1 article*Report of Analyses of Samples of Commercial Fertilizers Collected by the Commissioner of Agriculture during 1910* 103 pages

url: http://hdl.handle.net/1813/4224
date: 2006-12-21
creator: Smith, G. A.;Wilson, J. K.;Harding, H. A.;New York State Agricultural Experiment Station.
viewed: 115
title: Bulletin: Number 326: The Modern Milk Pail
abstract: 39 pages, 1 article*The Modern Milk Pail* (Harding, H. A.; Wilson, J. K.; Smith, G. A.) 37 pages

url: http://hdl.handle.net/1813/4225
date: 2006-12-21
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 136

title: Bulletin: Number 326, Edition popular: Covered Pails Mean Cleaner Milk
abstract: 8 pages, 1 article*Covered Pails Mean Cleaner Milk* (Hall, F. H.) 6 pages

url: http://hdl.handle.net/1813/4226
date: 2006-12-21
creator: Sirrine, F. A.;Jordan, W. H.;New York State Agricultural Experiment Station.
viewed: 161
title: Bulletin: Number 327: Potato Fertilizers: Method of Application and Form of Nitrogen
abstract: 24 pages, 1 article*Potato Fertilizers: Method of Application and Form of Nitrogen* (Jordan, W. H.; Sirrine, F. A.) 22 pages

url: http://hdl.handle.net/1813/4227
date: 2006-12-21
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 309
title: Bulletin: Number 327, Edition popular: Some Potato-Fertilizer Tests
abstract: 4 pages, 1 article*Some Potato-Fertilizer Tests* (Hall, F. H.) 3 pages

url: http://hdl.handle.net/1813/4228
date: 2006-12-21
creator: Stewart, F. C.;New York State Agricultural Experiment Station.
viewed: 164
title: Bulletin: Number 328: Notes on New York Plant Diseases, I.
abstract: 120 pages, 1 article*Notes on New York Plant Diseases, I.* (Stewart, F. C.) 118 pages

url: http://hdl.handle.net/1813/4229
date: 2006-12-21
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 122
title: Bulletin: Number 328, Edition popular: Some Troubles of New York Plants
abstract: 12 pages, 1 article*Some Troubles of New York Plants* (Hall, F. H.) 11 pages

url: http://hdl.handle.net/1813/4230
date: 2006-12-21
creator: Hedges, C. C.;Bosworth, A. W.;Van Slyke, L. L.;New York State Agricultural Experiment Station.
viewed: 192
title: Bulletin: Number 329: Chemical Investigation of Best Conditions for Making the Lime Sulphur Wash
abstract: 48 pages, 1 article*Chemical Investigation of Best Conditions for Making the Lime Sulphur Wash* (Van Slyke, L. L.; Bosworth, A. W.; Hedges, C. C.) 46 pages

url: http://hdl.handle.net/1813/4231
date: 2006-12-21
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 448
title: Bulletin: Number 329-330, Edition popular: Making and Using Concentrated Lime-Sulphur Wash
abstract: 12 pages, 1 article*Making and Using Concentrated Lime-Sulphur Wash* (Hall, F. H.) 11 pages

url: http://hdl.handle.net/1813/4232
date: 2006-12-21
creator: New York State Agricultural Experiment Station.
viewed: 108
title: Bulletin: Number 33: The New York State Fertilizer Control and Fertilizer Analyses
abstract: 23 pages, 1 article*The New York State Fertilizer Control and Fertilizer Analyses* 20 pages

url: http://hdl.handle.net/1813/4233
date: 2006-12-21
creator: Schoene, W. J.;Parrott, P. J.;New York State Agricultural Experiment Station.
viewed: 138
title: Bulletin: Number 330: Experiments with Home-Made Concentrated Lime-Sulphur Mixtures
abstract: 36 pages, 1 article*Experiments with Home-Made Concentrated Lime-Sulphur Mixtures* (Parrott, P. J.; Schoene, W. J.) 34 pages

url: http://hdl.handle.net/1813/4234
date: 2006-12-21
creator: Hartzell, Frederick Z.;New York State Agricultural Experiment Station.
viewed: 167
title: Bulletin: Number 331: Grape Investigations in Chautauqua County
abstract: 113 pages, 1 article*Grape Investigations in Chautauqua County* (Hartzell, Frederick Z.) 108 pages

url: http://hdl.handle.net/1813/4235
date: 2006-12-21
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 247
title: Bulletin: Number 130, Edition popular: A New Disease of Sweet Corn
abstract: 9 pages, 1 article*A New Disease of Sweet Corn* (Hall, F. H.) 7 pages

url: http://hdl.handle.net/1813/4236
date: 2006-12-21
creator: Close, C. P.;New York State Agricultural Experiment Station.
viewed: 141
title: Bulletin: Number 131: Results with Oat Smut in 1897
abstract: 16 pages, 1 article*Results with Oat Smut in 1897* (Close, C. P.) 14 pages

url: http://hdl.handle.net/1813/4237
date: 2006-12-21
creator: New York State Agricultural Experiment Station.
viewed: 140
title: Bulletin: Number 77: Comparison of Different Breeds of Dairy Cattle, Pt.1: the Cost of Milk Production
abstract: 32 pages, 1 article*Comparison of Different Breeds of Dairy Cattle, Pt.1: the Cost of Milk Production* 30 pages

url: http://hdl.handle.net/1813/4238
date: 2006-12-21

creator: Little, H. B.;Clark, B. E.;New York State Agricultural Experiment Station.
viewed: 130
title: Bulletin: Number 770: The Quality of Seeds on Sale in New York as Revealed by Tests Completed in 1954
abstract: 61 pages, 1 article*The Quality of Seeds on Sale in New York as Revealed by Tests Completed in 1954* (Clark, B. E.; Little, H. B.) 59 pages

url: http://hdl.handle.net/1813/4239
date: 2006-12-21
creator: Schroeder, W. T.;Natti, J. J.;New York State Agricultural Experiment Station.
viewed: 221
title: Bulletin: Number 771: Protectant Seed Treatments for Vegetable Processing Crops
abstract: 46 pages, 1 article*Protectant Seed Treatments for Vegetable Processing Crops* (Natti, J. J.; Schroeder, W. T.) 42 pages

url: http://hdl.handle.net/1813/4240
date: 2006-12-21
creator: Little, H. B.;Clark, B. E.;New York State Agricultural Experiment Station.
viewed: 148
title: Bulletin: Number 772: The Quality of Seeds on Sale in New York as Revealed by Tests Completed in 1955
abstract: 62 pages, 1 article*The Quality of Seeds on Sale in New York as Revealed by Tests Completed in 1955* (Clark, B. E.; Little, H. B.) 60 pages

url: http://hdl.handle.net/1813/4241
date: 2006-12-21
creator: Brase, Karl D.;New York State Agricultural Experiment Station.
viewed: 149
title: Bulletin: Number 773: Propagating Fruit Trees
abstract: 42 pages, 1 article*Propagating Fruit Trees* (Brase, Karl D.) 40 pages

url: http://hdl.handle.net/1813/4242
date: 2006-12-21
creator: Atkin, John D.;New York State Agricultural Experiment Station.
viewed: 175
title: Bulletin: Number 774: Bitter Flavor in Carrots
abstract: 30 pages, 1 article*Bitter Flavor in Carrots* (Atkin, John D.) 28 pages

url: http://hdl.handle.net/1813/4243
date: 2006-12-21
creator: Peck, N. H.;Vittum, M. T.;New York State Agricultural Experiment Station.
viewed: 338
title: Bulletin: Number 775: Soils and Methods Used in Irrigation Experriments at Geneva, N.Y.
abstract: 56 pages, 1 article*Soils and Methods Used in Irrigation Experriments at Geneva, N.Y.* (Vittum, M. T.; Peck, N. H.) 54 pages

url: http://hdl.handle.net/1813/4244
date: 2006-12-21

creator: Gilmer, R. M.;Gambrell, F. L.;New York State Agricultural Experiment Station.
viewed: 187
title: Bulletin: Number 776: Insects and Diseases of Fruit Nursery Stocks and Their Control
abstract: 50 pages, 1 article*Insects and Diseases of Fruit Nursery Stocks and Their Control* (Gambrell, F. L.; Gilmer, R. M.) 46 pages

url: http://hdl.handle.net/1813/4245
date: 2006-12-21
creator: Peck, N. H.;Vittum, M. T.;New York State Agricultural Experiment Station.
viewed: 142
title: Bulletin: Number 777: Response of Cabbage to Irrigation, Fertility Level, and Spacing
abstract: 34 pages, 1 article*Response of Cabbage to Irrigation, Fertility Level, and Spacing* (Vittum, M. T.; Peck, N. H.) 32 pages

url: http://hdl.handle.net/1813/4246
date: 2006-12-21
creator: Kirk, E. W.;Clark, B. E.;New York State Agricultural Experiment Station.
viewed: 214
title: Bulletin: Volume 778: The Quality and Labeling of Seeds on Sale in New York as Revealed by Tests Completed in 1956
abstract: 76 pages, 1 article*The Quality and Labeling of Seeds on Sale in New York as Revealed by Tests Completed in 1956* (Clark, B. E.; Kirk, E. W.) 74 pages

url: http://hdl.handle.net/1813/4247
date: 2006-12-21
creator: Parker, K. G.;Brase, K. D.;Gilmer, R. M.;New York State Agricultural Experiment Station.
viewed: 287
title: Bulletin: Number 779: Control of Virus Diseases of Stone Fruit Nursery Trees in New York
abstract: 53 pages, 1 article*Control of Virus Diseases of Stone Fruit Nursery Trees in New York* (Gilmer, R. M.; Brase, K. D.; Parker, K. G.) 49 pages

url: http://hdl.handle.net/1813/4248
date: 2006-12-21
creator: New York State Agricultural Experiment Station.
viewed: 167
title: Bulletin: Number 78: Comparison of Different Breed of Dairy Cattle, Pt.2: The Cost of Butter and Cream Production
abstract: 31 pages, 1 article*Comparison of Different Breed of Dairy Cattle, Pt.2: The Cost of Butter and Cream Production* 29 pages

url: http://hdl.handle.net/1813/4249
date: 2006-12-21
creator: Shaw, Byron T.;Newton, Roy C.;Libby, Willard F.;Meier, Richard L.;Morgan, Bruce H.;New York State Agricultural Experiment Station.
viewed: 172
title: Bulletin: Number 780
abstract: 68 pages, 6 articles*Symposium Papers on The Role of Agriculture in Future Society* 30 pages*The Role of Ionizing Radiations in the Future Preservation of Foods* (Morgan, Bruce H.) 8 pages*The Future

of Agriculture and the Industrialization of Photosynthesis* (Meier, Richard L.) 9 pages*Atomic Energy in Agriculture* (Libby, Willard F.) 8 pages*Food Processing and the Future of Agriculture* (Newton, Roy C.) 10 pages*The Role of Publicly Supported Agricultural Research in Future Society* (Shaw, Byron T.) 6 pages

url: http://hdl.handle.net/1813/4250
date: 2006-12-21
creator: Kirk, E. W.;Clark, B. E.;New York State Agricultural Experiment Station.
viewed: 125
title: Bulletin: Number 781: The Quality and Labeling of Seeds in New York as Revealed by Sampling and Testing in 1957
abstract: 66 pages, 1 article*The Quality and Labeling of Seeds in New York as Revealed by Sampling and Testing in 1957* (Clark, B. E.; Kirk, E. W.) 64 pages

url: http://hdl.handle.net/1813/4251
date: 2006-12-21
creator: Way, R. D.;Brase, K. D.;New York State Agricultural Experiment Station.
viewed: 165
title: Bulletin: Number 783: Rootstocks and Methods Used for Dwarfing Fruit Trees
abstract: 50 pages, 1 article*Rootstocks and Methods Used for Dwarfing Fruit Trees* (Brase, K. D.; Way, R. D.) 46 pages

url: http://hdl.handle.net/1813/4252
date: 2006-12-21
creator: Kirk, E. W.;Clark, B. E.;New York State Agricultural Experiment Station.
viewed: 186
title: Bulletin: Number 784: The Quality and Labeling of Seeds in New York as Revealed by Sampling and Testing in 1958
abstract: 42 pages, 1 article*The Quality and Labeling of Seeds in New York as Revealed by Sampling and Testing in 1958* (Clark, B. E.; Kirk, E. W.) 40 pages

url: http://hdl.handle.net/1813/4253
date: 2006-12-21
creator: Waters, E. C.;Nittler, L. W.;Crosier, W. F.;New York State Agricultural Experiment Station.
viewed: 135
title: Bulletin: Number 785: The Quality of Seed Oats Collected from New York Farms in 1958
abstract: 33 pages, 1 article*The Quality of Seed Oats Collected from New York Farms in 1958* (Crosier, W. F.; Nittler, L. W.; Waters, E. C.) 31 pages

url: http://hdl.handle.net/1813/4254
date: 2006-12-21
creator: Carruth, A. F.;Peck, N. H.;Vittum, M. T.;New York State Agricultural Experiment Station.
viewed: 171
title: Bulletin: Number 786: Response of Sweet Corn to Irrigation, Fertility Level, and Spacing
abstract: 45 pages, 1 article*Response of Sweet Corn to Irrigation, Fertility Level, and Spacing* (Vittum, M. T.; Peck, N. H.; Carruth, A. F.) 43 pages

url: http://hdl.handle.net/1813/4255
date: 2006-12-21

creator: Clark, B. E.;Sayre, C. B.;Vittum, M. T.;New York State Agricultural Experiment Station.
viewed: 386
title: Bulletin: Number 787: Experiments with an Improved Drill for Fertilizing and Planting Processing Peas
abstract: 34 pages, 1 article*Experiments with an Improved Drill for Fertilizing and Planting Processing Peas* (Vittum, M. T.; Sayre, C. B.; Clark, B. E.) 32 pages

url: http://hdl.handle.net/1813/4256
date: 2006-12-21
creator: Page, H. L.;Clark, B. E.;New York State Agricultural Experiment Station.
viewed: 265
title: Bulletin: Volume 788: The Quality and Labeling of Seeds in New York as Revealed by Sampling and Testing in 1959
abstract: 42 pages, 1 article*The Quality and Labeling of Seeds in New York as Revealed by Sampling and Testing in 1959* (Clark, B. E.; Page, H. L.) 40 pages

url: http://hdl.handle.net/1813/4257
date: 2006-12-21
creator: Glass, E. H.;New York State Agricultural Experiment Station.
viewed: 130
title: Bulletin: Number 789: Apple Maggot Fly Emergence in Western New York
abstract: 29 pages, 1 article*Apple Maggot Fly Emergence in Western New York* (Glass, E. H.) 27 pages

url: http://hdl.handle.net/1813/4258
date: 2006-12-21
creator: New York State Agricultural Experiment Station.
viewed: 147
title: Bulletin: Number 79: Comparison of Different Breeds of Dairy Cattle, Pt.3: The Cost of Cheese Production
abstract: 24 pages, 1 article*Comparison of Different Breeds of Dairy Cattle, Pt.3: The Cost of Cheese Production* 22 pages

url: http://hdl.handle.net/1813/4259
date: 2006-12-21
creator: Peterson, Erwin L.;Harrar, J. G.;Youmans, John B.;White, Philip L.;Mrak, Emil M.;Darby, William J.;New York State Agricultural Experiment Station.
viewed: 748
title: Bulletin: Number 790
abstract: 82 pages, 7 articles*Symposium Papers on Food and Health, together with addresses made at the Dedication Ceremony of the Food Research Building* 30 pages*What Is an Adequate Diet for Young and Old?* (Darby, William J.) 6 pages*The Role of Chemistry and Technology in the Development of Modern Foods* (Mrak, Emil M.) 14 pages*Public Education and Food Attitudes* (White, Philip L.) 9 pages*What Lies Ahead in Nutrition* (Youmans, John B.) 10 pages*Food in National and International Welfare* (Harrar, J. G.) 6 pages*The Significance of Agricultural Research in the Development of an Improved Food Supply* (Peterson, Erwin L.) 7 pages

url: http://hdl.handle.net/1813/4260
date: 2006-12-21

creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 1196
title: Bulletin: Number 131, Edition popular: Oat Smut and New Preventives
abstract: 8 pages, 1 article*Oat Smut and New Preventives* (Hall, F. H.) 6 pages

url: http://hdl.handle.net/1813/4261
date: 2006-12-21
creator: Jenter, C. G.;Jordan, W. H.;New York State Agricultural Experiment Station.
viewed: 178
title: Bulletin: Number 132: The Source of Milk Fat
abstract: 36 pages, 1 article*The Source of Milk Fat* (Jordan, W. H.; Jenter, C. G.) 34 pages

url: http://hdl.handle.net/1813/4262
date: 2006-12-21
creator: Palmiter, D. H.;Hamilton, J. M.;New York State Agricultural Experiment Station.
viewed: 174
title: Bulletin: Number 747: Orchard Tests for Apple Scab Control in New York State: I. Sulfur Fungicides
abstract: 63 pages, 1 article*Orchard Tests for Apple Scab Control in New York State: I. Sulfur Fungicides* (Hamilton, J. M.; Palmiter, D. H.) 59 pages

url: http://hdl.handle.net/1813/4263
date: 2006-12-21
creator: Buchholz, A. B.;Mack, G. L.;New York State Agricultural Experiment Station.
viewed: 161
title: Bulletin: Number 748: The Quality of Economic Poisons Sold in New York State in 1950
abstract: 33 pages, 1 article*The Quality of Economic Poisons Sold in New York State in 1950* (Mack, G. L.; Buchholz, A. B.) 31 pages

url: http://hdl.handle.net/1813/4264
date: 2006-12-21
creator: Vittum, M. T.;Sayre, C. B.;New York State Agricultural Experiment Station.
viewed: 317
title: Bulletin: Number 749: Effect of Different Sources of Fertilizer Nutrients and Different Rates of Fertilizer Applications on Yields of Vegetable Canning Crops: Beets, Cabbage, Peas, Sweet Corn, and Tomatoes
abstract: 30 pages, 1 article*Effect of Different Sources of Fertilizer Nutrients and Different Rates of Fertilizer Applications on Yields of Vegetable Canning Crops: Beets, Cabbage, Peas, Sweet Corn, and Tomatoes* (Sayre, C. B.; Vittum, M. T.) 28 pages

url: http://hdl.handle.net/1813/4265
date: 2006-12-21
creator: New York State Agricultural Experiment Station.
viewed: 123
title: Bulletin: Number 75
abstract: 27 pages, 2 articles*Some Insects Injurious to Squash, Melon and Cucumber Vines* 21 pages*The Asparagus Beetle* 3 pages

url: http://hdl.handle.net/1813/4266
date: 2006-12-21

creator: Hervey, G. E. R.;Vittum, M. T.;New York State Agricultural Experiment Station.
viewed: 151
title: Bulletin: Number 750: Relation of Marion Market Cabbage Yield and Bursting to Rates of Application and Sources of Fertilizer Nutrients and Insect Control
abstract: 16 pages, 1 article*Relation of Marion Market Cabbage Yield and Bursting to Rates of Application and Sources of Fertilizer Nutrients and Insect Control* (Vittum, M. T.; Hervey, G. E. R.) 14 pages

url: http://hdl.handle.net/1813/4267
date: 2006-12-21
creator: Little, H. B.;Munn, M. T.;New York State Agricultural Experiment Station.
viewed: 141
title: Bulletin: Number 751: The Quality of Seeds On Sale in New York in 1951
abstract: 52 pages, 1 article*The Quality of Seeds On Sale in New York in 1951* (Munn, M. T.; Little, H. B.) 50 pages

url: http://hdl.handle.net/1813/4268
date: 2006-12-21
creator: Swenson, K. G.;Schroeder, W. T.;Howe, W. L.;New York State Agricultural Experiment Station.
viewed: 132
title: Bulletin: Number 752: Seed Treatment for Control of Seed-Corn Maggot and Seed Decay Organisms
abstract: 34 pages, 1 article*Seed Treatment for Control of Seed-Corn Maggot and Seed Decay Organisms* (Howe, W. L.; Schroeder, W. T.; Swenson, K. G.) 32 pages

url: http://hdl.handle.net/1813/4269
date: 2006-12-21
creator: Gunkel, W. W.;Hervey, G. E. R.;New York State Agricultural Experiment Station.
viewed: 121
title: Bulletin: Number 753: Low Gallonage Spraying of Vegetable Crops
abstract: 40 pages, 1 article*Low Gallonage Spraying of Vegetable Crops* (Hervey, G. E. R.; Gunkel, W. W.) 38 pages

url: http://hdl.handle.net/1813/4270
date: 2006-12-21
creator: Kertesz, Z. I.;Stotz, E. H.;Robinson, W. B.;Moyer, J. C.;New York State Agricultural Experiment Station.
viewed: 134
title: Bulletin: Number 754: Effect of Blanching and Subsequent Holding on Some Chemical Constituents and Enzyme Activities in Peas, Snap Beans, and Lima Beans
abstract: 33 pages, 1 article*Effect of Blanching and Subsequent Holding on Some Chemical Constituents and Enzyme Activities in Peas, Snap Beans, and Lima Beans* (Moyer, J. C.; Robinson, W. B.; Stotz, E. H.; Kertesz, Z. I.) 31 pages

url: http://hdl.handle.net/1813/4271
date: 2006-12-21
creator: Palmiter, D. H.;New York State Agricultural Experiment Station.
viewed: 195
title: Bulletin: Number 756: Rust Diseases of Apples and Their Control in the Hudson Valley
abstract: 26 pages, 1 article*Rust Diseases of Apples and Their Control in the Hudson Valley* (Palmiter, D.

H.) 24 pages

url: http://hdl.handle.net/1813/4272
date: 2006-12-21
creator: Little, H. B.;Clark, B. E.;New York State Agricultural Experiment Station.
viewed: 717
title: Bulletin: Number 757: The Quality of Seeds on Sale in New York as Revealed by Tests Completed in 1952
abstract: 49 pages, 1 article*The Quality of Seeds on Sale in New York as Revealed by Tests Completed in 1952* (Clark, B. E.; Little, H. B.) 47 pages

url: http://hdl.handle.net/1813/4273
date: 2006-12-21
creator: Barton, D. W.;Tapley, W. T.;Sayre, Charles B.;New York State Agricultural Experiment Station.
viewed: 240
title: Bulletin: Volume 758: Variety Comparison of Peas Used for Canning and Freezing, 1952
abstract: 31 pages, 1 article*Variety Comparison of Peas Used for Canning and Freezing, 1952* (Sayre, Charles B.; Tapley, W. T.; Barton, D. W.) 29 pages

url: http://hdl.handle.net/1813/4274
date: 2006-12-21
creator: Healy, Norman C.;Sayre, Charles B.;Pederson, Carl S.;Hening, J. Courtenay;LaBelle, Robert L.;Wishnetsky, Theodore;Ransford, J. Robert;Moyer, James C.;Robinson, Willard B.;Hand, David B.;New York State Agricultural Experiment Station.
viewed: 200
title: Bulletin: Number 759: The Yield and Quality of Juice Obtained from New York State Tomatoes Graded According to United States Department of Agriculture Standards
abstract: 65 pages, 1 article*The Yield and Quality of Juice Obtained from New York State Tomatoes Graded According to United States Department of Agriculture Standards* (Hand, David B.; Robinson, Willard B.; Moyer, James C.; Ransford, J. Robert; Wishnetsky, Theodore; LaBelle, Robert L.; Hening, J. Courtenay; Pederson, Carl S.; Sayre, Charles B.; Healy, Norman C.) 62 pages

url: http://hdl.handle.net/1813/4275
date: 2006-12-21
creator: New York State Agricultural Experiment Station.
viewed: 155
title: Bulletin: Number 76: Notes on Strawberries for 1894
abstract: 19 pages, 1 article*Notes on Strawberries for 1894* 16 pages

url: http://hdl.handle.net/1813/4276
date: 2006-12-21
creator: Slate, George L.;Lee, Frank A.;New York State Agricultural Experiment Station.
viewed: 212
title: Bulletin: Number 761: Chemical Composition and Freezing Adaptability of Raspberries
abstract: 12 pages, 1 article*Chemical Composition and Freezing Adaptability of Raspberries* (Lee, Frank A.; Slate, George L.) 10 pages

url: http://hdl.handle.net/1813/4277

date: 2006-12-21
creator: Slate, George L.;New York State Agricultural Experiment Station.
viewed: 140
title: Bulletin: Number 762: New Strawberry Varieties
abstract: 8 pages, 1 article*New Strawberry Varieties* (Slate, George L.) 8 pages

url: http://hdl.handle.net/1813/4278
date: 2006-12-21
creator: Slate, George L.;New York State Agricultural Experiment Station.
viewed: 115
title: Bulletin: Number 763: New Raspberry Varieties
abstract: 4 pages, 1 article*New Raspberry Varieties* (Slate, George L.) 4 pages

url: http://hdl.handle.net/1813/4279
date: 2006-12-21
creator: Slate, George L.;New York State Agricultural Experiment Station.
viewed: 169
title: Bulletin: Number 764: New Blackberry Varieties
abstract: 4 pages, 1 article*New Blackberry Varieties* (Slate, George L.) 4 pages

url: http://hdl.handle.net/1813/4280
date: 2006-12-21
creator: Barton, Donald W.;New York State Agricultural Experiment Station.
viewed: 159
title: Bulletin: Number 765: Quality, Maturity, and Yield Measurements of Twelve Sweet Corn Varieties, 1951-53
abstract: 22 pages, 1 article*Quality, Maturity, and Yield Measurements of Twelve Sweet Corn Varieties, 1951-53* (Barton, Donald W.) 20 pages

url: http://hdl.handle.net/1813/4281
date: 2006-12-21
creator: Hamilton, J. M.;Palmiter, D. H.;New York State Agricultural Experiment Station.
viewed: 184
title: Bulletin: Number 766: Influence of Certain Nitrogen and Fungicide Applications on Yield and Quality of Apples
abstract: 41 pages, 1 article*Influence of Certain Nitrogen and Fungicide Applications on Yield and Quality of Apples* (Palmiter, D. H.; Hamilton, J. M.) 39 pages

url: http://hdl.handle.net/1813/4282
date: 2006-12-21
creator: Smock, R. M.;Palmiter, D. H.;New York State Agricultural Experiment Station.
viewed: 175
title: Bulletin: Number 767: Effect of Fungicides on McIntosh Apple Yield and Quality: A Five-Year Study Under Hudson Valley Conditions, 1949-1953
abstract: 40 pages, 1 article*Effect of Fungicides on McIntosh Apple Yield and Quality: A Five-Year Study Under Hudson Valley Conditions, 1949-1953* (Palmiter, D. H.; Smock, R. M.) 38 pages

url: http://hdl.handle.net/1813/4283

date: 2006-12-21
creator: Whitcombe, Joanne;Oberle, George;Lee, Frank A.;New York State Agricultural Experiment Station.
viewed: 173
title: Bulletin: Number 768: Chemical Composition and Freezing Adaptability of Peach Varieties Grown in Western New York
abstract: 13 pages, 1 article*Chemical Composition and Freezing Adaptability of Peach Varieties Grown in Western New York* (Lee, Frank A.; Oberle, George; Whitcombe, Joanne) 11 pages

url: http://hdl.handle.net/1813/4284
date: 2006-12-21
creator: Clark, B. E.;New York State Agricultural Experiment Station.
viewed: 164
title: Bulletin: Number 769: Factors Affecting the Germination of Sweet Corn in Low-Temperature Laboratory Tests
abstract: 24 pages, 1 article*Factors Affecting the Germination of Sweet Corn in Low-Temperature Laboratory Tests* (Clark, B. E.) 22 pages

url: http://hdl.handle.net/1813/4285
date: 2006-12-21
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 111
title: Bulletin: Number 132, Edition popular: Milk Fat from Fat-Free Food
abstract: 8 pages, 1 article*Milk Fat from Fat-Free Food* (Hall, F. H.) 6 pages

url: http://hdl.handle.net/1813/4286
date: 2006-12-21
creator: Close, C. P.;New York State Agricultural Experiment Station.
viewed: 137
title: Bulletin: Number 133: Spraying in 1897 to Prevent Gooseberry Mildew
abstract: 14 pages, 1 article*Spraying in 1897 to Prevent Gooseberry Mildew* (Close, C. P.) 12 pages

url: http://hdl.handle.net/1813/4287
date: 2006-12-21
creator: Kertesz, Z. I.;Stotz, Elmer;Schroeder, W. T.;Robinson, W. B.;New York State Agricultural Experiment Station.
viewed: 343
title: Bulletin: Number 725: Relation of Copper-Containing Fungicides to the Ascorbic Acid and Copper Content of Tomato Juice
abstract: 18 pages, 1 article*Relation of Copper-Containing Fungicides to the Ascorbic Acid and Copper Content of Tomato Juice* (Robinson, W. B.; Schroeder, W. T.; Stotz, Elmer; Kertesz, Z. I.) 16 pages

url: http://hdl.handle.net/1813/4288
date: 2006-12-21
creator: Pederson, C. S.;Slate, G. L.;Lee, F. A.;Robinson, W. B.;New York State Agricultural Experiment Station.
viewed: 151
title: Bulletin: Number 726: Chemical Composition and Freezing Adaptability of Strawberries

abstract: 13 pages, 1 article*Chemical Composition and Freezing Adaptability of Strawberries* (Robinson, W. B.; Lee, F. A.; Slate, G. L.; Pederson, C. S.) 11 pages

url: http://hdl.handle.net/1813/4289
date: 2006-12-21
creator: Beattie, Harold G.;Pederson, Carl S.;New York State Agricultural Experiment Station.
viewed: 219
title: Bulletin: Number 727: Concentration of Fruit Juices by Freezing
abstract: 27 pages, 1 article*Concentration of Fruit Juices by Freezing* (Pederson, Carl S.; Beattie, Harold G.) 25 pages

url: http://hdl.handle.net/1813/4290
date: 2006-12-21
creator: Lee, Frank A.;New York State Agricultural Experiment Station.
viewed: 114
title: Bulletin: Number 729: Determination of Maturity of Frozen Lima Beans
abstract: 12 pages, 1 article*Determination of Maturity of Frozen Lima Beans* (Lee, Frank A.) 10 pages

url: http://hdl.handle.net/1813/4291
date: 2006-12-21
creator: New York State Agricultural Experiment Station.
viewed: 100
title: Bulletin: Number 73: Analyses of Commercial Fertilizers Collected during the Spring of 1894
abstract: 35 pages, 1 article*Analyses of Commercial Fertilizers Collected during the Spring of 1894* 33 pages

url: http://hdl.handle.net/1813/4292
date: 2006-12-21
creator: Buchholz, A. B.;Munn, M. T.;New York State Agricultural Experiment Station.
viewed: 179
title: Bulletin: Number 730: The Quality of Seeds on Sale in New York in 1947
abstract: 46 pages, 1 article*The Quality of Seeds on Sale in New York in 1947* (Munn, M. T.; Buchholz, A. B.) 44 pages

url: http://hdl.handle.net/1813/4293
date: 2006-12-21
creator: Cunningham, H. S.;New York State Agricultural Experiment Station.
viewed: 161
title: Bulletin: Number 731: Leaf Roll in Relation to Second-Crop Seed Potato Production on Long Island
abstract: 13 pages, 1 article*Leaf Roll in Relation to Second-Crop Seed Potato Production on Long Island* (Cunningham, H. S.) 11 pages

url: http://hdl.handle.net/1813/4294
date: 2006-12-21
creator: Taschenberg, E. F.;New York State Agricultural Experiment Station.
viewed: 140
title: Bulletin: Number 732: Hooded Booms for Grape Spraying
abstract: 35 pages, 1 article*Hooded Booms for Grape Spraying* (Taschenberg, E. F.) 33 pages

url: http://hdl.handle.net/1813/4295
date: 2006-12-21
creator: Harman, S. W.;New York State Agricultural Experiment Station.
viewed: 145
title: Bulletin: Number 733: The Red-Banded Leaf Roller as an Apple Pest in New York
abstract: 23 pages, 1 article*The Red-Banded Leaf Roller as an Apple Pest in New York* (Harman, S. W.) 21 pages

url: http://hdl.handle.net/1813/4296
date: 2006-12-21
creator: Palmiter, D. H.;New York State Agricultural Experiment Station.
viewed: 190
title: Bulletin: Number 734: Sooty Blotch Disease of Pears and Its Control
abstract: 15 pages, 1 article*Sooty Blotch Disease of Pears and Its Control* (Palmiter, D. H.) 13 pages

url: http://hdl.handle.net/1813/4297
date: 2006-12-21
creator: Buchholz, A. B.;Munn, M. T.;New York State Agricultural Experiment Station.
viewed: 114
title: Bulletin: Number 735: The Quality of Seeds on Sale in New York in 1948
abstract: 40 pages, 1 article*The Quality of Seeds on Sale in New York in 1948* (Munn, M. T.; Buchholz, A. B.) 38 pages

url: http://hdl.handle.net/1813/4298
date: 2006-12-21
creator: Taschenberg, E. F.;New York State Agricultural Experiment Station.
viewed: 162
title: Bulletin: Number 736: Control of the Potato Aphid on Tomatoes
abstract: 21 pages, 1 article*Control of the Potato Aphid on Tomatoes* (Taschenberg, E. F.) 19 pages

url: http://hdl.handle.net/1813/4299
date: 2006-12-21
creator: Schroeder, W. T.;Hervey, G. E. R.;New York State Agricultural Experiment Station.
viewed: 133
title: Bulletin: Number 737: The Yellows Disease of Carrot
abstract: 29 pages, 1 article*The Yellows Disease of Carrot* (Hervey, G. E. R.; Schroeder, W. T.) 27 pages

url: http://hdl.handle.net/1813/4300
date: 2006-12-21
creator: Hartzell, F. Z.;Taschenberg, E. F.;New York State Agricultural Experiment Station.
viewed: 153
title: Bulletin: Number 738: Grape Leafhopper Control, 1944-1947
abstract: 40 pages, 1 article*Grape Leafhopper Control, 1944-1947* (Taschenberg, E. F.; Hartzell, F. Z.) 38 pages

url: http://hdl.handle.net/1813/4301
date: 2006-12-21

creator: Buchholz, A. B.;Munn, M. T.;New York State Agricultural Experiment Station.
viewed: 112
title: Bulletin: Number 739: The Quality of Seeds on Sale in New York in 1949
abstract: 71 pages, 1 article*The Quality of Seeds on Sale in New York in 1949* (Munn, M. T.; Buchholz, A. B.) 69 pages

url: http://hdl.handle.net/1813/4302
date: 2006-12-21
creator: New York State Agricultural Experiment Station.
viewed: 104
title: Bulletin: Number 74: Observations on the Application of Fungicides and Insecticides
abstract: 29 pages, 1 article*Observations on the Application of Fungicides and Insecticides* 24 pages

url: http://hdl.handle.net/1813/4303
date: 2006-12-21
creator: Munn, M. T.;New York State Agricultural Experiment Station.
viewed: 222
title: Bulletin: Number 740: A Method for Testing the Germinability of Large Seeds
abstract: 10 pages, 1 article*A Method for Testing the Germinability of Large Seeds* (Munn, M. T.) 8 pages

url: http://hdl.handle.net/1813/4304
date: 2006-12-21
creator: Dearborn, C. H.;New York State Agricultural Experiment Station.
viewed: 159
title: Bulletin: Number 741: Chemical Weed Control in Peas, Sweet Corn, and Beets Grown for Processing
abstract: 39 pages, 1 article*Chemical Weed Control in Peas, Sweet Corn, and Beets Grown for Processing* (Dearborn, C. H.) 37 pages

url: http://hdl.handle.net/1813/4305
date: 2006-12-21
creator: Holgate, K. C.;New York State Agricultural Experiment Station.
viewed: 152
title: Bulletin: Number 742: Changes in the Composition of Maple Sap during the Tapping Season
abstract: 14 pages, 1 article*Changes in the Composition of Maple Sap during the Tapping Season* (Holgate, K. C.) 12 pages

url: http://hdl.handle.net/1813/4306
date: 2006-12-21
creator: Pederson, C. S.;Hening, J. C.;Robinson, W. B.;Lee, F. A.;New York State Agricultural Experiment Station.
viewed: 490
title: Bulletin: Number 743: Low Temperature Preservation of Fruit Juices and Fruit Juice Concentrates
abstract: 18 pages, 1 article*Low Temperature Preservation of Fruit Juices and Fruit Juice Concentrates* (Lee, F. A.; Robinson, W. B.; Hening, J. C.; Pederson, C. S.) 16 pages

url: http://hdl.handle.net/1813/4307
date: 2006-12-21
creator: Albury, Margaret N.;Pederson, Carl S.;New York State Agricultural Experiment Station.

viewed: 431
title: Bulletin: Number 744: Effect of Temperature Upon Bacteriological and Chemical Changes in Fermenting Cucumbers
abstract: 31 pages, 1 article*Effect of Temperature Upon Bacteriological and Chemical Changes in Fermenting Cucumbers* (Pederson, Carl S.; Albury, Margaret N.) 29 pages

url: http://hdl.handle.net/1813/4308
date: 2006-12-21
creator: McColloch, R. J.;Kertesz, Z. I.;New York State Agricultural Experiment Station.
viewed: 779
title: Bulletin: Volume 745: The Pectic Substances of Mature John Baer Tomatoes
abstract: 15 pages, 1 article*The Pectic Substances of Mature John Baer Tomatoes* (Kertesz, Z. I.; McColloch, R. J.) 13 pages

url: http://hdl.handle.net/1813/4309
date: 2006-12-21
creator: Buchholz, A. B.;Munn, M. T.;New York State Agricultural Experiment Station.
viewed: 113
title: Bulletin: Number 746: The Quality of Seeds On Sale in New York in 1950
abstract: 80 pages, 1 article*The Quality of Seeds On Sale in New York in 1950* (Munn, M. T.; Buchholz, A. B.) 78 pages

url: http://hdl.handle.net/1813/4310
date: 2006-12-21
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 137
title: Bulletin: Number 133, Edition popular: The Best Remedy for Gooseberry Mildew
abstract: 8 pages, 1 article*The Best Remedy for Gooseberry Mildew* (Hall, F. H.) 6 pages

url: http://hdl.handle.net/1813/4311
date: 2006-12-21
creator: Van Slyke, L. L.;New York State Agricultural Experiment Station.
viewed: 142
title: Bulletin: Number 134: Report of Analyses of Commercial Fertilizers for the Fall of 1897
abstract: 42 pages, 1 article*Report of Analyses of Commercial Fertilizers for the Fall of 1897* (Van Slyke, L. L.) 39 pages

url: http://hdl.handle.net/1813/4312
date: 2006-12-21
creator: Hildebrand, E. M.;Palmiter, D. H.;New York State Agricultural Experiment Station.
viewed: 1289
title: Bulletin: Number 704: The Yellow-Red Virosis of Peach: Its Identification and Control
abstract: 18 pages, 1 article*The Yellow-Red Virosis of Peach: Its Identification and Control* (Palmiter, D. H.; Hildebrand, E. M.) 16 pages

url: http://hdl.handle.net/1813/4313
date: 2006-12-21
creator: Enzie, W. D.;New York State Agricultural Experiment Station.

viewed: 129
title: Bulletin: Number 705: A Descriptive and Historical Study of Some Yellow Sweet Corn Hybrids
abstract: 64 pages, 1 article*A Descriptive and Historical Study of Some Yellow Sweet Corn Hybrids* (Enzie, W. D.) 61 pages

url: http://hdl.handle.net/1813/4314
date: 2006-12-21
creator: Sayre, Charles B.;New York State Agricultural Experiment Station.
viewed: 275
title: Bulletin: Number 706: Starter Solutions for Tomato Plants for 1943
abstract: 18 pages, 1 article*Starter Solutions for Tomato Plants for 1943* (Sayre, Charles B.) 16 pages

url: http://hdl.handle.net/1813/4315
date: 2006-12-21
creator: Munn, M. T.;New York State Agricultural Experiment Station.
viewed: 205
title: Bulletin: Number 707: The Quality of Vegetable Seeds on Sale in New York in 1943
abstract: 43 pages, 1 article*The Quality of Vegetable Seeds on Sale in New York in 1943* (Munn, M. T.) 41 pages

url: http://hdl.handle.net/1813/4316
date: 2006-12-21
creator: Magie, R. O.;New York State Agricultural Experiment Station.
viewed: 177
title: Bulletin: Number 708: Disease and Insect Control on Hops
abstract: 20 pages, 1 article*Disease and Insect Control on Hops* (Magie, R. O.) 18 pages

url: http://hdl.handle.net/1813/4317
date: 2006-12-21
creator: Suit, R. F.;New York State Agricultural Experiment Station.
viewed: 170
title: Bulletin: Number 709: Currant Leaf Spot Control
abstract: 13 pages, 1 article*Currant Leaf Spot Control* (Suit, R. F.) 11 pages

url: http://hdl.handle.net/1813/4318
date: 2006-12-21
creator: New York State Agricultural Experiment Station.
viewed: 103
title: Bulletin: Number 71: Some Reasons Why There Should Be a Legal Standard for Cheese in New York State
abstract: 22 pages, 1 article*Some Reasons Why There Should Be a Legal Standard for Cheese in New York State* 20 pages

url: http://hdl.handle.net/1813/4319
date: 2006-12-21
creator: Suit, R. F.;New York State Agricultural Experiment Station.
viewed: 160
title: Bulletin: Number 710: Control of Spur Blight of Red Raspberries

abstract: 14 pages, 1 article*Control of Spur Blight of Red Raspberries* (Suit, R. F.) 12 pages

url: http://hdl.handle.net/1813/4320
date: 2006-12-21
creator: Palmiter, D. H.;Suit, R. F.;New York State Agricultural Experiment Station.
viewed: 1343
title: Bulletin: Number 711: Control of Gooseberry Diseases
abstract: 22 pages, 1 article*Control of Gooseberry Diseases* (Suit, R. F.; Palmiter, D. H.) 20 pages

url: http://hdl.handle.net/1813/4321
date: 2006-12-21
creator: Suit, R. F.;New York State Agricultural Experiment Station.
viewed: 158
title: Bulletin: Number 712: Field Results on the Control of Certain Grape Diseases in New York
abstract: 26 pages, 1 article*Field Results on the Control of Certain Grape Diseases in New York* (Suit, R. F.) 24 pages

url: http://hdl.handle.net/1813/4322
date: 2006-12-21
creator: Huckett, H. C.;New York State Agricultural Experiment Station.
viewed: 140
title: Bulletin: Number 713: Timing Rotenone Applications for Control of the Pea Aphid on Long Island, with Special Reference to Mosaic Incidence
abstract: 30 pages, 1 article*Timing Rotenone Applications for Control of the Pea Aphid on Long Island, with Special Reference to Mosaic Incidence* (Huckett, H. C.) 28 pages

url: http://hdl.handle.net/1813/4323
date: 2006-12-21
creator: Palmiter, D. H.;New York State Agricultural Experiment Station.
viewed: 388
title: Bulletin: Number 714: Ground Treatments as an Aid in Apple Scab Control
abstract: 27 pages, 1 article*Ground Treatments as an Aid in Apple Scab Control* (Palmiter, D. H.) 25 pages

url: http://hdl.handle.net/1813/4324
date: 2006-12-21
creator: Adams, J. A.;Bartlett, L. M.;Carruth, L. A.;New York State Agricultural Experiment Station.
viewed: 168
title: Bulletin: Number 715: Japanese Beetle Abundance and Injury on Sweet Corn
abstract: 16 pages, 1 article*Japanese Beetle Abundance and Injury on Sweet Corn* (Carruth, L. A.; Bartlett, L. M.; Adams, J. A.) 14 pages

url: http://hdl.handle.net/1813/4325
date: 2006-12-21
creator: Chapman, P. J.;Dean, R. W.;New York State Agricultural Experiment Station.
viewed: 176
title: Bulletin: Number 716: Biology and Control of the Apple Redbug
abstract: 42 pages, 1 article*Biology and Control of the Apple Redbug* (Dean, R. W.; Chapman, P. J.) 40

pages

url: http://hdl.handle.net/1813/4326
date: 2006-12-21
creator: Munn, M. T.;New York State Agricultural Experiment Station.
viewed: 217
title: Bulletin: Number 717: Thr Quality of Flower and Vegetable Seeds on Sale in New York in 1945
abstract: 69 pages, 1 article*Thr Quality of Flower and Vegetable Seeds on Sale in New York in 1945* (Munn, M. T.) 67 pages

url: http://hdl.handle.net/1813/4327
date: 2006-12-21
creator: Pederson, C. S.;Hayward, F. W.;New York State Agricultural Experiment Station.
viewed: 491
title: Bulletin: Number 718: Some Factors Causing Dark-Colored Maple Sirup
abstract: 14 pages, 1 article*Some Factors Causing Dark-Colored Maple Sirup* (Hayward, F. W.; Pederson, C. S.) 12 pages

url: http://hdl.handle.net/1813/4328
date: 2006-12-21
creator: Hayward, F. W.;New York State Agricultural Experiment Station.
viewed: 116
title: Bulletin: Number 719: The Storage of Maple Sirup
abstract: 8 pages, 1 article*The Storage of Maple Sirup* (Hayward, F. W.) 6 pages

url: http://hdl.handle.net/1813/4329
date: 2006-12-21
creator: New York State Agricultural Experiment Station.
viewed: 141
title: Bulletin: Number 72: Preventing Leaf Blight of Plum and Cherry Nursery Stock
abstract: 10 pages, 1 article*Preventing Leaf Blight of Plum and Cherry Nursery Stock* 8 pages

url: http://hdl.handle.net/1813/4330
date: 2006-12-21
creator: Hayward, F. W.;New York State Agricultural Experiment Station.
viewed: 105
title: Bulletin: Number 720: Factors in the Preparation of Maple Cream
abstract: 8 pages, 1 article*Factors in the Preparation of Maple Cream* (Hayward, F. W.) 6 pages

url: http://hdl.handle.net/1813/4331
date: 2006-12-21
creator: Reinking, Otto A.;Cunningham, H. S.;New York State Agricultural Experiment Station.
viewed: 319
title: Bulletin: Number 721: Fusarium Seed Piece Decay of Potato on Long Island and Its Control
abstract: 32 pages, 1 article*Fusarium Seed Piece Decay of Potato on Long Island and Its Control* (Cunningham, H. S.; Reinking, Otto A.) 30 pages

url: http://hdl.handle.net/1813/4332

date: 2006-12-21
creator: Munn, M. T.;Buchholz, A. B.;New York State Agricultural Experiment Station.
viewed: 200
title: Bulletin: Number 722: The Quality of Flower and Vegetable Seeds on Sale in New York in 1946
abstract: 69 pages, 1 article*The Quality of Flower and Vegetable Seeds on Sale in New York in 1946* (Buchholz, A. B.; Munn, M. T.) 67 pages

url: http://hdl.handle.net/1813/4333
date: 2006-12-21
creator: Cunningham, H. S.;New York State Agricultural Experiment Station.
viewed: 237
title: Bulletin: Number 723: Control of Downy Mildew of Lima Beans on Long Island
abstract: 19 pages, 1 article*Control of Downy Mildew of Lima Beans on Long Island* (Cunningham, H. S.) 17 pages

url: http://hdl.handle.net/1813/4334
date: 2006-12-21
creator: Schroeder, W. T.;New York State Agricultural Experiment Station.
viewed: 120
title: Bulletin: Number 724: Control of Tomato Diseases by Spraying
abstract: 28 pages, 1 article*Control of Tomato Diseases by Spraying* (Schroeder, W. T.) 26 pages

url: http://hdl.handle.net/1813/4335
date: 2006-12-21
creator: Churchill, G. W.;Jordan, W. H.;Van Slyke, L. L.;New York State Agricultural Experiment Station.
viewed: 118
title: Bulletin: Number 135: The Composition and Production of Sugar Beets
abstract: 32 pages, 1 article*The Composition and Production of Sugar Beets* (Van Slyke, L. L.; Jordan, W. H.; Churchill, G. W.) 30 pages

url: http://hdl.handle.net/1813/4336
date: 2006-12-21
creator: Lowe, V. H.;New York State Agricultural Experiment Station.
viewed: 143
title: Bulletin: Number 136: Inspection of Nurseries and Treatment of Infested Nursery Stock
abstract: 41 pages, 1 article*Inspection of Nurseries and Treatment of Infested Nursery Stock* (Lowe, V. H.) 39 pages

url: http://hdl.handle.net/1813/4337
date: 2006-12-21
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 139
title: Bulletin: Number 180, Edition popular: A Few Fruit-Tree Foes
abstract: 10 pages, 1 article*A Few Fruit-Tree Foes* (Hall, F. H.) 8 pages

url: http://hdl.handle.net/1813/4338
date: 2006-12-21
creator: Van Slyke, L. L.;New York State Agricultural Experiment Station.

viewed: 115
title: Bulletin: Number 230: Some Facts about Commercial Fertilizers in New York State
abstract: 20 pages, 1 article*Some Facts about Commercial Fertilizers in New York State* (Van Slyke, L. L.) 18 pages

url: http://hdl.handle.net/1813/4339
date: 2006-12-21
creator: Hart, E. B.;Van Slyke, L. L.;New York State Agricultural Experiment Station.
viewed: 125
title: Bulletin: Number 231: The Relation of Carbon Dioxide to Proteolysis in the Ripening of Cheddar Cheese
abstract: 25 pages, 1 article*The Relation of Carbon Dioxide to Proteolysis in the Ripening of Cheddar Cheese* (Van Slyke, L. L.; Hart, E. B.) 23 pages

url: http://hdl.handle.net/1813/4340
date: 2006-12-21
creator: Harding, H. A.;Stewart, F. C.;New York State Agricultural Experiment Station.
viewed: 132
title: Bulletin: Number 232: Combating the Black Rot of Cabbage by the Removal of Affected Leaves
abstract: 27 pages, 1 article*Combating the Black Rot of Cabbage by the Removal of Affected Leaves* (Stewart, F. C.; Harding, H. A.) 25 pages

url: http://hdl.handle.net/1813/4341
date: 2006-12-21
creator: Taylor, O. M.;New York State Agricultural Experiment Station.
viewed: 217
title: Bulletin: Number 309, Edition popular: Some Newer Strawberries
abstract: 12 pages, 1 article*Some Newer Strawberries* (Taylor, O. M.) 11 pages

url: http://hdl.handle.net/1813/4342
date: 2006-12-21
creator: New York State Agricultural Experiment Station.
viewed: 166
title: Bulletin: Number 31: Commercial Valuation of the Food and Fertilizing Constituents of Feeding Materials
abstract: 19 pages, 1 article*Commercial Valuation of the Food and Fertilizing Constituents of Feeding Materials* 17 pages

url: http://hdl.handle.net/1813/4343
date: 2006-12-21
creator: Sirrine, F. A.;French, G. T.;Stewart, F. C.;New York State Agricultural Experiment Station.
viewed: 141
title: Bulletin: Number 311: Potato Spraying Experiments in 1908
abstract: 40 pages, 1 article*Potato Spraying Experiments in 1908* (Stewart, F. C.; French, G. T.; Sirrine, F. A.) 38 pages

url: http://hdl.handle.net/1813/4344
date: 2006-12-21

creator: Schoene, W. J.;New York State Agricultural Experiment Station.
viewed: 152
title: Bulletin: Number 312: The Tussock Moth in Orchards
abstract: 16 pages, 1 article*The Tussock Moth in Orchards* (Schoene, W. J.) 14 pages

url: http://hdl.handle.net/1813/4345
date: 2006-12-21
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 171
title: Bulletin: Number 312, Edition popular: Orchards Injured by Tussock Moth
abstract: 8 pages, 1 article*Orchards Injured by Tussock Moth* (Hall, F. H.) 5 pages

url: http://hdl.handle.net/1813/4346
date: 2006-12-21
creator: Wilson, J. K.;Harding, H. A.;New York State Agricultural Experiment Station.
viewed: 155
title: Bulletin: Number 313: Inoculation and Lime as Factors in Growing Alfalfa
abstract: 29 pages, 1 article*Inoculation and Lime as Factors in Growing Alfalfa* (Harding, H. A.; Wilson, J. K.) 27 pages

url: http://hdl.handle.net/1813/4347
date: 2006-12-21
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 295
title: Bulletin: Number 313, Edition popular: Two Factors Favoring Success with Alfalfa
abstract: 8 pages, 1 article*Two Factors Favoring Success with Alfalfa* (Hall, F. H.) 6 pages

url: http://hdl.handle.net/1813/4348
date: 2006-12-21
creator: Hedrick, U. P.;New York State Agricultural Experiment Station.
viewed: 159
title: Bulletin: Number 314: A Comparison of Tillage and Sod Mulch in an Apple Orchard
abstract: 65 pages, 1 article*A Comparison of Tillage and Sod Mulch in an Apple Orchard* (Hedrick, U. P.) 63 pages

url: http://hdl.handle.net/1813/4349
date: 2006-12-21
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 161
title: Bulletin: Number 314, Edition popular: How Sod Affected an Apple Orchard
abstract: 20 pages, 1 article*How Sod Affected an Apple Orchard* (Hall, F. H.) 18 pages

url: http://hdl.handle.net/1813/4350
date: 2006-12-21
creator: Dorsey, M. J.;New York State Agricultural Experiment Station.
viewed: 115
title: Bulletin: Number 315: The Grape Districts of New York and Table of Varieties
abstract: 31 pages, 1 article*The Grape Districts of New York and Table of Varieties* (Dorsey, M. J.) 29

pages

url: http://hdl.handle.net/1813/4351
date: 2006-12-21
creator: New York State Agricultural Experiment Station.
viewed: 142
title: Bulletin: Number 316: Inspection of Feeding Stuffs
abstract: 91 pages, 1 article*Inspection of Feeding Stuffs* 89 pages

url: http://hdl.handle.net/1813/4352
date: 2006-12-21
creator: New York State Agricultural Experiment Station.
viewed: 149
title: Bulletin: Number 317: Report of Analyses of Samples of Commercial Fertilizers Collected by the Commissioner of Agriculture during 1909
abstract: 91 pages, 1 article*Report of Analyses of Samples of Commercial Fertilizers Collected by the Commissioner of Agriculture during 1909* 89 pages

url: http://hdl.handle.net/1813/4353
date: 2006-12-21
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 147
title: Bulletin: Number 317, Edition popular: Milking Machines and Clean Milk
abstract: 12 pages, 1 article*Milking Machines and Clean Milk* (Hall, F. H.) 10 pages

url: http://hdl.handle.net/1813/4354
date: 2006-12-21
creator: Bosworth, A. W.;Hedges, C. C.;Van Slyke, L. L.;New York State Agricultural Experiment Station.
viewed: 148
title: Bulletin: Number 319: A Chemical Study of the Lime-Sulphur Wash
abstract: 38 pages, 1 article*A Chemical Study of the Lime-Sulphur Wash* (Van Slyke, L. L.; Hedges, C. C.; Bosworth, A. W.) 36 pages

url: http://hdl.handle.net/1813/4355
date: 2006-12-21
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 292
title: Bulletin: Number 319-320, Edition popular: Composition and Use of Lime-Sulphur Washes
abstract: 15 pages, 1 article*Composition and Use of Lime-Sulphur Washes* (Hall, F. H.) 13 pages

url: http://hdl.handle.net/1813/4356
date: 2006-12-21
creator: New York State Agricultural Experiment Station.
viewed: 149
title: Bulletin: Number 32: The New York State Fertilizer Control and Fertilizer Analyses
abstract: 34 pages, 1 article*The New York State Fertilizer Control and Fertilizer Analyses* 29 pages

url: http://hdl.handle.net/1813/4357

date: 2006-12-21
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 173
title: Bulletin: Number 136, Edition popular: Nursery Stock Pests and Their Repression
abstract: 16 pages, 1 article*Nursery Stock Pests and Their Repression* (Hall, F. H.) 14 pages

url: http://hdl.handle.net/1813/4358
date: 2006-12-21
creator: Jordan, W. H.;New York State Agricultural Experiment Station.
viewed: 158
title: Bulletin: Number 137: Commercial Fertilizers for Potatoes
abstract: 24 pages, 1 article*Commercial Fertilizers for Potatoes* (Jordan, W. H.) 21 pages

url: http://hdl.handle.net/1813/4359
date: 2006-12-21
creator: Chapman, P. J.;New York State Agricultural Experiment Station.
viewed: 159
title: Bulletin: Volume 684: The Plum Curculio as an Apple Pest
abstract: 75 pages, 1 article*The Plum Curculio as an Apple Pest* (Chapman, P. J.) 73 pages

url: http://hdl.handle.net/1813/4360
date: 2006-12-21
creator: Wessels, P. H.;Cunningham, H. S.;New York State Agricultural Experiment Station.
viewed: 215
title: Bulletin: Number 685: Controlling Common Scab of the Potato on Long Island by the Addition of Mercury Compounds to the Fertilizer Mixture and the Relation of Soil Reaction to the Treatment
abstract: 20 pages, 1 article*Controlling Common Scab of the Potato on Long Island by the Addition of Mercury Compounds to the Fertilizer Mixture and the Relation of Soil Reaction to the Treatment* (Cunningham, H. S.; Wessels, P. H.) 18 pages

url: http://hdl.handle.net/1813/4361
date: 2006-12-21
creator: Enzie, W. D.;New York State Agricultural Experiment Station.
viewed: 137
title: Bulletin: Number 686: Yellow Sweet Corn Hybrids for New York
abstract: 63 pages, 1 article*Yellow Sweet Corn Hybrids for New York* (Enzie, W. D.) 59 pages

url: http://hdl.handle.net/1813/4362
date: 2006-12-21
creator: Harlan, J. D.;New York State Agricultural Experiment Station.
viewed: 130
title: Bulletin: Number 687: A Trial of New Varieties of Hops for New York
abstract: 8 pages, 1 article*A Trial of New Varieties of Hops for New York* (Harlan, J. D.) 6 pages

url: http://hdl.handle.net/1813/4363
date: 2006-12-21
creator: Hess, A. D.;New York State Agricultural Experiment Station.
viewed: 776

title: Bulletin: Volume 688: The Biology and Control of the Round-Headed Apple-Tree Borer, Saperda Candida Fabricius
abstract: 93 pages, 1 article*The Biology and Control of the Round-Headed Apple-Tree Borer, Saperda Candida Fabricius* (Hess, A. D.) 89 pages

url: http://hdl.handle.net/1813/4364
date: 2006-12-21
creator: Gloyer, W. O.;Reinking, O. A.;New York State Agricultural Experiment Station.
viewed: 270
title: Bulletin: Number 689: Yellows-Resistant Varieties of Cabbage Suitable for New York State
abstract: 28 pages, 1 article*Yellows-Resistant Varieties of Cabbage Suitable for New York State* (Reinking, O. A.; Gloyer, W. O.) 26 pages

url: http://hdl.handle.net/1813/4365
date: 2006-12-21
creator: New York State Agricultural Experiment Station.
viewed: 112
title: Bulletin: Number 69: Vegetables Grown for Exhibition
abstract: 58 pages, 1 article*Vegetables Grown for Exhibition* 56 pages

url: http://hdl.handle.net/1813/4366
date: 2006-12-21
creator: DuBois, C. W.;Tressler, D. K.;New York State Agricultural Experiment Station.
viewed: 128
title: Bulletin: Number 690: Freezing and Storage of Foods in Freezing Cabinets and Locker Plants
abstract: 60 pages, 1 article*Freezing and Storage of Foods in Freezing Cabinets and Locker Plants* (Tressler, D. K.; DuBois, C. W.) 56 pages

url: http://hdl.handle.net/1813/4367
date: 2006-12-21
creator: Collison, R. C.;New York State Agricultural Experiment Station.
viewed: 127
title: Bulletin: Number 691: Experiments in Orchard Soil Management: Fertilizers, Mulches, and Cover Crops
abstract: 37 pages, 1 article*Experiments in Orchard Soil Management: Fertilizers, Mulches, and Cover Crops* (Collison, R. C.) 35 pages

url: http://hdl.handle.net/1813/4368
date: 2006-12-21
creator: Harman, S. W.;New York State Agricultural Experiment Station.
viewed: 156
title: Bulletin: Number 692: The Cranberry Rootworm as an Apple Pest
abstract: 11 pages, 1 article*The Cranberry Rootworm as an Apple Pest* (Harman, S. W.) 9 pages

url: http://hdl.handle.net/1813/4369
date: 2006-12-21
creator: Pederson, Carl S.;New York State Agricultural Experiment Station.
viewed: 127

title: Bulletin: Number 693: The Relation Between Quality and Chemical Composition of Canned Sauerkraut
abstract: 15 pages, 1 article*The Relation Between Quality and Chemical Composition of Canned Sauerkraut* (Pederson, Carl S.) 13 pages

url: http://hdl.handle.net/1813/4370
date: 2006-12-21
creator: Cunningham, H. S.;New York State Agricultural Experiment Station.
viewed: 197
title: Bulletin: Number 694: A Comparison of New Improved Semesan Bel and Different Strengths of Yellow Oxide of Mercury as Materials for Treating Seed Potatoes Under Long Island Conditions
abstract: 13 pages, 1 article*A Comparison of New Improved Semesan Bel and Different Strengths of Yellow Oxide of Mercury as Materials for Treating Seed Potatoes Under Long Island Conditions* (Cunningham, H. S.) 11 pages

url: http://hdl.handle.net/1813/4371
date: 2006-12-21
creator: Huckett, Hugh C.;New York State Agricultural Experiment Station.
viewed: 160
title: Bulletin: Number 695: Non-Arsenical Dusts for Cauliflower and Cabbage Worm Control on Long Island
abstract: 58 pages, 1 article*Non-Arsenical Dusts for Cauliflower and Cabbage Worm Control on Long Island* (Huckett, Hugh C.) 56 pages

url: http://hdl.handle.net/1813/4372
date: 2006-12-21
creator: Penczek, E. S.;Dahlberg, A. C.;New York State Agricultural Experiment Station.
viewed: 236
title: Bulletin: Number 696: Dextrose and Corn Sirup for Frozen Desserts
abstract: 36 pages, 1 article*Dextrose and Corn Sirup for Frozen Desserts* (Dahlberg, A. C.; Penczek, E. S.) 34 pages

url: http://hdl.handle.net/1813/4373
date: 2006-12-21
creator: Dahlberg, A. C.;New York State Agricultural Experiment Station.
viewed: 200
title: Bulletin: Number 697: The Influence on Milk Production of a Definite Time Interval for Milking Cows by Machine
abstract: 13 pages, 1 article*The Influence on Milk Production of a Definite Time Interval for Milking Cows by Machine* (Dahlberg, A. C.) 11 pages

url: http://hdl.handle.net/1813/4374
date: 2006-12-21
creator: Greenwood, D. E.;Hartzell, F. Z.;Taschenberg, E. F.;Hamilton, D. W.;Hammer, O. H.;Huckett, H. C.;Mundinger, F. G.;Mendall, S. C.;Avens, A. W.;Gambrell, F. L.;Hervey, G. E. R.;Harman, S. W.;Chapman, P. J.;Pearce, G. W.;Glasgow, Hugh;Dean, R. W.;Daniel, D. M.;Smith, E. H.;Carruth, L. A.;New York State Agricultural Experiment Station.
viewed: 262

title: Bulletin: Number 698
abstract: 62 pages, 21 articles*Present Status of the Mineral Oil Treatmen for Corn Ear Worm Control* (Carruth, L. A.) 3 pages*The Status of Biological Control of the Japanese Beetle in New York State* (Smith, E. H.; Daniel, D. M.) 4 pages*Pyrethrum Dusts for the Control of the Apple Redbug* (Dean, R. W.) 2 pages*The Use of Concentrated Sprays for Pea Aphid Control* (Glasgow, Hugh) 3 pages*Blood Albumin for Use as an Emulsifier* (Pearce, G. W.; Chapman, P. J.) 2 pages*Contributions to Codling Moth Control* (Harman, S. W.) 3 pages*Squash Vine Borer Control* (Hervey, G. E. R.) 2 pages*Dormant Treatments for the Control of Certain Insects on Nursery Plants* (Gambrell, F. L.) 4 pages*Relation of Oil Deposits to the Control of the Oriental Fruit Moth on Quinces* (Smith, E. H.; Avens, A. W.; Mendall, S. C.) 3 pages*Insecticidal Control of the Raspberry Cane Borer* (Mundinger, F. G.) 2 pages*Pea Aphids as a Factor in Growing Peas on Long Island* (Huckett, H. C.) 1 page*A Shortened, Intensive Summer Spray Program for Apples in Eastern New York* (Hammer, O. H.; Hamilton, D. W.) 3 pages*Use of Dusts for European Corn Borer Control* (Carruth, L. A.) 5 pages*A New Basis for Selecting Petroleum Oils for Orchard Sprays* (Chapman, P. J.; Pearce, G. W.; Avens, A. W.) 3 pages*Recent Investigations on Cherry Fruitflies* (Hamilton, D. W.) 2 pages*Studies on the Control of the Grape-Berry Moth* (Taschenberg, E. F.; Hartzell, F. Z.) 3 pages*Studies of Rotenone Sprays for Cabbage Worm Control* (Hervey, G. E. R.) 3 pages*Recent Experiments to Control the Scurfy Scale* (Hammer, O. H.) 2 pages*Insecticides for Oriental Fruit Moth Control* (Dean, R. W.; Smith, E. H.) 2 pages*Field Identification of Five Leaf Rollers Found in Apple Orchards* (Greenwood, D. E.) 4 pages*Pre-Foliage Treatments for Control of Bud Moth* (Hartzell, F. Z.) 4 pages

url: http://hdl.handle.net/1813/4375
date: 2006-12-21
creator: Zimmerman, W. I.;Tressler, C. J.;New York State Agricultural Experiment Station.
viewed: 472
title: Bulletin: Number 699: Three Years' Operation of an Experimental Sugar Bush
abstract: 24 pages, 1 article*Three Years' Operation of an Experimental Sugar Bush* (Tressler, C. J.; Zimmerman, W. I.) 22 pages

url: http://hdl.handle.net/1813/4376
date: 2006-12-21
creator: Sturtevant, E. Lewis;New York State Agricultural Experiment Station.
viewed: 490
title: Bulletin: Number VII: Slug Shot
abstract: 3 pages, 1 article*Slug Shot* (Sturtevant, E. Lewis) 3 pages

url: http://hdl.handle.net/1813/4377
date: 2006-12-21
creator: New York State Agricultural Experiment Station.
viewed: 116
title: Bulletin: Number 70: Some Reasons Why the Legal Milk-Standard of New York State Should be Changed
abstract: 19 pages, 1 article*Some Reasons Why the Legal Milk-Standard of New York State Should be Changed* 17 pages

url: http://hdl.handle.net/1813/4378
date: 2006-12-21
creator: Enzie, W. D.;New York State Agricultural Experiment Station.
viewed: 299

title: Bulletin: Number 700: The Relation of Spacing to Yield and to Plant and Ear Development of Some Yellow Sweet Corn Hybrids in New York
abstract: 19 pages, 1 article*The Relation of Spacing to Yield and to Plant and Ear Development of Some Yellow Sweet Corn Hybrids in New York* (Enzie, W. D.) 17 pages

url: http://hdl.handle.net/1813/4379
date: 2006-12-21
creator: Carleton, E. A.;Collison, R. C.;New York State Agricultural Experiment Station.
viewed: 164
title: Bulletin: Number 701: Orchard Covers and Their Relation to Coil Conservation
abstract: 33 pages, 1 article*Orchard Covers and Their Relation to Coil Conservation* (Collison, R. C.; Carleton, E. A.) 31 pages

url: http://hdl.handle.net/1813/4380
date: 2006-12-21
creator: Huckett, H. C.;New York State Agricultural Experiment Station.
viewed: 129
title: Bulletin: Number 702: Spraying and Dusting Experiments with Bush Lima Beans on Long Island for Control of the Mexican Bean Beetle
abstract: 45 pages, 1 article*Spraying and Dusting Experiments with Bush Lima Beans on Long Island for Control of the Mexican Bean Beetle* (Huckett, H. C.) 43 pages

url: http://hdl.handle.net/1813/4381
date: 2006-12-21
creator: Wheeler, E. H.;Taschenberg, E. F.;Hamilton, D. W.;Brann, J. L., Jr.;Mundinger, F. G.;Pearce, G. W.;Hervey, G. E. R.;Carruth, L. A.;Avens, A. W.;Mendall, S. C.;Hartzell, F. Z.;Greenwood, D. E.;Chapman, P. J.;Glasgow, Hugh;Harman, S. W.;Dean, R. W.;Gambrell, F. L.;Huckett, H. C.;New York State Agricultural Experiment Station.
viewed: 457
title: Bulletin: Number 703
abstract: 63 pages, 21 articles*The Control of the Common Red Spider on Lima Beans* (Huckett, H. C.) 3 pages*Observations on the Economic Importance and Control of the European Chafer* (Gambrell, F. L.) 6 pages*Rotenone for Apple Maggot Control* (Dean, R. W.) 5 pages*An Improvement in the Nonresidue Apple Spray Schedule* (Harman, S. W.) 2 pages*Substitutes for Mercury Salts in Cabbage Maggot Control* (Glasgow, Hugh) 3 pages*A New Apple Leafroller* (Chapman, P. J.; Greenwood, D. E.) 3 pages*Tests of Modified Mixtures for the Control of Bud Moth on Apple* (Hartzell, F. Z.) 4 pages*New Phases of Rosy Apple Aphid Control* (Hartzell, F. Z.) 5 pages*Summer Oil-Nicotine Sprays for Oriental Fruit Moth Control on Quinces* (Mendall, S. C.; Avens, A. W.) 4 pages*An Alternative Insecticide for European Corn Borer Control* (Carruth, L. A.) 4 pages*Spreaders for Codling Moth Sprays on Apple* (Harman, S. W.) 3 pages*A Study of Rotenone-Bearing Dusts for Cabbage Insect Control * (Hervey, G. E. R.) 6 pages*Dilutents and Supplements for Lead Arsenate Dusts for Cabbage Worm Control* (Hervey, G. E. R.; Pearce, G. W.) 3 pages*Experiments with Dinitro Insecticides and Oil Sprays for the Control of Pear Psylla* (Mundinger, F. G.) 3 pages*A Shortened, Intensive Summer Spray Program for Apples in Eastern New York: Second Report* (Brann, J. L., Jr.; Hamilton, D. W.) 4 pages*Tank-Mixed Oil Sprays for European Red Mite Control* (Dean, R. W.) 5 pages*Studies of Spray Supplements for Grape Berry Moth Control* (Taschenberg, E. F.) 3 pages*Influence of Temperature and Rainfall on the Performance of Oil Sprays* (Chapman, P. J.; Pearce, G. W.; Avens, A. W.) 3 pages*Notes on the Cherry Leafminer* (Hamilton, D. W.) 3 pages*Insecticides for Peachtree Borer Control* (Wheeler, E. H.) 2 pages*The Effect of Summer Sprays on San Jose Scale Control

on Apple* (Harman, S. W.) 2 pages

url: http://hdl.handle.net/1813/4382
date: 2006-12-21
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 1194
title: Bulletin: Number 137, Edition popular: Profitable Potato Fertilizing
abstract: 7 pages, 1 article*Profitable Potato Fertilizing* (Hall, F. H.) 5 pages

url: http://hdl.handle.net/1813/4383
date: 2006-12-21
creator: Stewart, F. C.;New York State Agricultural Experiment Station.
viewed: 1917
title: Bulletin: Number 138: Experiments and Observations on Some Diseases of Plants
abstract: 21 pages, 1 article*Experiments and Observations on Some Diseases of Plants* (Stewart, F. C.) 18 pages

url: http://hdl.handle.net/1813/4384
date: 2006-12-21
creator: Anderson, L. C.;Collison, R. C.;New York State Agricultural Experiment Station.
viewed: 1225
title: Bulletin: Number 661: Fertilizer Experiments in the Morgan-Thau Orchard: Six Years' Results with Nineteen Treatments
abstract: 32 pages, 1 article*Fertilizer Experiments in the Morgan-Thau Orchard: Six Years' Results with Nineteen Treatments* (Collison, R. C.; Anderson, L. C.) 30 pages

url: http://hdl.handle.net/1813/4385
date: 2006-12-21
creator: Marquardt, J. C.;New York State Agricultural Experiment Station.
viewed: 131
title: Bulletin: Number 662: Studies on the Manufacture of Trappist Type Cheese
abstract: 23 pages, 1 article*Studies on the Manufacture of Trappist Type Cheese* (Marquardt, J. C.) 21 pages

url: http://hdl.handle.net/1813/4386
date: 2006-12-21
creator: Munn, Rachel E.;Munn, M. T.;New York State Agricultural Experiment Station.
viewed: 131
title: Bulletin: Number 663: The Quality of Flower Seeds on Sale in New York
abstract: 12 pages, 1 article*The Quality of Flower Seeds on Sale in New York* (Munn, M. T.; Munn, Rachel E.) 10 pages

url: http://hdl.handle.net/1813/4387
date: 2006-12-21
creator: Munn, M. T.;New York State Agricultural Experiment Station.
viewed: 186
title: Bulletin: Number 664: The Quality of Vegetable Seeds on Sale in New York in 1934 and 1935
abstract: 21 pages, 1 article*The Quality of Vegetable Seeds on Sale in New York in 1934 and 1935* (Munn,

M. T.) 19 pages

url: http://hdl.handle.net/1813/4388
date: 2006-12-21
creator: Cooley, L. M.;New York State Agricultural Experiment Station.
viewed: 126
title: Bulletin: Number 665: Wild Brambles in Relation to Spread of Virus Diseases in Cultivated Black Raspberries
abstract: 15 pages, 1 article*Wild Brambles in Relation to Spread of Virus Diseases in Cultivated Black Raspberries* (Cooley, L. M.) 13 pages

url: http://hdl.handle.net/1813/4389
date: 2006-12-21
creator: Stewart, F. C.;New York State Agricultural Experiment Station.
viewed: 194
title: Bulletin: Number 666: The Uncertain Hypholoma
abstract: 17 pages, 1 article*The Uncertain Hypholoma* (Stewart, F. C.) 14 pages

url: http://hdl.handle.net/1813/4390
date: 2006-12-21
creator: Cunningham, H. S.;New York State Agricultural Experiment Station.
viewed: 170
title: Bulletin: Number 667: The Root-Knot Nematode (Heterodera Marioni) in Relation to the Potato Industry on Long Island
abstract: 24 pages, 1 article*The Root-Knot Nematode (Heterodera Marioni) in Relation to the Potato Industry on Long Island* (Cunningham, H. S.) 22 pages

url: http://hdl.handle.net/1813/4391
date: 2006-12-21
creator: Cunningham, H. S.;New York State Agricultural Experiment Station.
viewed: 206
title: Bulletin: Number 668: Yellow Oxide of Mercury Treatment for Seed Potatoes on Long Island
abstract: 14 pages, 1 article*Yellow Oxide of Mercury Treatment for Seed Potatoes on Long Island* (Cunningham, H. S.) 12 pages

url: http://hdl.handle.net/1813/4392
date: 2006-12-21
creator: Cox, James A.;Daniel, Derrill M.;New York State Agricultural Experiment Station.
viewed: 272
title: Bulletin: Number 669: Oriental Fruit Moth Control in Quince Planting
abstract: 16 pages, 1 article*Oriental Fruit Moth Control in Quince Planting* (Daniel, Derrill M.; Cox, James A.) 14 pages

url: http://hdl.handle.net/1813/4393
date: 2006-12-21
creator: New York State Agricultural Experiment Station.
viewed: 173
title: Bulletin: Number 67: Experiments in Preventing Pear Scab

abstract: 26 pages, 1 article*Experiments in Preventing Pear Scab* 24 pages

url: http://hdl.handle.net/1813/4394
date: 2006-12-21
creator: Marquardt, J. C.;New York State Agricultural Experiment Station.
viewed: 144
title: Bulletin: Number 670: The Salting and Cooking of Curds in the Manufacture of Several Varieties of Cheeses
abstract: 16 pages, 1 article*The Salting and Cooking of Curds in the Manufacture of Several Varieties of Cheeses* (Marquardt, J. C.) 14 pages

url: http://hdl.handle.net/1813/4395
date: 2006-12-21
creator: Stewart, F. C.;New York State Agricultural Experiment Station.
viewed: 133
title: Bulletin: Number 672: The Relation of Age and Viability to the Popping of Popcorn
abstract: 7 pages, 1 article*The Relation of Age and Viability to the Popping of Popcorn* (Stewart, F. C.) 5 pages

url: http://hdl.handle.net/1813/4396
date: 2006-12-21
creator: Breed, Robert S.;Yale, M. W.;New York State Agricultural Experiment Station.
viewed: 194
title: Bulletin: Number 673: Comparative Fairness of Single Can and Weigh Vat Samples of Milk for Bacterial Counts as a Basis for Premium Payments to Grade A Dairymen
abstract: 22 pages, 1 article*Comparative Fairness of Single Can and Weigh Vat Samples of Milk for Bacterial Counts as a Basis for Premium Payments to Grade A Dairymen* (Yale, M. W.; Breed, Robert S.) 20 pages

url: http://hdl.handle.net/1813/4397
date: 2006-12-21
creator: Cooley, L. M.;New York State Agricultural Experiment Station.
viewed: 156
title: Bulletin: Number 674: Wild Bramble Eradication
abstract: 32 pages, 1 article*Wild Bramble Eradication* (Cooley, L. M.) 30 pages

url: http://hdl.handle.net/1813/4398
date: 2006-12-21
creator: Cooley, L. M.;New York State Agricultural Experiment Station.
viewed: 154
title: Bulletin: Number 675: Retarded Foliation in Black Raspberries and its Relation to Mosaic
abstract: 20 pages, 1 article*Retarded Foliation in Black Raspberries and its Relation to Mosaic* (Cooley, L. M.) 18 pages

url: http://hdl.handle.net/1813/4399
date: 2006-12-21
creator: Tressler, Donald K.;Pederson, Carl S.;New York State Agricultural Experiment Station.
viewed: 157
title: Bulletin: Number 676: Improvements in the Manufacture and the Preservation of Grape Juice

abstract: 29 pages, 1 article*Improvements in the Manufacture and the Preservation of Grape Juice* (Pederson, Carl S.; Tressler, Donald K.) 27 pages

url: http://hdl.handle.net/1813/4400
date: 2006-12-21
creator: Crosier, Willard F.;New York State Agricultural Experiment Station.
viewed: 150
title: Bulletin: Number 677: The Planting Value of Wheat Taken Directly from Farmers' Drills
abstract: 30 pages, 1 article*The Planting Value of Wheat Taken Directly from Farmers' Drills* (Crosier, Willard F.) 28 pages

url: http://hdl.handle.net/1813/4401
date: 2006-12-21
creator: Hamilton, J. M.;New York State Agricultural Experiment Station.
viewed: 439
title: Bulletin: Number 678: Recent Investigations on the Control of Cedar-Apple Rust in the Hudson Valley
abstract: 34 pages, 1 article*Recent Investigations on the Control of Cedar-Apple Rust in the Hudson Valley* (Hamilton, J. M.) 32 pages

url: http://hdl.handle.net/1813/4402
date: 2006-12-21
creator: Collison, R. C.;New York State Agricultural Experiment Station.
viewed: 113
title: Bulletin: Number 679: Potash and Phosphorus in Relation to Organic Matter in New York Orchards
abstract: 18 pages, 1 article*Potash and Phosphorus in Relation to Organic Matter in New York Orchards* (Collison, R. C.) 16 pages

url: http://hdl.handle.net/1813/4403
date: 2006-12-21
creator: New York State Agricultural Experiment Station.
viewed: 152
title: Bulletin: Number 68: Investigation Relating to the Manufacture of Cheese--Part V
abstract: 46 pages, 1 article*Investigation Relating to the Manufacture of Cheese--Part V* 44 pages

url: http://hdl.handle.net/1813/4404
date: 2006-12-21
creator: Crosier, Willard F.;New York State Agricultural Experiment Station.
viewed: 128
title: Bulletin: Number 681: The Planting Value of Oats and Barley Collected from Farmers' Drills and Granaries
abstract: 46 pages, 1 article*The Planting Value of Oats and Barley Collected from Farmers' Drills and Granaries* (Crosier, Willard F.) 44 pages

url: http://hdl.handle.net/1813/4405
date: 2006-12-21
creator: Brase, K. D.;Tukey, H. B.;New York State Agricultural Experiment Station.
viewed: 253

title: Bulletin: Volume 682: Random Notes on Fruit Tree Rootstocks and Plant Propagation, III
abstract: 32 pages, 1 article*Random Notes on Fruit Tree Rootstocks and Plant Propagation, III* (Tukey, H. B.; Brase, K. D.) 30 pages

url: http://hdl.handle.net/1813/4406
date: 2006-12-21
creator: Horsfall, James G.;New York State Agricultural Experiment Station.
viewed: 158
title: Bulletin: Number 683: Combating Damping-Off
abstract: 45 pages, 1 article*Combating Damping-Off* (Horsfall, James G.) 43 pages

url: http://hdl.handle.net/1813/4407
date: 2006-12-21
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 151
title: Bulletin: Number 138, Edition popular: Work upon Some Diseases of Plants in 1897
abstract: 8 pages, 1 article*Work upon Some Diseases of Plants in 1897* (Hall, F. H.) 6 pages

url: http://hdl.handle.net/1813/4408
date: 2006-12-21
creator: Lowe, V. H.;New York State Agricultural Experiment Station.
viewed: 651
title: Bulletin: Number 139: Plant Lice: Descriptions, Enemies and Treatment
abstract: 26 pages, 1 article*Plant Lice: Descriptions, Enemies and Treatment* (Lowe, V. H.) 24 pages

url: http://hdl.handle.net/1813/4409
date: 2006-12-21
creator: Hervey, G. E. R.;New York State Agricultural Experiment Station.
viewed: 168
title: Bulletin: Number 640: Non-Arsenical Dusts for Cauliflower Worm Control in Western New York
abstract: 17 pages, 1 article*Non-Arsenical Dusts for Cauliflower Worm Control in Western New York* (Hervey, G. E. R.) 15 pages

url: http://hdl.handle.net/1813/4410
date: 2006-12-21
creator: Anderson, L. C.;New York State Agricultural Experiment Station.
viewed: 204
title: Bulletin: Number 641: Four Years of Commercial Fertilizers on Currants in the Hudson River Valley
abstract: 13 pages, 1 article*Four Years of Commercial Fertilizers on Currants in the Hudson River Valley* (Anderson, L. C.) 11 pages

url: http://hdl.handle.net/1813/4411
date: 2006-12-21
creator: Munn, M. T.;New York State Agricultural Experiment Station.
viewed: 103
title: Bulletin: Number 642: The Quality of Vegetable Seeds on Sale in New York in 1933
abstract: 69 pages, 1 article*The Quality of Vegetable Seeds on Sale in New York in 1933* (Munn, M. T.) 67 pages

url: http://hdl.handle.net/1813/4412
date: 2006-12-21
creator: Guterman, C. E. F.;Newhall, A. G.;Horsfall, James G.;New York State Agricultural Experiment Station.
viewed: 193
title: Bulletin: Volume 643: Dusting Miscellaneous Seeds with Red Copper Oxide to Combat Damping-Off
abstract: 39 pages, 1 article*Dusting Miscellaneous Seeds with Red Copper Oxide to Combat Damping-Off* (Horsfall, James G.; Newhall, A. G.; Guterman, C. E. F.) 37 pages

url: http://hdl.handle.net/1813/4413
date: 2006-12-21
creator: Chapman, P. J.;New York State Agricultural Experiment Station.
viewed: 132
title: Bulletin: Number 644: A Study of Apple Maggot Control Measures
abstract: 41 pages, 1 article*A Study of Apple Maggot Control Measures* (Chapman, P. J.) 39 pages

url: http://hdl.handle.net/1813/4414
date: 2006-12-21
creator: Dahlberg, A. C.;New York State Agricultural Experiment Station.
viewed: 175
title: Bulletin: Number 645: Proved Sires and Partially Proved Dams in Breeding Dairy Cattle for Production
abstract: 30 pages, 1 article*Proved Sires and Partially Proved Dams in Breeding Dairy Cattle for Production* (Dahlberg, A. C.) 28 pages

url: http://hdl.handle.net/1813/4415
date: 2006-12-21
creator: Harlan, J. D.;Collison, R. C.;New York State Agricultural Experiment Station.
viewed: 467
title: Bulletin: Volume 646: Fertilizer Responses of Baldwin Apple Trees on an Acid Soil
abstract: 24 pages, 1 article*Fertilizer Responses of Baldwin Apple Trees on an Acid Soil* (Collison, R. C.; Harlan, J. D.) 22 pages

url: http://hdl.handle.net/1813/4416
date: 2006-12-21
creator: Harlan, J. D.;Collison, R. C.;New York State Agricultural Experiment Station.
viewed: 368
title: Bulletin: Number 647: Winter Injury of Baldwin Apple Trees and its Relation to Previous Tree Performance and Nutritional Treatment
abstract: 13 pages, 1 article*Winter Injury of Baldwin Apple Trees and its Relation to Previous Tree Performance and Nutritional Treatment* (Collison, R. C.; Harlan, J. D.) 11 pages

url: http://hdl.handle.net/1813/4417
date: 2006-12-21
creator: Glasgow, Hugh;New York State Agricultural Experiment Station.
viewed: 171

title: Bulletin: Number 648: The Feeding Habits of the Sinuate Pear Borer in Relation to Control Practices
abstract: 31 pages, 1 article*The Feeding Habits of the Sinuate Pear Borer in Relation to Control Practices* (Glasgow, Hugh) 29 pages

url: http://hdl.handle.net/1813/4418
date: 2006-12-21
creator: Brase, K. D.;Tukey, H. B.;New York State Agricultural Experiment Station.
viewed: 106
title: Bulletin: Number 649: Random Notes on Fruit Tree Rootstocks and Plant Propagation
abstract: 22 pages, 1 article*Random Notes on Fruit Tree Rootstocks and Plant Propagation* (Tukey, H. B.; Brase, K. D.) 20 pages

url: http://hdl.handle.net/1813/4419
date: 2006-12-21
creator: New York State Agricultural Experiment Station.
viewed: 122
title: Bulletin: Number 65: Investigation Relating to the Manufacture of Cheese--Part IV
abstract: 136 pages, 1 article*Investigation Relating to the Manufacture of Cheese--Part IV* 134 pages

url: http://hdl.handle.net/1813/4420
date: 2006-12-21
creator: Horsfall, James G.;New York State Agricultural Experiment Station.
viewed: 121
title: Bulletin: Number 650: Zinc Oxide as a Seed and Soil Treatment for Damping-Off
abstract: 25 pages, 1 article*Zinc Oxide as a Seed and Soil Treatment for Damping-Off* (Horsfall, James G.) 23 pages

url: http://hdl.handle.net/1813/4421
date: 2006-12-21
creator: Horsfall, James G.;New York State Agricultural Experiment Station.
viewed: 204
title: Bulletin: Number 651: Pasteurizing Soil Electrically to Control Damping-Off
abstract: 8 pages, 1 article*Pasteurizing Soil Electrically to Control Damping-Off* (Horsfall, James G.) 6 pages

url: http://hdl.handle.net/1813/4422
date: 2006-12-21
creator: Huckett, H. C.;New York State Agricultural Experiment Station.
viewed: 168
title: Bulletin: Number 652: Planting Dates as an Aid to Potato Insect Control on Long Island
abstract: 27 pages, 1 article*Planting Dates as an Aid to Potato Insect Control on Long Island* (Huckett, H. C.) 25 pages

url: http://hdl.handle.net/1813/4423
date: 2006-12-21
creator: Anderson, L. C.;New York State Agricultural Experiment Station.
viewed: 136
title: Bulletin: Number 653: A Survey of the Behavior of Cherry Trees in the Hudson River Valley with

Particular Reference to Losses from Winter Killing and Other Causes
abstract: 23 pages, 1 article*A Survey of the Behavior of Cherry Trees in the Hudson River Valley with Particular Reference to Losses from Winter Killing and Other Causes* (Anderson, L. C.) 21 pages

url: http://hdl.handle.net/1813/4424
date: 2006-12-21
creator: Dahlberg, A. C.;New York State Agricultural Experiment Station.
viewed: 198
title: Bulletin: Number 654: The Influence of Machine Milking upon Milk Production
abstract: 16 pages, 1 article*The Influence of Machine Milking upon Milk Production* (Dahlberg, A. C.) 14 pages

url: http://hdl.handle.net/1813/4425
date: 2006-12-21
creator: Stewart, F. C.;New York State Agricultural Experiment Station.
viewed: 157
title: Bulletin: Volume 655: A Potato Seed Plat Roguing Experiment
abstract: 10 pages, 1 article*A Potato Seed Plat Roguing Experiment* (Stewart, F. C.) 8 pages

url: http://hdl.handle.net/1813/4426
date: 2006-12-21
creator: Harrison, Arthur L.;New York State Agricultural Experiment Station.
viewed: 1196
title: Bulletin: Number 656: Mosaic of the Refugee Bean
abstract: 19 pages, 1 article*Mosaic of the Refugee Bean* (Harrison, Arthur L.) 17 pages

url: http://hdl.handle.net/1813/4427
date: 2006-12-21
creator: Brase, K. D.;Tukey, H. B.;New York State Agricultural Experiment Station.
viewed: 118
title: Bulletin: Number 657: Random Notes on Fruit Tree Rootstocks and Plant Propagation, II
abstract: 26 pages, 1 article*Random Notes on Fruit Tree Rootstocks and Plant Propagation, II* (Tukey, H. B.; Brase, K. D.) 24 pages

url: http://hdl.handle.net/1813/4428
date: 2006-12-21
creator: Stewart, F. C.;New York State Agricultural Experiment Station.
viewed: 153
title: Bulletin: Number 658: The Relative Vigor and Productivity of Potato Plants from Bassl and Apical Sets Cut From Tubers in Different Stages of Sprouting
abstract: 18 pages, 1 article*The Relative Vigor and Productivity of Potato Plants from Bassl and Apical Sets Cut From Tubers in Different Stages of Sprouting* (Stewart, F. C.) 16 pages

url: http://hdl.handle.net/1813/4429
date: 2006-12-21
creator: Cumings, G. A.;Sayre, Charles B.;New York State Agricultural Experiment Station.
viewed: 141
title: Bulletin: Number 659: Fertilizer Placement for Cannery Peas

abstract: 30 pages, 1 article*Fertilizer Placement for Cannery Peas* (Sayre, Charles B.; Cumings, G. A.) 28 pages

url: http://hdl.handle.net/1813/4430
date: 2006-12-21
creator: New York State Agricultural Experiment Station.
viewed: 117
title: Bulletin: Number 66: Analyses of Commercial Fertilizers Collected in the Fall of 1893
abstract: 25 pages, 1 article*Analyses of Commercial Fertilizers Collected in the Fall of 1893* 23 pages

url: http://hdl.handle.net/1813/4431
date: 2006-12-21
creator: Horsfall, James G.;Arnold, Earl. L.;New York State Agricultural Experiment Station.
viewed: 161
title: Bulletin: Number 660: Use of Graphite to Prevent Clogging of Drills when Sowing Dusted Pea Seed
abstract: 23 pages, 1 article*Use of Graphite to Prevent Clogging of Drills when Sowing Dusted Pea Seed* (Arnold, Earl. L.; Horsfall, James G.) 21 pages

url: http://hdl.handle.net/1813/4432
date: 2006-12-21
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 295
title: Bulletin: Number 139, Edition popular: Combating Plant Lice
abstract: 11 pages, 1 article*Combating Plant Lice* (Hall, F. H.) 9 pages

url: http://hdl.handle.net/1813/4433
date: 2006-12-21
creator: Ladd, E. F.;New York State Agricultural Experiment Station.
viewed: 154
title: Bulletin: Number 14: Chemical Department
abstract: 32 pages, 1 article*Chemical Department* (Ladd, E. F.) 30 pages

url: http://hdl.handle.net/1813/4434
date: 2006-12-21
creator: Munn, M. T.;New York State Agricultural Experiment Station.
viewed: 193
title: Bulletin: Number 618: The Quality of Vegetable Seeds on Sale in New York in 1932
abstract: 46 pages, 1 article*The Quality of Vegetable Seeds on Sale in New York in 1932* (Munn, M. T.) 44 pages

url: http://hdl.handle.net/1813/4435
date: 2006-12-21
creator: Sayre, Charles B.;New York State Agricultural Experiment Station.
viewed: 175
title: Bulletin: Number 619: Effects of Fertilizers and Rotation on Earliness and Total Yields of Tomatoes
abstract: 50 pages, 1 article*Effects of Fertilizers and Rotation on Earliness and Total Yields of Tomatoes* (Sayre, Charles B.) 48 pages

url: http://hdl.handle.net/1813/4436
date: 2006-12-21
creator: New York State Agricultural Experiment Station.
viewed: 95
title: Bulletin: Number 62: Investigation Relating to the Manufacture of Cheese--Part III
abstract: 79 pages, 1 article*Investigation Relating to the Manufacture of Cheese--Part III* 77 pages

url: http://hdl.handle.net/1813/4437
date: 2006-12-21
creator: Howe, G. H.;New York State Agricultural Experiment Station.
viewed: 267
title: Bulletin: Number 620: New or Noteworthy Fruits, XI
abstract: 19 pages, 1 article*New or Noteworthy Fruits, XI* (Howe, G. H.) 16 pages

url: http://hdl.handle.net/1813/4438
date: 2006-12-21
creator: Kertesz, Z. I.;Horsfall, J. G.;New York State Agricultural Experiment Station.
viewed: 159
title: Bulletin: Number 621: Abnormal Enlargement of Peas from Plants Affected with Root-Rot
abstract: 20 pages, 1 article*Abnormal Enlargement of Peas from Plants Affected with Root-Rot* (Horsfall, J. G.; Kertesz, Z. I.) 18 pages

url: http://hdl.handle.net/1813/4439
date: 2006-12-21
creator: Kertesz, Z. I.;New York State Agricultural Experiment Station.
viewed: 289
title: Bulletin: Number 622: Some Carbohydrate Changes in Shelled Green Peas
abstract: 14 pages, 1 article*Some Carbohydrate Changes in Shelled Green Peas* (Kertesz, Z. I.) 12 pages

url: http://hdl.handle.net/1813/4440
date: 2006-12-21
creator: Collison, R. C.;Harlan, J. D.;New York State Agricultural Experiment Station.
viewed: 155
title: Bulletin: Number 623: Experiments with Commercial Nitrogenous Fertilizers on Apple Orchards
abstract: 36 pages, 1 article*Experiments with Commercial Nitrogenous Fertilizers on Apple Orchards* (Harlan, J. D.; Collison, R. C.) 34 pages

url: http://hdl.handle.net/1813/4441
date: 2006-12-21
creator: Gloyer, W. O.;New York State Agricultural Experiment Station.
viewed: 127
title: Bulletin: Number 624: Evaluation of Applications of Lime-Sulphur for the Control of Apple Scab
abstract: 39 pages, 1 article*Evaluation of Applications of Lime-Sulphur for the Control of Apple Scab* (Gloyer, W. O.) 37 pages

url: http://hdl.handle.net/1813/4442
date: 2006-12-21
creator: Rankin, W. Howard;Slate, George L.;New York State Agricultural Experiment Station.

viewed: 147
title: Bulletin: Number 625: Raspberry Growing in New York State: Cultural Practises and Disease Control
abstract: 61 pages, 1 article*Raspberry Growing in New York State: Cultural Practises and Disease Control* (Slate, George L.; Rankin, W. Howard) 58 pages

url: http://hdl.handle.net/1813/4443
date: 2006-12-21
creator: Marquardt, J. C.;Dahlberg, A. C.;New York State Agricultural Experiment Station.
viewed: 149
title: Bulletin: Number 628: Sterilization of Ice Cream Freezers
abstract: 20 pages, 1 article*Sterilization of Ice Cream Freezers* (Dahlberg, A. C.; Marquardt, J. C.) 18 pages

url: http://hdl.handle.net/1813/4444
date: 2006-12-21
creator: Harlan, J. D.;Collison, R. C.;New York State Agricultural Experiment Station.
viewed: 177
title: Bulletin: Number 629: Some Facts About Soil Management in a New York Orchard
abstract: 20 pages, 1 article*Some Facts About Soil Management in a New York Orchard* (Collison, R. C.; Harlan, J. D.) 18 pages

url: http://hdl.handle.net/1813/4445
date: 2006-12-21
creator: New York State Agricultural Experiment Station.
viewed: 114
title: Bulletin: Number 63: Some Experiences with Blackberries, Dewberries, and Raspberries
abstract: 29 pages, 1 article*Some Experiences with Blackberries, Dewberries, and Raspberries* 27 pages

url: http://hdl.handle.net/1813/4446
date: 2006-12-21
creator: Kelly, C. D.;Yale, M. W.;New York State Agricultural Experiment Station.
viewed: 197
title: Bulletin: Number 630: Thermophilic Bacteria in Milk Pasteurized by the High-Temperature, Short-Time Process
abstract: 23 pages, 1 article*Thermophilic Bacteria in Milk Pasteurized by the High-Temperature, Short-Time Process* (Yale, M. W.; Kelly, C. D.) 21 pages

url: http://hdl.handle.net/1813/4447
date: 2006-12-21
creator: Kelly, C. D.;New York State Agricultural Experiment Station.
viewed: 1241
title: Bulletin: Number 631: Controlling Ropy Milk Outbreaks
abstract: 18 pages, 1 article*Controlling Ropy Milk Outbreaks* (Kelly, C. D.) 16 pages

url: http://hdl.handle.net/1813/4448
date: 2006-12-21
creator: Collison, R. C.;New York State Agricultural Experiment Station.

viewed: 130
title: Bulletin: Number 632: Relations Between Orchard Soils and Cover Crops
abstract: 18 pages, 1 article*Relations Between Orchard Soils and Cover Crops* (Collison, R. C.) 16 pages

url: http://hdl.handle.net/1813/4449
date: 2006-12-21
creator: Stewart, F. C.;New York State Agricultural Experiment Station.
viewed: 128
title: Bulletin: Number 633: The Relative Vigor and Productivity of Potato Plants from Basal and Apical Sets
abstract: 18 pages, 1 article*The Relative Vigor and Productivity of Potato Plants from Basal and Apical Sets* (Stewart, F. C.) 16 pages

url: http://hdl.handle.net/1813/4450
date: 2006-12-21
creator: Dahlberg, A. C.;Hening, J. C.;New York State Agricultural Experiment Station.
viewed: 177
title: Bulletin: Number 634: Frozen Fruits for Ice Cream
abstract: 19 pages, 1 article*Frozen Fruits for Ice Cream* (Hening, J. C.; Dahlberg, A. C.) 17 pages

url: http://hdl.handle.net/1813/4451
date: 2006-12-21
creator: Crawford, Aubrey;Cox, James;Daniel, Derrill M.;New York State Agricultural Experiment Station.
viewed: 255
title: Bulletin: Number 635: Biological Control of the Oriental Fruit Moth
abstract: 27 pages, 1 article*Biological Control of the Oriental Fruit Moth* (Daniel, Derrill M.; Cox, James; Crawford, Aubrey) 25 pages

url: http://hdl.handle.net/1813/4452
date: 2006-12-21
creator: Parrott, P. J.;Hartzell, F. Z.;New York State Agricultural Experiment Station.
viewed: 187
title: Bulletin: Number 636: Tar Distillate Emulsions for the Control of the Rosy Aphid and Other Fruit Insects
abstract: 29 pages, 1 article*Tar Distillate Emulsions for the Control of the Rosy Aphid and Other Fruit Insects* (Hartzell, F. Z.; Parrott, P. J.) 27 pages

url: http://hdl.handle.net/1813/4453
date: 2006-12-21
creator: Hartzell, F. Z.;New York State Agricultural Experiment Station.
viewed: 124
title: Bulletin: Number 637: Tar Distillate Emulsions for the Control of the Black Cherry Aphid
abstract: 23 pages, 1 article*Tar Distillate Emulsions for the Control of the Black Cherry Aphid* (Hartzell, F. Z.) 21 pages

url: http://hdl.handle.net/1813/4454
date: 2006-12-21
creator: Gloyer, W. O.;New York State Agricultural Experiment Station.

viewed: 145
title: Bulletin: Number 638: Crown Gall and Hairy Root of Applies in Nursery and Orchard
abstract: 30 pages, 1 article*Crown Gall and Hairy Root of Applies in Nursery and Orchard* (Gloyer, W. O.) 28 pages

url: http://hdl.handle.net/1813/4455
date: 2006-12-21
creator: Dahlberg, A. C.;New York State Agricultural Experiment Station.
viewed: 236
title: Bulletin: Number 639: The Temperature of Milk Immediately After Milking and Strainer Capacity
abstract: 11 pages, 1 article*The Temperature of Milk Immediately After Milking and Strainer Capacity* (Dahlberg, A. C.) 9 pages

url: http://hdl.handle.net/1813/4456
date: 2006-12-21
creator: New York State Agricultural Experiment Station.
viewed: 134
title: Bulletin: Number 64
abstract: 26 pages, 2 articles*Some Experiences in Testing Strawberries* 16 pages*Strawberry Crosses* 8 pages

url: http://hdl.handle.net/1813/4457
date: 2006-12-21
creator: Beach, S. A.;New York State Agricultural Experiment Station.
viewed: 275
title: Bulletin: Number 140: Wood Ashes and Apple Scab
abstract: 28 pages, 1 article*Wood Ashes and Apple Scab* (Beach, S. A.) 26 pages

url: http://hdl.handle.net/1813/4458
date: 2006-12-21
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 132
title: Bulletin: Number 140, Edition popular: Wood Ashes Not an Apple Scab Preventive
abstract: 8 pages, 1 article*Wood Ashes Not an Apple Scab Preventive* (Hall, F. H.) 6 pages

url: http://hdl.handle.net/1813/4459
date: 2006-12-21
creator: Smith, G. A.;Jordan, W. H.;New York State Agricultural Experiment Station.
viewed: 181
title: Bulletin: Number 178: Inspection of Babcock Milk Test Bottles
abstract: 7 pages, 1 article*Inspection of Babcock Milk Test Bottles* (Jordan, W. H.; Smith, G. A.) 5 pages

url: http://hdl.handle.net/1813/4460
date: 2006-12-21
creator: Stewart, F. C.;New York State Agricultural Experiment Station.
viewed: 141
title: Bulletin: Number 179: An Anthracnose and a Stem Rot of the Cultivated Snapdragon
abstract: 12 pages, 1 article*An Anthracnose and a Stem Rot of the Cultivated Snapdragon* (Stewart, F. C.)

10 pages

url: http://hdl.handle.net/1813/4461
date: 2006-12-21
creator: Lowe, V. H.;New York State Agricultural Experiment Station.
viewed: 108
title: Bulletin: Number 180: Miscellaneous Notes on Injurious Insects
abstract: 32 pages, 1 article*Miscellaneous Notes on Injurious Insects* (Lowe, V. H.) 30 pages

url: http://hdl.handle.net/1813/4462
date: 2006-12-21
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 1165
title: Bulletin: Number 232, Edition popular: An Unsuccessful Cabbage-Rot Remedy
abstract: 10 pages, 1 article*An Unsuccessful Cabbage-Rot Remedy* (Hall, F. H.) 7 pages

url: http://hdl.handle.net/1813/4463
date: 2006-12-21
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 385
title: Bulletin: Number 300, Edition popular: Alfalfa Aided by Soil Inoculation
abstract: 10 pages, 1 article*Alfalfa Aided by Soil Inoculation* (Hall, F. H.) 8 pages

url: http://hdl.handle.net/1813/4464
date: 2006-12-21
creator: Schoene, W. J.;New York State Agricultural Experiment Station.
viewed: 180
title: Bulletin: Number 301: Screening for the Protection of Cabbage Seed-Beds
abstract: 13 pages, 1 article*Screening for the Protection of Cabbage Seed-Beds* (Schoene, W. J.) 11 pages

url: http://hdl.handle.net/1813/4465
date: 2006-12-21
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 149
title: Bulletin: Number 301, Edition popular: Protecting Cabbage Plant Beds from Maggots
abstract: 4 pages, 1 article*Protecting Cabbage Plant Beds from Maggots* (Hall, F. H.) 3 pages

url: http://hdl.handle.net/1813/4466
date: 2006-12-21
creator: Schoene, W. J.;Hodgkiss, H. E.;Parrott, P. J.;New York State Agricultural Experiment Station.
viewed: 166
title: Bulletin: Number 302: Dipping of Nursery Stock in the Lime-Sulphur Wash
abstract: 32 pages, 1 article*Dipping of Nursery Stock in the Lime-Sulphur Wash* (Parrott, P. J.; Hodgkiss, H. E.; Schoene, W. J.) 30 pages

url: http://hdl.handle.net/1813/4467
date: 2006-12-21
creator: New York State Agricultural Experiment Station.

viewed: 138
title: Bulletin: Number 303: Inspection of Feeding Stuffs
abstract: 54 pages, 1 article*Inspection of Feeding Stuffs* 51 pages

url: http://hdl.handle.net/1813/4468
date: 2006-12-21
creator: New York State Agricultural Experiment Station.
viewed: 165
title: Bulletin: Number 304: Report of Analyses of Commercial Fertilizers Collected by the Commissioner of Agriculture during 1908
abstract: 79 pages, 1 article*Report of Analyses of Commercial Fertilizers Collected by the Commissioner of Agriculture during 1908* 77 pages

url: http://hdl.handle.net/1813/4469
date: 2006-12-21
creator: Wilson, J. K.;French, G. T.;Stewart, F. C.;New York State Agricultural Experiment Station.
viewed: 119
title: Bulletin: Number 305: Troubles of Alfalfa in New York
abstract: 100 pages, 1 article*Troubles of Alfalfa in New York* (Stewart, F. C.; French, G. T.; Wilson, J. K.) 96 pages

url: http://hdl.handle.net/1813/4470
date: 2006-12-21
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 133
title: Bulletin: Number 305, Edition popular: Alfalfa Troubles
abstract: 16 pages, 1 article*Alfalfa Troubles* (Hall, F. H.) 14 pages

url: http://hdl.handle.net/1813/4471
date: 2006-12-21
creator: Parrott, P. J.;New York State Agricultural Experiment Station.
viewed: 145
title: Bulletin: Number 306: Control of Leaf Blister-Mite in Apple Orchards
abstract: 24 pages, 1 article*Control of Leaf Blister-Mite in Apple Orchards* (Parrott, P. J.) 22 pages

url: http://hdl.handle.net/1813/4472
date: 2006-12-21
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 159
title: Bulletin: Number 306, Edition popular: Sulphur Sprays for Blister Mite
abstract: 7 pages, 1 article*Sulphur Sprays for Blister Mite* (Hall, F. H.) 5 pages

url: http://hdl.handle.net/1813/4473
date: 2006-12-21
creator: Sirrine, F. A.;French, G. T.;Stewart, F. C.;New York State Agricultural Experiment Station.
viewed: 106
title: Bulletin: Number 307: Potato Spraying Experiments in 1907
abstract: 32 pages, 1 article*Potato Spraying Experiments in 1907* (Stewart, F. C.; French, G. T.; Sirrine, F.

A.) 30 pages

url: http://hdl.handle.net/1813/4474
date: 2006-12-21
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 291
title: Bulletin: Number 307, 311, Edition popular: Potato Spraying in Dry Seasons
abstract: 12 pages, 1 article*Potato Spraying in Dry Seasons* (Hall, F. H.) 10 pages

url: http://hdl.handle.net/1813/4475
date: 2006-12-21
creator: Van Slyke, L. L.;New York State Agricultural Experiment Station.
viewed: 169
title: Bulletin: Number 308: Methods of Paying for Milk at Cheese Factories
abstract: 40 pages, 1 article*Methods of Paying for Milk at Cheese Factories* (Van Slyke, L. L.) 38 pages

url: http://hdl.handle.net/1813/4476
date: 2006-12-21
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 149
title: Bulletin: Number 308, Edition popular: Paying for Milk at Cheese-Factories
abstract: 8 pages, 1 article*Paying for Milk at Cheese-Factories* (Hall, F. H.) 7 pages

url: http://hdl.handle.net/1813/4477
date: 2006-12-21
creator: Taylor, O. M.;New York State Agricultural Experiment Station.
viewed: 143
title: Bulletin: Number 309: Variety Test of Strawberries and Cultural Directions
abstract: 61 pages, 1 article*Variety Test of Strawberries and Cultural Directions* (Taylor, O. M.) 59 pages

url: http://hdl.handle.net/1813/4478
date: 2006-12-21
creator: Jordan, W. H.;New York State Agricultural Experiment Station.
viewed: 105
title: Bulletin: Number 310: Director's Report for 1908
abstract: 23 pages, 1 article*Director's Report for 1908* (Jordan, W. H.) 21 pages

url: http://hdl.handle.net/1813/4479
date: 2006-12-21
creator: Jenter, C. G.;Jordan, W. H.;New York State Agricultural Experiment Station.
viewed: 131
title: Bulletin: Number 141: Digestion and Feeding Experiments
abstract: 32 pages, 1 article*Digestion and Feeding Experiments* (Jordan, W. H.; Jenter, C. G.) 30 pages

url: http://hdl.handle.net/1813/4480
date: 2006-12-21
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 129

title: Bulletin: Number 141, Edition popular: Some Results in Stock Feeding
abstract: 8 pages, 1 article*Some Results in Stock Feeding* (Hall, F. H.) 6 pages

url: http://hdl.handle.net/1813/4481
date: 2006-12-21
creator: Blodgett, Frederick H.;New York State Agricultural Experiment Station.
viewed: 161
title: Bulletin: Number 175: A Parasite upon Carnation Rust
abstract: 11 pages, 1 article*A Parasite upon Carnation Rust* (Blodgett, Frederick H.) 9 pages

url: http://hdl.handle.net/1813/4482
date: 2006-12-21
creator: Jenter, C. G.;Jordan, W. H.;New York State Agricultural Experiment Station.
viewed: 126
title: Bulletin: Number 176: Inspection of Concentrated Commercial Feeding Stuffs during the Spring of 1900
abstract: 24 pages, 1 article*Inspection of Concentrated Commercial Feeding Stuffs during the Spring of 1900* (Jordan, W. H.; Jenter, C. G.) 22 pages

url: http://hdl.handle.net/1813/4483
date: 2006-12-21
creator: Andrews, W. H.;Van Slyke, L. L.;New York State Agricultural Experiment Station.
viewed: 130
title: Bulletin: Number 177: Report of Analyses of Commercial Fertilizers for the Spring and Fall of 1900
abstract: 63 pages, 1 article*Report of Analyses of Commercial Fertilizers for the Spring and Fall of 1900* (Van Slyke, L. L.; Andrews, W. H.) 61 pages

url: http://hdl.handle.net/1813/4484
date: 2006-12-21
creator: Hart, E. B.;Harding, H. A.;Van Slyke, L. L.;New York State Agricultural Experiment Station.
viewed: 131
title: Bulletin: Number 233: Rennet-Enzyme as a Factor in Cheese-Ripening
abstract: 32 pages, 1 article*Rennet-Enzyme as a Factor in Cheese-Ripening* (Van Slyke, L. L.; Harding, H. A.; Hart, E. B.) 30 pages

url: http://hdl.handle.net/1813/4485
date: 2006-12-21
creator: Sirrine, F. A.;French, G. T.;Eustace, H. J.;Stewart, F. C.;New York State Agricultural Experiment Station.
viewed: 120
title: Bulletin: Number 290: Potato Spraying Experiments in 1906
abstract: 88 pages, 1 article*Potato Spraying Experiments in 1906* (Stewart, F. C.; Eustace, H. J.; French, G. T.; Sirrine, F. A.) 85 pages

url: http://hdl.handle.net/1813/4486
date: 2006-12-21
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 121

title: Bulletin: Number 290, Edition popular: Five Years of Potato Spraying
abstract: 12 pages, 1 article*Five Years of Potato Spraying* (Hall, F. H.) 11 pages

url: http://hdl.handle.net/1813/4487
date: 2006-12-21
creator: New York State Agricultural Experiment Station.
viewed: 150
title: Bulletin: Number 291: Inspection of Feeding Stuffs
abstract: 49 pages, 1 article*Inspection of Feeding Stuffs* 47 pages

url: http://hdl.handle.net/1813/4488
date: 2006-12-21
creator: Bosworth, Alfred W.;Van Slyke, L. L.;New York State Agricultural Experiment Station.
viewed: 150
title: Bulletin: Number 292: The Effect of Treating Milk with Carbon Dioxide Gas Under Pressure
abstract: 19 pages, 1 article*The Effect of Treating Milk with Carbon Dioxide Gas Under Pressure* (Van Slyke, L. L.; Bosworth, Alfred W.) 17 pages

url: http://hdl.handle.net/1813/4489
date: 2006-12-21
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 171
title: Bulletin: Number 292, Edition popular: Carbonated Milk
abstract: 6 pages, 1 article*Carbonated Milk* (Hall, F. H.) 2 pages

url: http://hdl.handle.net/1813/4490
date: 2006-12-21
creator: Van Slyke, L. L.;New York State Agricultural Experiment Station.
viewed: 132
title: Bulletin: Number 293: Analyses of Miscellaneous Materials
abstract: 13 pages, 1 article*Analyses of Miscellaneous Materials* (Van Slyke, L. L.) 11 pages

url: http://hdl.handle.net/1813/4491
date: 2006-12-21
creator: New York State Agricultural Experiment Station.
viewed: 132
title: Bulletin: Number 294: Report of Analyses of Commercial Fertilizers Collected by the Commissioner of Agriculture during 1907
abstract: 85 pages, 1 article*Report of Analyses of Commercial Fertilizers Collected by the Commissioner of Agriculture during 1907* 83 pages

url: http://hdl.handle.net/1813/4492
date: 2006-12-21
creator: Jordan, W. H.;New York State Agricultural Experiment Station.
viewed: 272
title: Bulletin: Number 295: Director's Report for 1907
abstract: 24 pages, 1 article*Director's Report for 1907* (Jordan, W. H.) 22 pages

url: http://hdl.handle.net/1813/4493
date: 2006-12-21
creator: Schoene, W. J.;Hodgkiss, H. E.;Parrott, P. J.;New York State Agricultural Experiment Station.
viewed: 165
title: Bulletin: Number 296: Control of Scale in Old Apple Orchards
abstract: 36 pages, 1 article*Control of Scale in Old Apple Orchards* (Parrott, P. J.; Hodgkiss, H. E.; Schoene, W. J.) 34 pages

url: http://hdl.handle.net/1813/4494
date: 2006-12-21
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 187
title: Bulletin: Number 296, Edition popular: Saving Old Orchards from Scale
abstract: 10 pages, 1 article*Saving Old Orchards from Scale* (Hall, F. H.) 8 pages

url: http://hdl.handle.net/1813/4495
date: 2006-12-21
creator: Eustace, H. J.;New York State Agricultural Experiment Station.
viewed: 309
title: Bulletin: Number 297: Investigations on Some Fruit Diseases
abstract: 27 pages, 1 article*Investigations on Some Fruit Diseases* (Eustace, H. J.) 25 pages

url: http://hdl.handle.net/1813/4496
date: 2006-12-21
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 714
title: Bulletin: Number 297, Edition popular: Some Fruit-Rot Notes
abstract: 6 pages, 1 article*Some Fruit-Rot Notes* (Hall, F. H.) 5 pages

url: http://hdl.handle.net/1813/4497
date: 2006-12-21
creator: Taylor, O. M.;Hedrick, U. P.;New York State Agricultural Experiment Station.
viewed: 124
title: Bulletin: Number 298: Distribution of Station Strawberries and Raspberries
abstract: 16 pages, 1 article*Distribution of Station Strawberries and Raspberries* (Hedrick, U. P.; Taylor, O. M.) 14 pages

url: http://hdl.handle.net/1813/4498
date: 2006-12-21
creator: Hedrick, U. P.;New York State Agricultural Experiment Station.
viewed: 174
title: Bulletin: Number 299: The Relation of Weather to the Setting of Fruit; with Blooming Data for 866 Varieties of Fruit
abstract: 82 pages, 1 article*The Relation of Weather to the Setting of Fruit; with Blooming Data for 866 Varieties of Fruit* (Hedrick, U. P.) 80 pages

url: http://hdl.handle.net/1813/4499
date: 2006-12-21

creator: Sturtevant, E. Lewis;New York State Agricultural Experiment Station.
viewed: 200
title: Bulletin: Number III: State Fair exhibits
abstract: 2 pages, 1 article*State Fair exhibits* (Sturtevant, E. Lewis) 2 pages

url: http://hdl.handle.net/1813/4500
date: 2006-12-21
creator: New York State Agricultural Experiment Station.
viewed: 187
title: Bulletin: Number 30
abstract: 18 pages, 2 articles*Cabbage and Cauliflower* 6 pages*Tomato Tests* 10 pages

url: http://hdl.handle.net/1813/4501
date: 2006-12-21
creator: Wilson, J. K.;Harding, H. A.;New York State Agricultural Experiment Station.
viewed: 126
title: Bulletin: Number 300: Inoculation as a Factor in Growing Alfalfa
abstract: 30 pages, 1 article*Inoculation as a Factor in Growing Alfalfa* (Harding, H. A.; Wilson, J. K.) 28 pages

url: http://hdl.handle.net/1813/4502
date: 2006-12-21
creator: Jordan, W. H.;New York State Agricultural Experiment Station.
viewed: 163
title: Bulletin: Number 142: Director's Report
abstract: 22 pages, 1 article*Director's Report* (Jordan, W. H.) 20 pages

url: http://hdl.handle.net/1813/4503
date: 2006-12-21
creator: Lowe, V. H.;New York State Agricultural Experiment Station.
viewed: 133
title: Bulletin: Number 143
abstract: 30 pages, 2 articles*The Cottonwood Leaf-Beetle* (Lowe, V. H.) 22 pages*Green Arsenite* (Lowe, V. H.) 4 pages

url: http://hdl.handle.net/1813/4504
date: 2006-12-21
creator: Beach, S. A.;New York State Agricultural Experiment Station.
viewed: 152
title: Bulletin: Number 174: Fumigation of Nursery Stock
abstract: 10 pages, 1 article*Fumigation of Nursery Stock* (Beach, S. A.) 8 pages

url: http://hdl.handle.net/1813/4505
date: 2006-12-21
creator: Hart, E. B.;Smith, G. A.;Van Slyke, L. L.;New York State Agricultural Experiment Station.
viewed: 122
title: Bulletin: Number 234: Experiments in Curing Cheese at Different Temperatures
abstract: 27 pages, 1 article*Experiments in Curing Cheese at Different Temperatures* (Van Slyke, L. L.;

Smith, G. A.; Hart, E. B.) 25 pages

url: http://hdl.handle.net/1813/4506
date: 2006-12-21
creator: New York State Agricultural Experiment Station.
viewed: 117
title: Bulletin: Number 280: Inspection of Feeding Stuffs
abstract: 30 pages, 1 article*Inspection of Feeding Stuffs* 28 pages

url: http://hdl.handle.net/1813/4507
date: 2006-12-21
creator: Sirrine, F. A.;Hodgkiss, H. E.;Parrott, P. J.;New York State Agricultural Experiment Station.
viewed: 161
title: Bulletin: Number 281: Commercial Miscible Oils for Treatment of the San Jose Scale
abstract: 12 pages, 1 article*Commercial Miscible Oils for Treatment of the San Jose Scale* (Parrott, P. J.; Hodgkiss, H. E.; Sirrine, F. A.) 10 pages

url: http://hdl.handle.net/1813/4508
date: 2006-12-21
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 141
title: Bulletin: Number 281, Edition popular: Miscible Oil Sprays
abstract: 7 pages, 1 article*Miscible Oil Sprays* (Hall, F. H.) 5 pages

url: http://hdl.handle.net/1813/4509
date: 2006-12-21
creator: Harding, H. A.;Prucha, M. J.;New York State Agricultural Experiment Station.
viewed: 148
title: Bulletin: Number 282: Quality of Commercial Cultures for Legumes in 1906
abstract: 11 pages, 1 article*Quality of Commercial Cultures for Legumes in 1906* (Prucha, M. J.; Harding, H. A.) 9 pages

url: http://hdl.handle.net/1813/4510
date: 2006-12-21
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 142
title: Bulletin: Number 282, Edition popular: Dried Cultures for Legumes Unsatisfactory
abstract: 4 pages, 1 article*Dried Cultures for Legumes Unsatisfactory* (Hall, F. H.) 3 pages

url: http://hdl.handle.net/1813/4511
date: 2006-12-21
creator: Schoene, W. J.;Hodgkiss, H. E.;Parrott, P. J.;New York State Agricultural Experiment Station.
viewed: 126
title: Bulletin: Number 283: The Apple and Pear Mites
abstract: 50 pages, 1 article*The Apple and Pear Mites* (Parrott, P. J.; Hodgkiss, H. E.; Schoene, W. J.) 48 pages

url: http://hdl.handle.net/1813/4512

date: 2006-12-21
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 134
title: Bulletin: Number 283, Edition popular: The Blister-Mite and its Allies
abstract: 12 pages, 1 article*The Blister-Mite and its Allies* (Hall, F. H.) 10 pages

url: http://hdl.handle.net/1813/4513
date: 2006-12-21
creator: New York State Agricultural Experiment Station.
viewed: 117
title: Bulletin: Number 284: Director's Report for 1906
abstract: 24 pages, 1 article*Director's Report for 1906* 19 pages

url: http://hdl.handle.net/1813/4514
date: 2006-12-21
creator: New York State Agricultural Experiment Station.
viewed: 102
title: Bulletin: Number 285: Report of Analyses of Samples of Fertilizers Collected by the Commissioner of Agriculture during 1906
abstract: 83 pages, 1 article*Report of Analyses of Samples of Fertilizers Collected by the Commissioner of Agriculture during 1906* 81 pages

url: http://hdl.handle.net/1813/4515
date: 2006-12-21
creator: Schoene, W. J.;New York State Agricultural Experiment Station.
viewed: 139
title: Bulletin: Number 286: The Poplar and Willow Borer
abstract: 30 pages, 1 article*The Poplar and Willow Borer* (Schoene, W. J.) 28 pages

url: http://hdl.handle.net/1813/4516
date: 2006-12-21
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 207
title: Bulletin: Number 286, Edition popular: An Enemy of Poplars and Willows
abstract: 8 pages, 1 article*An Enemy of Poplars and Willows* (Hall, F. H.) 7 pages

url: http://hdl.handle.net/1813/4517
date: 2006-12-21
creator: Hedrick, U. P.;New York State Agricultural Experiment Station.
viewed: 172
title: Bulletin: Number 287: Bordeaux Injury
abstract: 95 pages, 1 article*Bordeaux Injury* (Hedrick, U. P.) 90 pages

url: http://hdl.handle.net/1813/4518
date: 2006-12-21
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 124
title: Bulletin: Number 287, Edition popular: Cause and Control of Bordeaux Injury

abstract: 16 pages, 1 article*Cause and Control of Bordeaux Injury* (Hall, F. H.) 15 pages

url: http://hdl.handle.net/1813/4519
date: 2006-12-21
creator: Wellington, Richard;Taylor, O. M.;Hedrick, U. P.;New York State Agricultural Experiment Station.
viewed: 372
title: Bulletin: Number 288: Ringing Herbaceous Plants
abstract: 23 pages, 1 article*Ringing Herbaceous Plants* (Hedrick, U. P.; Taylor, O. M.; Wellington, Richard) 21 pages

url: http://hdl.handle.net/1813/4520
date: 2006-12-21
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 133
title: Bulletin: Number 288, Edition popular: Ringing Detrimental to Tomatoes and Chrysanthemums
abstract: 4 pages, 1 article*Ringing Detrimental to Tomatoes and Chrysanthemums* (Hall, F. H.) 3 pages

url: http://hdl.handle.net/1813/4521
date: 2006-12-21
creator: Hedrick, U. P.;New York State Agricultural Experiment Station.
viewed: 158
title: Bulletin: Number 289: The Effect of Wood Ashes and Acid Phosphate on the Yield and Color of Apples
abstract: 27 pages, 1 article*The Effect of Wood Ashes and Acid Phosphate on the Yield and Color of Apples* (Hedrick, U. P.) 25 pages

url: http://hdl.handle.net/1813/4522
date: 2006-12-21
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 120
title: Bulletin: Number 289, Edition popular: Unprofitable Orchard Fertilizing
abstract: 8 pages, 1 article*Unprofitable Orchard Fertilizing* (Hall, F. H.) 6 pages

url: http://hdl.handle.net/1813/4523
date: 2006-12-21
creator: New York State Agricultural Experiment Station.
viewed: 126
title: Bulletin: Number 29: Feeding Experiment with Laying Hens
abstract: 20 pages, 1 article*Feeding Experiment with Laying Hens* 18 pages

url: http://hdl.handle.net/1813/4524
date: 2006-12-21
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 164
title: Bulletin: Number 143, Edition popular: A Destructive Beetle and a Remedy
abstract: 8 pages, 1 article*A Destructive Beetle and a Remedy* (Hall, F. H.) 6 pages

url: http://hdl.handle.net/1813/4525

date: 2006-12-21
creator: Sirrine, F. A.;New York State Agricultural Experiment Station.
viewed: 157
title: Bulletin: Number 144: A Spraying Mixture for Cauliflower and Cabbage Worms
abstract: 29 pages, 1 article*A Spraying Mixture for Cauliflower and Cabbage Worms* (Sirrine, F. A.) 26 pages

url: http://hdl.handle.net/1813/4526
date: 2006-12-21
creator: Clayton, E. E.;New York State Agricultural Experiment Station.
viewed: 119
title: Bulletin: Number 597: Vegetable Seed Treatment
abstract: 15 pages, 1 article*Vegetable Seed Treatment* (Clayton, E. E.) 13 pages

url: http://hdl.handle.net/1813/4527
date: 2006-12-21
creator: Brase, Karl D.;Tukey, H. B.;New York State Agricultural Experiment Station.
viewed: 212
title: Bulletin: Number 598: The Propagation of Multiflora Rootstocks for Roses by Soft Wood Cuttings
abstract: 10 pages, 1 article*The Propagation of Multiflora Rootstocks for Roses by Soft Wood Cuttings* (Tukey, H. B.; Brase, Karl D.) 8 pages

url: http://hdl.handle.net/1813/4528
date: 2006-12-21
creator: Brase, Karl D.;Tukey, H. B.;New York State Agricultural Experiment Station.
viewed: 282
title: Bulletin: Number 599: The Response of Apples, Cherries, and Roses to Fertilizer Applications in the Nursery
abstract: 23 pages, 1 article*The Response of Apples, Cherries, and Roses to Fertilizer Applications in the Nursery* (Tukey, H. B.; Brase, Karl D.) 21 pages

url: http://hdl.handle.net/1813/4529
date: 2006-12-21
creator: Sturtevant, E. Lewis;New York State Agricultural Experiment Station.
viewed: 794
title: Bulletin: Number VI: Hay vs. Damaged Hay
abstract: 2 pages, 1 article*Hay vs. Damaged Hay* (Sturtevant, E. Lewis) 2 pages

url: http://hdl.handle.net/1813/4530
date: 2006-12-21
creator: New York State Agricultural Experiment Station.
viewed: 131
title: Bulletin: Number 60: Investigation Relating to the Manufacture of Cheese--Part I
abstract: 68 pages, 1 article*Investigation Relating to the Manufacture of Cheese--Part I* 66 pages

url: http://hdl.handle.net/1813/4531
date: 2006-12-21
creator: Harman, S. W.;New York State Agricultural Experiment Station.

viewed: 124
title: Bulletin: Number 600: Control of Hibernating Caterpillars of the Eye-Spotted Budmoth in Apple Orchards
abstract: 18 pages, 1 article*Control of Hibernating Caterpillars of the Eye-Spotted Budmoth in Apple Orchards* (Harman, S. W.) 16 pages

url: http://hdl.handle.net/1813/4532
date: 2006-12-21
creator: Rankin, W. Howard;Cooley, L. M.;New York State Agricultural Experiment Station.
viewed: 139
title: Bulletin: Number 601: Virus Disease Control Experiments in Black Raspberry Plantings in 1931
abstract: 6 pages, 1 article*Virus Disease Control Experiments in Black Raspberry Plantings in 1931* (Cooley, L. M.; Rankin, W. Howard) 4 pages

url: http://hdl.handle.net/1813/4533
date: 2006-12-21
creator: Conn, H. J.;Hofer, A. W.;New York State Agricultural Experiment Station.
viewed: 282
title: Bulletin: Number 602: Legume Inoculant Tests in 1931
abstract: 12 pages, 1 article*Legume Inoculant Tests in 1931* (Hofer, A. W.; Conn, H. J.) 10 pages

url: http://hdl.handle.net/1813/4534
date: 2006-12-21
creator: Hervey, G. E. R.;New York State Agricultural Experiment Station.
viewed: 189
title: Bulletin: Volume 603: The European Corn Borer in Western New York
abstract: 28 pages, 1 article*The European Corn Borer in Western New York* (Hervey, G. E. R.) 26 pages

url: http://hdl.handle.net/1813/4535
date: 2006-12-21
creator: Hamilton, J. M.;New York State Agricultural Experiment Station.
viewed: 128
title: Bulletin: Number 604: Recent Investigations on the Control of Apple Scab in the Hudson Valley
abstract: 44 pages, 1 article*Recent Investigations on the Control of Apple Scab in the Hudson Valley* (Hamilton, J. M.) 42 pages

url: http://hdl.handle.net/1813/4536
date: 2006-12-21
creator: Durham, H. L.;Marquardt, J. C.;New York State Agricultural Experiment Station.
viewed: 315
title: Bulletin: Number 605: Sampling Milk for Fat Test at Milk Plants
abstract: 13 pages, 1 article*Sampling Milk for Fat Test at Milk Plants* (Marquardt, J. C.; Durham, H. L.) 11 pages

url: http://hdl.handle.net/1813/4537
date: 2006-12-21
creator: Hammer, Oscar H.;Chapman, Paul J.;New York State Agricultural Experiment Station.
viewed: 172

title: Bulletin: Number 606: Apple Insects in the Hudson Valley and the Lake Champlain Fruit Districts
abstract: 33 pages, 1 article*Apple Insects in the Hudson Valley and the Lake Champlain Fruit Districts* (Chapman, Paul J.; Hammer, Oscar H.) 30 pages

url: http://hdl.handle.net/1813/4538
date: 2006-12-21
creator: Gladwin, F.E.;New York State Agricultural Experiment Station.
viewed: 244
title: Bulletin: Number 607: Grafting American Grapes on Vigorous Stocks
abstract: 28 pages, 1 article*Grafting American Grapes on Vigorous Stocks* (Gladwin, F.E.) 26 pages

url: http://hdl.handle.net/1813/4539
date: 2006-12-21
creator: Woodbridge, Mary E.;Sipple, Olive Hoefle;Munn, M. T.;New York State Agricultural Experiment Station.
viewed: 209
title: Bulletin: Number 608: Thw Quality of Vegetable Seeds on Sale in New York in 1931
abstract: 32 pages, 1 article*Thw Quality of Vegetable Seeds on Sale in New York in 1931* (Munn, M. T.; Sipple, Olive Hoefle; Woodbridge, Mary E.) 30 pages

url: http://hdl.handle.net/1813/4540
date: 2006-12-21
creator: Harman, S. W.;New York State Agricultural Experiment Station.
viewed: 116
title: Bulletin: Number 609: Summer Treatments for the Control of the Eye-Spotted Budmoth
abstract: 16 pages, 1 article*Summer Treatments for the Control of the Eye-Spotted Budmoth* (Harman, S. W.) 14 pages

url: http://hdl.handle.net/1813/4541
date: 2006-12-21
creator: Clayton, E. E.;New York State Agricultural Experiment Station.
viewed: 146
title: Bulletin: Number 610: Dust Treatments of Cut Potato Seed
abstract: 16 pages, 1 article*Dust Treatments of Cut Potato Seed* (Clayton, E. E.) 14 pages

url: http://hdl.handle.net/1813/4542
date: 2006-12-21
creator: Pearce, G. W.;Harman, S. W.;Chapman, P. J.;Streeter, L. R.;New York State Agricultural Experiment Station.
viewed: 161
title: Bulletin: Number 611: Spray and Other Deposits on Fruit
abstract: 19 pages, 1 article*Spray and Other Deposits on Fruit* (Streeter, L. R.; Chapman, P. J.; Harman, S. W.; Pearce, G. W.) 17 pages

url: http://hdl.handle.net/1813/4543
date: 2006-12-21
creator: Marquardt, J. C.;Dahlberg, A. C.;New York State Agricultural Experiment Station.
viewed: 234

title: Bulletin: Number 612: Sterilization of Dairy Farm Utensils with Dry Heat
abstract: 16 pages, 1 article*Sterilization of Dairy Farm Utensils with Dry Heat* (Dahlberg, A. C.; Marquardt, J. C.) 14 pages

url: http://hdl.handle.net/1813/4544
date: 2006-12-21
creator: Kelly, C. D.;Pederson, Carl S.;New York State Agricultural Experiment Station.
viewed: 121
title: Bulletin: Number 613: The Quality of Commercial Sauerkraut
abstract: 14 pages, 1 article*The Quality of Commercial Sauerkraut* (Pederson, Carl S.; Kelly, C. D.) 12 pages

url: http://hdl.handle.net/1813/4545
date: 2006-12-21
creator: Pederson, Carl S.;New York State Agricultural Experiment Station.
viewed: 109
title: Bulletin: Number 614: The Relation Between Temperature and the Rate of Fermentation of Commercial Sauerkraut
abstract: 23 pages, 1 article*The Relation Between Temperature and the Rate of Fermentation of Commercial Sauerkraut* (Pederson, Carl S.) 21 pages

url: http://hdl.handle.net/1813/4546
date: 2006-12-21
creator: Horsfall, James G.;New York State Agricultural Experiment Station.
viewed: 126
title: Bulletin: Number 615: Red Oxide of Copper as a Dust Fungicide for Combating Damping-Off by Seed Treatment
abstract: 25 pages, 1 article*Red Oxide of Copper as a Dust Fungicide for Combating Damping-Off by Seed Treatment* (Horsfall, James G.) 23 pages

url: http://hdl.handle.net/1813/4547
date: 2006-12-21
creator: Hoefle, Olive M.;New York State Agricultural Experiment Station.
viewed: 121
title: Bulletin: Number 616: Weed Seeds Found in Vegetable Seeds
abstract: 15 pages, 1 article*Weed Seeds Found in Vegetable Seeds* (Hoefle, Olive M.) 13 pages

url: http://hdl.handle.net/1813/4548
date: 2006-12-21
creator: Einset, Olav;New York State Agricultural Experiment Station.
viewed: 501
title: Bulletin: Number 617: Experiments in Cherry Pollination
abstract: 13 pages, 1 article*Experiments in Cherry Pollination* (Einset, Olav) 11 pages

url: http://hdl.handle.net/1813/4549
date: 2006-12-21
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 178

title: Bulletin: Number 144, Edition popular: Combating Cabbage Pests
abstract: 10 pages, 1 article*Combating Cabbage Pests* (Hall, F. H.) 8 pages

url: http://hdl.handle.net/1813/4550
date: 2006-12-21
creator: Van Slyke, L. L.;New York State Agricultural Experiment Station.
viewed: 111
title: Bulletin: Number 145: Report of Analyses of Commercial Fertilizers for the Spring of 1898
abstract: 103 pages, 1 article*Report of Analyses of Commercial Fertilizers for the Spring of 1898* (Van Slyke, L. L.) 101 pages

url: http://hdl.handle.net/1813/4551
date: 2006-12-21
creator: Clayton, E. E.;New York State Agricultural Experiment Station.
viewed: 134
title: Bulletin: Number 576: Studies of the Black-Rot or Blight Disease of Cauliflower
abstract: 44 pages, 1 article*Studies of the Black-Rot or Blight Disease of Cauliflower* (Clayton, E. E.) 42 pages

url: http://hdl.handle.net/1813/4552
date: 2006-12-21
creator: Van Alstyne, L. M.;Einset, Olav;Stout, A. B.;Wellington, Richard;New York State Agricultural Experiment Station.
viewed: 150
title: Bulletin: Number 577: Pollination of Fruit Trees
abstract: 54 pages, 1 article*Pollination of Fruit Trees* (Wellington, Richard; Stout, A. B.; Einset, Olav; Van Alstyne, L. M.) 52 pages

url: http://hdl.handle.net/1813/4553
date: 2006-12-21
creator: Howe, G. H.;New York State Agricultural Experiment Station.
viewed: 138
title: Bulletin: Number 578: New or Noteworthy Fruits, X
abstract: 16 pages, 1 article*New or Noteworthy Fruits, X* (Howe, G. H.) 14 pages

url: http://hdl.handle.net/1813/4554
date: 2006-12-21
creator: Harman, S. Willard;Streeter, Leon R.;New York State Agricultural Experiment Station.
viewed: 136
title: Bulletin: Number 579: Spray Residues
abstract: 12 pages, 1 article*Spray Residues* (Streeter, Leon R.; Harman, S. Willard) 10 pages

url: http://hdl.handle.net/1813/4555
date: 2006-12-21
creator: New York State Agricultural Experiment Station.
viewed: 113
title: Bulletin: Number 58: Analyses of Commercial Fertilizers Collected in Long Island in the Spring of 1893

abstract: 15 pages, 1 article*Analyses of Commercial Fertilizers Collected in Long Island in the Spring of 1893* 13 pages

url: http://hdl.handle.net/1813/4556
date: 2006-12-21
creator: Wellington, Richard;Hawthorn, Leslie R.;New York State Agricultural Experiment Station.
viewed: 157
title: Bulletin: Number 580: Geneva, a Greenhouse Cucumber that Develops Fruit without Pollination
abstract: 11 pages, 1 article*Geneva, a Greenhouse Cucumber that Develops Fruit without Pollination* (Hawthorn, Leslie R.; Wellington, Richard) 9 pages

url: http://hdl.handle.net/1813/4557
date: 2006-12-21
creator: Dahlberg, A. C.;Marquardt, J. C.;New York State Agricultural Experiment Station.
viewed: 420
title: Bulletin: Number 581: Electric Cooling of Milk on the Farm
abstract: 20 pages, 1 article*Electric Cooling of Milk on the Farm* (Marquardt, J. C.; Dahlberg, A. C.) 18 pages

url: http://hdl.handle.net/1813/4558
date: 2006-12-21
creator: Glasgow, Hugh;Parrott, P. J.;New York State Agricultural Experiment Station.
viewed: 1143
title: Bulletin: Number 582: The Rosy Aphid in Relation to Spray Practices in 1929
abstract: 32 pages, 1 article*The Rosy Aphid in Relation to Spray Practices in 1929* (Parrott, P. J.; Glasgow, Hugh) 30 pages

url: http://hdl.handle.net/1813/4559
date: 2006-12-21
creator: Nixon, Maurice W.;Collins, Donald L.;New York State Agricultural Experiment Station.
viewed: 128
title: Bulletin: Number 583: Responses to Light of the Bud Moth and Leaf Roller
abstract: 32 pages, 1 article*Responses to Light of the Bud Moth and Leaf Roller* (Collins, Donald L.; Nixon, Maurice W.) 28 pages

url: http://hdl.handle.net/1813/4560
date: 2006-12-21
creator: Hucker, Alice M.;Hucker, G. J.;New York State Agricultural Experiment Station.
viewed: 129
title: Bulletin: Number 584: Commercially Prepared Infant Foods
abstract: 13 pages, 1 article*Commercially Prepared Infant Foods* (Hucker, G. J.; Hucker, Alice M.) 11 pages

url: http://hdl.handle.net/1813/4561
date: 2006-12-21
creator: Dahlberg, A. C.;New York State Agricultural Experiment Station.
viewed: 173
title: Bulletin: Number 585: Straining Milk on the Farm

abstract: 22 pages, 1 article*Straining Milk on the Farm* (Dahlberg, A. C.) 20 pages

url: http://hdl.handle.net/1813/4562
date: 2006-12-21
creator: Horsfall, James G.;New York State Agricultural Experiment Station.
viewed: 118
title: Bulletin: Number 586: Combating Damping-Off of Tomatoes by Seed Treatment
abstract: 22 pages, 1 article*Combating Damping-Off of Tomatoes by Seed Treatment* (Horsfall, James G.) 20 pages

url: http://hdl.handle.net/1813/4563
date: 2006-12-21
creator: Woodbridge, Mary E.;Sipple, Olive Hoefle;Munn, M. T.;New York State Agricultural Experiment Station.
viewed: 350
title: Bulletin: Number 587: The Quality of Packet Vegetable Seed on Sale in New York in 1929 and 1930
abstract: 27 pages, 1 article*The Quality of Packet Vegetable Seed on Sale in New York in 1929 and 1930* (Munn, M. T.; Sipple, Olive Hoefle; Woodbridge, Mary E.) 25 pages

url: http://hdl.handle.net/1813/4564
date: 2006-12-21
creator: Slate, G. L.;New York State Agricultural Experiment Station.
viewed: 140
title: Bulletin: Number 588: Filberts
abstract: 32 pages, 1 article*Filberts* (Slate, G. L.) 30 pages

url: http://hdl.handle.net/1813/4565
date: 2006-12-21
creator: Kertesz, Zoltan I.;New York State Agricultural Experiment Station.
viewed: 186
title: Bulletin: Number 589: A New Method for Enzymic Clarification of Unfermented Apple Juice
abstract: 10 pages, 1 article*A New Method for Enzymic Clarification of Unfermented Apple Juice* (Kertesz, Zoltan I.) 8 pages

url: http://hdl.handle.net/1813/4566
date: 2006-12-21
creator: New York State Agricultural Experiment Station.
viewed: 139
title: Bulletin: Number 59: Analyses of Commercial Fertilizers Collected in the Spring of 1893
abstract: 37 pages, 1 article*Analyses of Commercial Fertilizers Collected in the Spring of 1893* 35 pages

url: http://hdl.handle.net/1813/4567
date: 2006-12-21
creator: Clayton, E. E.;New York State Agricultural Experiment Station.
viewed: 119
title: Bulletin: Number 590: Cucumber Disease Investigations on Long Island
abstract: 20 pages, 1 article*Cucumber Disease Investigations on Long Island* (Clayton, E. E.) 18 pages

url: http://hdl.handle.net/1813/4568
date: 2006-12-21
creator: Marquardt, J. C.;Dahlberg, A. C.;New York State Agricultural Experiment Station.
viewed: 222
title: Bulletin: Number 591: How the Cream Layer Forms on Milk
abstract: 11 pages, 1 article*How the Cream Layer Forms on Milk* (Dahlberg, A. C.; Marquardt, J. C.) 9 pages

url: http://hdl.handle.net/1813/4569
date: 2006-12-21
creator: Huckett, H. C.;New York State Agricultural Experiment Station.
viewed: 126
title: Bulletin: Number 592: Spraying and Dusting Experiments with Potatoes on Long Island
abstract: 38 pages, 1 article*Spraying and Dusting Experiments with Potatoes on Long Island* (Huckett, H. C.) 36 pages

url: http://hdl.handle.net/1813/4570
date: 2006-12-21
creator: Marquardt, J. C.;Dahlberg, A. C.;New York State Agricultural Experiment Station.
viewed: 160
title: Bulletin: Number 593: The Creaming of Raw Milk
abstract: 11 pages, 1 article*The Creaming of Raw Milk* (Dahlberg, A. C.; Marquardt, J. C.) 9 pages

url: http://hdl.handle.net/1813/4571
date: 2006-12-21
creator: Kokoski, F. J.;Walsh, W. F.;Clark, A. W.;New York State Agricultural Experiment Station.
viewed: 169
title: Bulletin: Number 594: Composition and Cost of Commercial Fertilizers in New York from 1913 to 1930
abstract: 19 pages, 1 article*Composition and Cost of Commercial Fertilizers in New York from 1913 to 1930* (Clark, A. W.; Walsh, W. F.; Kokoski, F. J.) 17 pages

url: http://hdl.handle.net/1813/4572
date: 2006-12-21
creator: Pederson, Carl S.;New York State Agricultural Experiment Station.
viewed: 123
title: Bulletin: Number 595: Sauerkraut
abstract: 23 pages, 1 article*Sauerkraut* (Pederson, Carl S.) 21 pages

url: http://hdl.handle.net/1813/4573
date: 2006-12-21
creator: Collison, R. C.;New York State Agricultural Experiment Station.
viewed: 122
title: Bulletin: Number 596: Some Effects of Legumes in Relation to Economical Crop Production
abstract: 16 pages, 1 article*Some Effects of Legumes in Relation to Economical Crop Production* (Collison, R. C.) 14 pages

url: http://hdl.handle.net/1813/4574

date: 2006-12-21
creator: Beach, S. A.;New York State Agricultural Experiment Station.
viewed: 137
title: Bulletin: Number 146: Some Experiments in Forcing Head Lettuce
abstract: 35 pages, 1 article*Some Experiments in Forcing Head Lettuce* (Beach, S. A.) 33 pages

url: http://hdl.handle.net/1813/4575
date: 2006-12-21
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 1223
title: Bulletin: Number 146, Edition popular: Forcing Head Lettuce: Soils and Fertilizers
abstract: 8 pages, 1 article*Forcing Head Lettuce: Soils and Fertilizers* (Hall, F. H.) 6 pages

url: http://hdl.handle.net/1813/4576
date: 2006-12-21
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 241
title: Bulletin: Number 172, Edition popular: Continuous Pasteurization of Milk
abstract: 8 pages, 1 article*Continuous Pasteurization of Milk* (Hall, F. H.) 6 pages

url: http://hdl.handle.net/1813/4577
date: 2006-12-21
creator: Van Slyke, L. L.;New York State Agricultural Experiment Station.
viewed: 107
title: Bulletin: Number 173: Report of Analyses of Commercial Fertilizers for the Fall of 1899
abstract: 24 pages, 1 article*Report of Analyses of Commercial Fertilizers for the Fall of 1899* (Van Slyke, L. L.) 22 pages

url: http://hdl.handle.net/1813/4578
date: 2006-12-21
creator: Hartzell, F. Z.;New York State Agricultural Experiment Station.
viewed: 158
title: Bulletin: Number 519: Dusting and Spraying to Control Grape Root-Worm
abstract: 31 pages, 1 article*Dusting and Spraying to Control Grape Root-Worm* (Hartzell, F. Z.) 29 pages

url: http://hdl.handle.net/1813/4579
date: 2006-12-21
creator: New York State Agricultural Experiment Station.
viewed: 116
title: Bulletin: Number 52: Analyses of Commercial Fertilizers
abstract: 45 pages, 1 article*Analyses of Commercial Fertilizers* 43 pages

url: http://hdl.handle.net/1813/4580
date: 2006-12-21
creator: Gladwin, F. E.;New York State Agricultural Experiment Station.
viewed: 171
title: Bulletin: Number 520: The Grafting of American Grapes
abstract: 24 pages, 1 article*The Grafting of American Grapes* (Gladwin, F. E.) 22 pages

url: http://hdl.handle.net/1813/4581
date: 2006-12-21
creator: Streeter, Leon R.;Thatcher, R. W.;New York State Agricultural Experiment Station.
viewed: 210
title: Bulletin: Number 521: Chemical Studies of the Combined Lead Arsenate and Lime-Sulphur Spray
abstract: 20 pages, 1 article*Chemical Studies of the Combined Lead Arsenate and Lime-Sulphur Spray* (Thatcher, R. W.; Streeter, Leon R.) 18 pages

url: http://hdl.handle.net/1813/4582
date: 2006-12-21
creator: Stewart, F. C.;New York State Agricultural Experiment Station.
viewed: 137
title: Bulletin: Number 522: Control of Leafroll and Mosaic in Potatoes by Isolating and Roguing the Seed Plat
abstract: 14 pages, 1 article*Control of Leafroll and Mosaic in Potatoes by Isolating and Roguing the Seed Plat* (Stewart, F. C.) 12 pages

url: http://hdl.handle.net/1813/4583
date: 2006-12-21
creator: Webster, R. L.;New York State Agricultural Experiment Station.
viewed: 265
title: Bulletin: Number 523: Fumigation with Hydrogen Cyanide for Control of Pear Psylla
abstract: 26 pages, 1 article*Fumigation with Hydrogen Cyanide for Control of Pear Psylla* (Webster, R. L.) 23 pages

url: http://hdl.handle.net/1813/4584
date: 2006-12-21
creator: Mickle, Friend Lee;New York State Agricultural Experiment Station.
viewed: 129
title: Bulletin: Number 524: Milking Machines. VIII
abstract: 58 pages, 1 article*Milking Machines. VIII* (Mickle, Friend Lee) 56 pages

url: http://hdl.handle.net/1813/4585
date: 2006-12-21
creator: New York State Agricultural Experiment Station.
viewed: 271
title: Bulletin: Number 524, Edition popular: A Simplified Type of Milking Machine
abstract: 7 pages, 1 article*A Simplified Type of Milking Machine* 6 pages

url: http://hdl.handle.net/1813/4586
date: 2006-12-21
creator: Van Slyke, L. L.;New York State Agricultural Experiment Station.
viewed: 131
title: Bulletin: Number 525: Changes in the Composition and Cost of Fertilizers in New York from 1914 to 1924
abstract: 19 pages, 1 article*Changes in the Composition and Cost of Fertilizers in New York from 1914 to 1924* (Van Slyke, L. L.) 17 pages

url: http://hdl.handle.net/1813/4587
date: 2006-12-21
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 126
title: Bulletin: Number 526: Variations in Varieties and Canning Peas
abstract: 24 pages, 1 article*Variations in Varieties and Canning Peas* (Hall, F. H.) 1 page

url: http://hdl.handle.net/1813/4588
date: 2006-12-21
creator: Hartzell, F. Z.;New York State Agricultural Experiment Station.
viewed: 265
title: Bulletin: Number 527: Susceptibility to Dust and Spray Mixtures of the Pear Psylla (Psylla Pyricola Forster)
abstract: 135 pages, 1 article*Susceptibility to Dust and Spray Mixtures of the Pear Psylla (Psylla Pyricola Forster)* (Hartzell, F. Z.) 131 pages

url: http://hdl.handle.net/1813/4589
date: 2006-12-21
creator: Munn, M. T.;New York State Agricultural Experiment Station.
viewed: 198
title: Bulletin: Number 528: The Amended New York Seed Law and Seed Testing
abstract: 22 pages, 1 article*The Amended New York Seed Law and Seed Testing* (Munn, M. T.) 20 pages

url: http://hdl.handle.net/1813/4590
date: 2006-12-21
creator: Mundinger, F. G.;New York State Agricultural Experiment Station.
viewed: 148
title: Bulletin: Number 529: Investigations on the Control of Pear Psylla
abstract: 36 pages, 1 article*Investigations on the Control of Pear Psylla* (Mundinger, F. G.) 34 pages

url: http://hdl.handle.net/1813/4591
date: 2006-12-21
creator: New York State Agricultural Experiment Station.
viewed: 174
title: Bulletin: Number 53: Feeding Experiments with Capons
abstract: 38 pages, 1 article*Feeding Experiments with Capons* 36 pages

url: http://hdl.handle.net/1813/4592
date: 2006-12-21
creator: Moore, M. G.;Sweeney, M. P.;Walsh, W. F.;Clark, A. W.;New York State Agricultural Experiment Station.
viewed: 199
title: Bulletin: Number 530: Composition and Cost of Commercial Feeding Stuffs in 1924
abstract: 36 pages, 1 article*Composition and Cost of Commercial Feeding Stuffs in 1924* (Clark, A. W.; Walsh, W. F.; Sweeney, M. P.; Moore, M. G.) 34 pages

url: http://hdl.handle.net/1813/4593

date: 2006-12-21
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 410
title: Bulletin: Number 532: Variations in Varieties of Canning
abstract: 10 pages, 1 article*Variations in Varieties of Canning* (Hall, F. H.) 8 pages

url: http://hdl.handle.net/1813/4594
date: 2006-12-21
creator: Munn, M. T.;New York State Agricultural Experiment Station.
viewed: 114
title: Bulletin: Number 533: The Quality of Packet Vegetable Seed on Sale in New York in 1924
abstract: 27 pages, 1 article*The Quality of Packet Vegetable Seed on Sale in New York in 1924* (Munn, M. T.) 25 pages

url: http://hdl.handle.net/1813/4595
date: 2006-12-21
creator: Hucker, G. J.;Marquardt, J. C.;New York State Agricultural Experiment Station.
viewed: 133
title: Bulletin: Number 534: Effect of Pasteurization and Cooling of Milk upon the Quality of Cheddar Cheese
abstract: 28 pages, 1 article*Effect of Pasteurization and Cooling of Milk upon the Quality of Cheddar Cheese* (Marquardt, J. C.; Hucker, G. J.) 26 pages

url: http://hdl.handle.net/1813/4596
date: 2006-12-21
creator: Stewart, F. C.;New York State Agricultural Experiment Station.
viewed: 242
title: Bulletin: Number 535: The Mica Ink-Cap or Glistening Coprinus
abstract: 33 pages, 1 article*The Mica Ink-Cap or Glistening Coprinus* (Stewart, F. C.) 30 pages

url: http://hdl.handle.net/1813/4597
date: 2006-12-21
creator: Dahlberg, A. C.;New York State Agricultural Experiment Station.
viewed: 143
title: Bulletin: Number 536: A Study of the Manufacture of Water Ices and Sherbets
abstract: 30 pages, 1 article*A Study of the Manufacture of Water Ices and Sherbets* (Dahlberg, A. C.) 28 pages

url: http://hdl.handle.net/1813/4598
date: 2006-12-21
creator: Paddock, Wendell;New York State Agricultural Experiment Station.
viewed: 144
title: Bulletin: Number 147: Variety Tests of Strawberries, Raspberries and Blackberries
abstract: 20 pages, 1 article*Variety Tests of Strawberries, Raspberries and Blackberries* (Paddock, Wendell) 18 pages

url: http://hdl.handle.net/1813/4599
date: 2006-12-21

creator: Hall, F. H.;Paddock, Wendell;New York State Agricultural Experiment Station.
viewed: 404
title: Bulletin: Number 147, Edition popular: Some Good Berries
abstract: 4 pages, 1 article*Some Good Berries* (Hall, F. H.; Paddock, Wendell) 2 pages

url: http://hdl.handle.net/1813/4600
date: 2006-12-21
creator: Stewart, F. C.;Lowe, V. H.;Beach, S. A.;New York State Agricultural Experiment Station.
viewed: 138
title: Bulletin: Number 170, Edition revised: Common Diseases and Insects Injurious to Fruits
abstract: 74 pages, 1 articles*Common Diseases and Insects Injurious to Fruits* (Beach, S. A.; Lowe, V. H.; Stewart, F. C.) 72 pages

url: http://hdl.handle.net/1813/4601
date: 2006-12-21
creator: Rogers, L. A.;Harding, H. A.;New York State Agricultural Experiment Station.
viewed: 418
title: Bulletin: Number 172: The Efficiency of a Continuous Pasteurizer at Different Temperatures
abstract: 26 pages, 1 article*The Efficiency of a Continuous Pasteurizer at Different Temperatures* (Harding, H. A.; Rogers, L. A.) 24 pages

url: http://hdl.handle.net/1813/4602
date: 2006-12-21
creator: Clayton, E. E.;New York State Agricultural Experiment Station.
viewed: 209
title: Bulletin: Number 537: Control of Seedbed Diseases of Cruciferous Crops on Long Island by the Mercuric Chloride Treatment for Cabbage Maggot
abstract: 29 pages, 1 article*Control of Seedbed Diseases of Cruciferous Crops on Long Island by the Mercuric Chloride Treatment for Cabbage Maggot* (Clayton, E. E.) 27 pages

url: http://hdl.handle.net/1813/4603
date: 2006-12-21
creator: Breed, Robert S.;Pederson, Carl S.;New York State Agricultural Experiment Station.
viewed: 260
title: Bulletin: Number 538: The Preservative Action in Catsup of Salt, Sugar, Benzoate, and Acid
abstract: 15 pages, 1 article*The Preservative Action in Catsup of Salt, Sugar, Benzoate, and Acid* (Pederson, Carl S.; Breed, Robert S.) 13 pages

url: http://hdl.handle.net/1813/4604
date: 2006-12-21
creator: New York State Agricultural Experiment Station.
viewed: 133
title: Bulletin: Number 538, Edition popular: Preventing Spoilage in Catsup
abstract: 7 pages, 1 article*Preventing Spoilage in Catsup* 6 pages

url: http://hdl.handle.net/1813/4605
date: 2006-12-21
creator: Van Slyke, L. L.;New York State Agricultural Experiment Station.

viewed: 186
title: Bulletin: Number 539: Composition and Prices of Commercial Fertilizers in New York in 1926
abstract: 21 pages, 1 article*Composition and Prices of Commercial Fertilizers in New York in 1926* (Van Slyke, L. L.) 19 pages

url: http://hdl.handle.net/1813/4606
date: 2006-12-21
creator: New York State Agricultural Experiment Station.
viewed: 127
title: Bulletin: Number 54: Experiments in the Manufacture of Cheese
abstract: 45 pages, 1 article*Experiments in the Manufacture of Cheese* 43 pages

url: http://hdl.handle.net/1813/4607
date: 2006-12-21
creator: Gloyer, W. O.;New York State Agricultural Experiment Station.
viewed: 136
title: Bulletin: Number 540: The Dwarfing, Shriveling, and Dropping of Cherries and Prunes
abstract: 22 pages, 1 article*The Dwarfing, Shriveling, and Dropping of Cherries and Prunes* (Gloyer, W. O.) 20 pages

url: http://hdl.handle.net/1813/4608
date: 2006-12-21
creator: New York State Agricultural Experiment Station.
viewed: 117
title: Bulletin: Number 540, Edition popular: "Small Cherry" in English Morello
abstract: 9 pages, 1 article*"Small Cherry" in English Morello* 7 pages

url: http://hdl.handle.net/1813/4609
date: 2006-12-21
creator: Tukey, H. B.;New York State Agricultural Experiment Station.
viewed: 129
title: Bulletin: Number 541: Responses of the Sour Cherry to Fertilizers and to Pruning in the Hudson River Valley
abstract: 29 pages, 1 article*Responses of the Sour Cherry to Fertilizers and to Pruning in the Hudson River Valley* (Tukey, H. B.) 27 pages

url: http://hdl.handle.net/1813/4610
date: 2006-12-21
creator: Harman, S. W.;New York State Agricultural Experiment Station.
viewed: 136
title: Bulletin: Number 542: The Peach Cottony Scale
abstract: 22 pages, 1 article*The Peach Cottony Scale* (Harman, S. W.) 19 pages

url: http://hdl.handle.net/1813/4611
date: 2006-12-21
creator: Rankin, W. Howard;New York State Agricultural Experiment Station.
viewed: 117
title: Bulletin: Number 543: Mosaic of Raspberries

abstract: 67 pages, 1 article*Mosaic of Raspberries* (Rankin, W. Howard) 64 pages

url: http://hdl.handle.net/1813/4612
date: 2006-12-21
creator: New York State Agricultural Experiment Station.
viewed: 127
title: Bulletin: Number 543, Edition popular: Controlling Raspberry Mosaic
abstract: 9 pages, 1 article*Controlling Raspberry Mosaic* 8 pages

url: http://hdl.handle.net/1813/4613
date: 2006-12-21
creator: Howe, G. H.;New York State Agricultural Experiment Station.
viewed: 348
title: Bulletin: Number 544: Mazzard and Mahaleb Rootstocks for Cherries
abstract: 22 pages, 1 article*Mazzard and Mahaleb Rootstocks for Cherries* (Howe, G. H.) 20 pages

url: http://hdl.handle.net/1813/4614
date: 2006-12-21
creator: Clark, A. W.;New York State Agricultural Experiment Station.
viewed: 132
title: Bulletin: Number 545: Composition and Cost of Commercial Feeding Stuffs in 1926
abstract: 40 pages, 1 article*Composition and Cost of Commercial Feeding Stuffs in 1926* (Clark, A. W.) 38 pages

url: http://hdl.handle.net/1813/4615
date: 2006-12-21
creator: Stewart, F. C.;New York State Agricultural Experiment Station.
viewed: 202
title: Bulletin: Number 546: Experiments with Cottonseed Meal
abstract: 39 pages, 1 article*Experiments with Cottonseed Meal* (Stewart, F. C.) 37 pages

url: http://hdl.handle.net/1813/4616
date: 2006-12-21
creator: Jones, Leon K.;New York State Agricultural Experiment Station.
viewed: 125
title: Bulletin: Number 547: Studies of the Nature and Control of Blight, Leaf and Pod Spot, and Footrot of Peas Caused by Species of Ascochyta
abstract: 52 pages, 1 article*Studies of the Nature and Control of Blight, Leaf and Pod Spot, and Footrot of Peas Caused by Species of Ascochyta* (Jones, Leon K.) 48 pages

url: http://hdl.handle.net/1813/4617
date: 2006-12-21
creator: Odell, T. T.;New York State Agricultural Experiment Station.
viewed: 458
title: Bulletin: Number 549: The Food of Orchard Birds with Special Reference to the Pear Psylla
abstract: 21 pages, 1 article*The Food of Orchard Birds with Special Reference to the Pear Psylla* (Odell, T. T.) 19 pages

url: http://hdl.handle.net/1813/4618
date: 2006-12-21
creator: New York State Agricultural Experiment Station.
viewed: 127
title: Bulletin: Number 55: General Principles Relating to the Composition and Use of Fertilizers
abstract: 89 pages, 1 article*General Principles Relating to the Composition and Use of Fertilizers* 87 pages

url: http://hdl.handle.net/1813/4619
date: 2006-12-21
creator: Clayton, E. E.;New York State Agricultural Experiment Station.
viewed: 124
title: Bulletin: Number 550: Black-Leg Disease of Brussels Sprouts, Cabbage, and Cauliflower
abstract: 35 pages, 1 article*Black-Leg Disease of Brussels Sprouts, Cabbage, and Cauliflower* (Clayton, E. E.) 33 pages

url: http://hdl.handle.net/1813/4620
date: 2006-12-21
creator: Hedrick, U. P.;New York State Agricultural Experiment Station.
viewed: 129
title: Bulletin: Number 551: New or Noteworthy Fruits, IX
abstract: 17 pages, 1 article*New or Noteworthy Fruits, IX* (Hedrick, U. P.) 15 pages

url: http://hdl.handle.net/1813/4621
date: 2006-12-21
creator: Van Slyke, L. L.;New York State Agricultural Experiment Station.
viewed: 141
title: Bulletin: Number 148: Report of Analyses of Commercial Fertilizers for the Fall of 1898
abstract: 29 pages, 1 article*Report of Analyses of Commercial Fertilizers for the Fall of 1898* (Van Slyke, L. L.) 27 pages

url: http://hdl.handle.net/1813/4622
date: 2006-12-21
creator: Wheeler, W. P.;New York State Agricultural Experiment Station.
viewed: 169
title: Bulletin: Number 149: The Economy of Using Animal Food in Poultry Feeding
abstract: 22 pages, 1 article*The Economy of Using Animal Food in Poultry Feeding* (Wheeler, W. P.) 20 pages

url: http://hdl.handle.net/1813/4623
date: 2006-12-21
creator: Stewart, F. C.;Lowe, V. H.;Beach, S. A.;New York State Agricultural Experiment Station.
viewed: 118
title: Bulletin: Number 170: Common Diseases and Insects Injurious to Fruits
abstract: 67 pages, 1 article*Common Diseases and Insects Injurious to Fruits* (Beach, S. A.; Lowe, V. H.; Stewart, F. C.) 65 pages

url: http://hdl.handle.net/1813/4624

date: 2006-12-21
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 141
title: Bulletin: Number 234, Edition popular: Cold Cured Cheese II.
abstract: 8 pages, 1 article*Cold Cured Cheese II.* (Hall, F. H.) 5 pages

url: http://hdl.handle.net/1813/4625
date: 2006-12-21
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 586
title: Bulletin: Number 269, Edition popular: Freezing of Fruit Trees
abstract: 8 pages, 1 article*Freezing of Fruit Trees* (Hall, F. H.) 6 pages

url: http://hdl.handle.net/1813/4626
date: 2006-12-21
creator: New York State Agricultural Experiment Station.
viewed: 101
title: Bulletin: Number 27: The New York State Fertilizer Control and Fertilizer Analyses
abstract: 21 pages, 1 article*The New York State Fertilizer Control and Fertilizer Analyses* 17 pages

url: http://hdl.handle.net/1813/4627
date: 2006-12-21
creator: Prucha, M. J.;Harding, H. A.;New York State Agricultural Experiment Station.
viewed: 709
title: Bulletin: Number 270: The Quality of Commercial Cultures for Legumes
abstract: 43 pages, 1 article*The Quality of Commercial Cultures for Legumes* (Harding, H. A.; Prucha, M. J.) 41 pages

url: http://hdl.handle.net/1813/4628
date: 2006-12-21
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 142
title: Bulletin: Number 270, Edition popular: Commercial Cultures for Legumes Not Reliable
abstract: 10 pages, 1 article*Commercial Cultures for Legumes Not Reliable* (Hall, F. H.) 8 pages

url: http://hdl.handle.net/1813/4629
date: 2006-12-21
creator: Wheeler, W. P.;New York State Agricultural Experiment Station.
viewed: 130
title: Bulletin: Number 271: The Adaptability of Concentrated By-Products for Poultry Feeding
abstract: 19 pages, 1 article*The Adaptability of Concentrated By-Products for Poultry Feeding* (Wheeler, W. P.) 17 pages

url: http://hdl.handle.net/1813/4630
date: 2006-12-21
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 154
title: Bulletin: Number 271, Edition popular: Providing Protein for Poultry

abstract: 4 pages, 1 article*Providing Protein for Poultry* (Hall, F. H.) 3 pages

url: http://hdl.handle.net/1813/4631
date: 2006-12-21
creator: New York State Agricultural Experiment Station.
viewed: 122
title: Bulletin: Number 272: Report of Analyses of Samples of Fertilizers Collected by the Commissioner of Agriculture during 1905
abstract: 68 pages, 1 article*Report of Analyses of Samples of Fertilizers Collected by the Commissioner of Agriculture during 1905* 66 pages

url: http://hdl.handle.net/1813/4632
date: 2006-12-21
creator: Baker, E. L.;Sirrine, F. A.;Hodgkiss, H. E.;New York State Agricultural Experiment Station.
viewed: 159
title: Bulletin: Number 273: Spraying for the San Jose Scale
abstract: 34 pages, 1 article*Spraying for the San Jose Scale* (Hodgkiss, H. E.; Sirrine, F. A.; Baker, E. L.) 32 pages

url: http://hdl.handle.net/1813/4633
date: 2006-12-21
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 149
title: Bulletin: Number 273, Edition popular: Testing Spray Mixtures for San Jose Scale
abstract: 10 pages, 1 article*Testing Spray Mixtures for San Jose Scale* (Hall, F. H.) 5 pages

url: http://hdl.handle.net/1813/4634
date: 2006-12-21
creator: Jordan, W. H.;New York State Agricultural Experiment Station.
viewed: 241
title: Bulletin: Number 274: Director's Report for 1905
abstract: 20 pages, 1 article*Director's Report for 1905* (Jordan, W. H.) 18 pages

url: http://hdl.handle.net/1813/4635
date: 2006-12-21
creator: Taylor, O. M.;Booth, N. O.;Hedrick, U. P.;New York State Agricultural Experiment Station.
viewed: 189
title: Bulletin: Number 275: Varieties of Apples for New York
abstract: 63 pages, 1 article*Varieties of Apples for New York* (Hedrick, U. P.; Booth, N. O.; Taylor, O. M.) 61 pages

url: http://hdl.handle.net/1813/4636
date: 2006-12-21
creator: Moore, V. A.;Smith, Geo. A.;Harding, H. A.;New York State Agricultural Experiment Station.
viewed: 143
title: Bulletin: Number 277: The Bang Method of Controlling Tuberculosis, with an Illustration of its Application
abstract: 31 pages, 1 article*The Bang Method of Controlling Tuberculosis, with an Illustration of its

Application* (Harding, H. A.; Smith, Geo. A.; Moore, V. A.) 29 pages

url: http://hdl.handle.net/1813/4637
date: 2006-12-21
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 157
title: Bulletin: Number 277, Edition popular: A Healthy Herd from a Tuberculous Herd
abstract: 8 pages, 1 article*A Healthy Herd from a Tuberculous Herd* (Hall, F. H.) 7 pages

url: http://hdl.handle.net/1813/4638
date: 2006-12-21
creator: Taylor, O. M.;New York State Agricultural Experiment Station.
viewed: 1273
title: Bulletin: Number 278: Varieties of Raspberries and Blackberries, with Cultural Directions
abstract: 43 pages, 1 article*Varieties of Raspberries and Blackberries, with Cultural Directions* (Taylor, O. M.) 41 pages

url: http://hdl.handle.net/1813/4639
date: 2006-12-21
creator: Taylor, O. M.;New York State Agricultural Experiment Station.
viewed: 162
title: Bulletin: Number 278, Edition popular: Raspberries and Blackberries
abstract: 12 pages, 1 article*Raspberries and Blackberries* (Taylor, O. M.) 10 pages

url: http://hdl.handle.net/1813/4640
date: 2006-12-21
creator: Sirrine, F. A.;Eustace, H. J.;Stewart, F. C.;New York State Agricultural Experiment Station.
viewed: 125
title: Bulletin: Number 279: Potato Spraying Experiments in 1905
abstract: 84 pages, 1 article*Potato Spraying Experiments in 1905* (Stewart, F. C.; Eustace, H. J.; Sirrine, F. A.) 81 pages

url: http://hdl.handle.net/1813/4641
date: 2006-12-21
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 696
title: Bulletin: Number 279, Edition popular: Good Results from Spraying Potatoes
abstract: 16 pages, 1 article*Good Results from Spraying Potatoes* (Hall, F.H.) 14 pages

url: http://hdl.handle.net/1813/4642
date: 2006-12-21
creator: New York State Agricultural Experiment Station.
viewed: 146
title: Bulletin: Number 28: Pig Feeding Experiments with Coarse Foods
abstract: 11 pages, 1 article*Pig Feeding Experiments with Coarse Foods* 9 pages

url: http://hdl.handle.net/1813/4643
date: 2006-12-21

creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 197
title: Bulletin: Number 149, Edition popular: Will Poultry Thrive on Grain Alone?
abstract: 7 pages, 1 article*Will Poultry Thrive on Grain Alone?* (Hall, F. H.) 5 pages

url: http://hdl.handle.net/1813/4644
date: 2006-12-21
creator: Goff, Emmett S.;New York State Agricultural Experiment Station.
viewed: 167
title: Bulletin: Number 15: Horticultural Department
abstract: 14 pages, 1 article*Horticultural Department* (Goff, Emmett S.) 12 pages

url: http://hdl.handle.net/1813/4645
date: 2006-12-21
creator: Harman, S. W.;New York State Agricultural Experiment Station.
viewed: 121
title: Bulletin: Number 552: Midsummer Sprays for the Peach Cottony Scale
abstract: 24 pages, 1 article*Midsummer Sprays for the Peach Cottony Scale* (Harman, S. W.) 22 pages

url: http://hdl.handle.net/1813/4646
date: 2006-12-21
creator: Sayre, C. B.;New York State Agricultural Experiment Station.
viewed: 175
title: Bulletin: Volume 553: Better Methods of Canning Crops Production
abstract: 30 pages, 1 article*Better Methods of Canning Crops Production* (Sayre, C. B.) 28 pages

url: http://hdl.handle.net/1813/4647
date: 2006-12-21
creator: Glasgow, Hugh;Gloyer, W. O.;New York State Agricultural Experiment Station.
viewed: 259
title: Bulletin: Number 555: Defoliation of Cherry Trees in Relation to Winter Injury
abstract: 27 pages, 1 article*Defoliation of Cherry Trees in Relation to Winter Injury* (Gloyer, W. O.; Glasgow, Hugh) 25 pages

url: http://hdl.handle.net/1813/4648
date: 2006-12-21
creator: Clark, A. W.;New York State Agricultural Experiment Station.
viewed: 101
title: Bulletin: Number 556: Composition and Cost of Commercial Feeding Stuffs in 1927
abstract: 39 pages, 1 article*Composition and Cost of Commercial Feeding Stuffs in 1927* (Clark, A. W.) 37 pages

url: http://hdl.handle.net/1813/4649
date: 2006-12-21
creator: Van Slyke, L. L.;New York State Agricultural Experiment Station.
viewed: 113
title: Bulletin: Number 557: Commercial Fertilizers
abstract: 24 pages, 1 article*Commercial Fertilizers* (Van Slyke, L. L.) 22 pages

url: http://hdl.handle.net/1813/4650
date: 2006-12-21
creator: Clayton, E. E.;New York State Agricultural Experiment Station.
viewed: 206
title: Bulletin: Number 558: Spraying Experiments with Bush Lima Beans
abstract: 22 pages, 1 article*Spraying Experiments with Bush Lima Beans* (Clayton, E. E.) 20 pages

url: http://hdl.handle.net/1813/4651
date: 2006-12-21
creator: New York State Agricultural Experiment Station.
viewed: 116
title: Bulletin: Number 56: Experiments in the Manufacture of Cheese
abstract: 38 pages, 1 article*Experiments in the Manufacture of Cheese* 37 pages

url: http://hdl.handle.net/1813/4652
date: 2006-12-21
creator: Gladwin, F. E.;New York State Agricultural Experiment Station.
viewed: 316
title: Bulletin: Number 560: Downy and Powdery Mildews of the Grape and their Control
abstract: 14 pages, 1 article*Downy and Powdery Mildews of the Grape and their Control* (Gladwin, F. E.) 12 pages

url: http://hdl.handle.net/1813/4653
date: 2006-12-21
creator: Streeter, L. R.;Harlan, J. D.;Collison, R. C.;New York State Agricultural Experiment Station.
viewed: 138
title: Bulletin: Number 562: High-Nicotine Tobacco
abstract: 19 pages, 1 article*High-Nicotine Tobacco* (Collison, R. C.; Harlan, J. D.; Streeter, L. R.) 17 pages

url: http://hdl.handle.net/1813/4654
date: 2006-12-21
creator: Tukey, H. B.;New York State Agricultural Experiment Station.
viewed: 200
title: Bulletin: Number 563: Fruit Regions and Varieties of Eastern New York
abstract: 82 pages, 1 article*Fruit Regions and Varieties of Eastern New York* (Tukey, H. B.) 76 pages

url: http://hdl.handle.net/1813/4655
date: 2006-12-21
creator: Clayton, E. E.;New York State Agricultural Experiment Station.
viewed: 115
title: Bulletin: Number 564: Potato Seed Treatment Experiments on Long Island with Special Reference to the Organic Mercury Instant Dips
abstract: 32 pages, 1 article*Potato Seed Treatment Experiments on Long Island with Special Reference to the Organic Mercury Instant Dips* (Clayton, E. E.) 30 pages

url: http://hdl.handle.net/1813/4656
date: 2006-12-21

creator: Woodbridge, Mary E.;Hoefle, Olive M.;Munn, M. T.;New York State Agricultural Experiment Station.
viewed: 191
title: Bulletin: Number 565: The Quality of Packet Vegetable Seed on Sale in New York in 1926, 1927, and 1928
abstract: 47 pages, 1 article*The Quality of Packet Vegetable Seed on Sale in New York in 1926, 1927, and 1928* (Munn, M. T.; Hoefle, Olive M.; Woodbridge, Mary E.) 45 pages

url: http://hdl.handle.net/1813/4657
date: 2006-12-21
creator: Breed, Robert S.;New York State Agricultural Experiment Station.
viewed: 129
title: Bulletin: Number 566: The Microscopic Appearance of Unpasteurized Market Milk and Cream
abstract: 28 pages, 1 article*The Microscopic Appearance of Unpasteurized Market Milk and Cream* (Breed, Robert S.) 26 pages

url: http://hdl.handle.net/1813/4658
date: 2006-12-21
creator: Breed, Robert S.;New York State Agricultural Experiment Station.
viewed: 121
title: Bulletin: Number 567: Bacterial Counts in Sanitary Milk Control
abstract: 25 pages, 1 article*Bacterial Counts in Sanitary Milk Control* (Breed, Robert S.) 23 pages

url: http://hdl.handle.net/1813/4659
date: 2006-12-21
creator: Breed, Robert S.;New York State Agricultural Experiment Station.
viewed: 129
title: Bulletin: Number 568: The Sanitary Significance of Leucocytes in Milk
abstract: 14 pages, 1 article*The Sanitary Significance of Leucocytes in Milk* (Breed, Robert S.) 12 pages

url: http://hdl.handle.net/1813/4660
date: 2006-12-21
creator: Tukey, H. B.;New York State Agricultural Experiment Station.
viewed: 276
title: Bulletin: Number 569: Seedling Fruit Stocks
abstract: 34 pages, 1 article*Seedling Fruit Stocks* (Tukey, H. B.) 32 pages

url: http://hdl.handle.net/1813/4661
date: 2006-12-21
creator: New York State Agricultural Experiment Station.
viewed: 145
title: Bulletin: Number 57: Feeding Experiments with Laying Hens
abstract: 15 pages, 1 article*Feeding Experiments with Laying Hens* 13 pages

url: http://hdl.handle.net/1813/4662
date: 2006-12-21
creator: Breed, Robert S.;Pederson, Carl S.;New York State Agricultural Experiment Station.
viewed: 133

title: Bulletin: Number 570: Control of Spoilage in Tomato Products
abstract: 16 pages, 1 article*Control of Spoilage in Tomato Products* (Pederson, Carl S.; Breed, Robert S.) 14 pages

url: http://hdl.handle.net/1813/4663
date: 2006-12-21
creator: Breed, Robert S.;Prickett, Paul S.;New York State Agricultural Experiment Station.
viewed: 193
title: Bulletin: Number 571: Bacteria that Survive and Grow during the Pasteurization of Milk and their Relation to Bacterial Counts
abstract: 25 pages, 1 article*Bacteria that Survive and Grow during the Pasteurization of Milk and their Relation to Bacterial Counts* (Prickett, Paul S.; Breed, Robert S.) 23 pages

url: http://hdl.handle.net/1813/4664
date: 2006-12-21
creator: Wheeler, W. P.;New York State Agricultural Experiment Station.
viewed: 138
title: Bulletin: Number 572: Limitations as to Sunlight Requirements of Hens
abstract: 14 pages, 1 article*Limitations as to Sunlight Requirements of Hens* (Wheeler, W. P.) 12 pages

url: http://hdl.handle.net/1813/4665
date: 2006-12-21
creator: Conn, H. J.;Collison, R. C.;New York State Agricultural Experiment Station.
viewed: 131
title: Bulletin: Number 573: Artificial Manure from Straw
abstract: 17 pages, 1 article*Artificial Manure from Straw* (Collison, R. C.; Conn, H. J.) 15 pages

url: http://hdl.handle.net/1813/4666
date: 2006-12-21
creator: Anderson, L. C.;Tukey, H. B.;New York State Agricultural Experiment Station.
viewed: 140
title: Bulletin: Number 574: Five Years' Results with Fertilizers in Three Hudson River Valley Apple Orchards
abstract: 31 pages, 1 article*Five Years' Results with Fertilizers in Three Hudson River Valley Apple Orchards* (Tukey, H. B.; Anderson, L. C.) 29 pages

url: http://hdl.handle.net/1813/4667
date: 2006-12-21
creator: Shear, E. V.;New York State Agricultural Experiment Station.
viewed: 128
title: Bulletin: Number 575: Washing Fruit to Remove Spray Residue in the Hudson Valley
abstract: 34 pages, 1 article*Washing Fruit to Remove Spray Residue in the Hudson Valley* (Shear, E. V.) 32 pages

url: http://hdl.handle.net/1813/4668
date: 2006-12-21
creator: Lowe, V. H.;New York State Agricultural Experiment Station.
viewed: 120

title: Bulletin: Number 150: The Raspberry Saw-Fly
abstract: 27 pages, 1 article*The Raspberry Saw-Fly* (Lowe, V. H.) 20 pages

url: http://hdl.handle.net/1813/4669
date: 2006-12-21
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 130
title: Bulletin: Number 150, Edition popular: Two Small-Fruit Pests
abstract: 9 pages, 1 article*Two Small-Fruit Pests* (Hall, F. H.) 7 pages

url: http://hdl.handle.net/1813/4670
date: 2006-12-21
creator: Stewart, F. C.;New York State Agricultural Experiment Station.
viewed: 181
title: Bulletin: Number 162: Leaf Scorch of the Sugar Beet, Cherry, Cauliflower and Maple
abstract: 22 pages, 1 article*Leaf Scorch of the Sugar Beet, Cherry, Cauliflower and Maple* (Stewart, F. C.) 20 pages

url: http://hdl.handle.net/1813/4671
date: 2006-12-21
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 1196
title: Bulletin: Number 162, Edition popular: Injury by Sun Scorching of Foliage
abstract: 8 pages, 1 article*Injury by Sun Scorching of Foliage* (Hall, F. H.) 6 pages

url: http://hdl.handle.net/1813/4672
date: 2006-12-21
creator: Paddock, Wendell;New York State Agricultural Experiment Station.
viewed: 155
title: Bulletin: Number 163: The New York Apple-Tree Canker
abstract: 36 pages, 1 article*The New York Apple-Tree Canker* (Paddock, Wendell) 34 pages

url: http://hdl.handle.net/1813/4673
date: 2006-12-21
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 393
title: Bulletin: Number 163, Edition popular: Canker: An Apple Tree Enemy
abstract: 8 pages, 1 article*Canker: An Apple Tree Enemy* (Hall, F. H.) 6 pages

url: http://hdl.handle.net/1813/4674
date: 2006-12-21
creator: Stewart, F. C.;New York State Agricultural Experiment Station.
viewed: 107
title: Bulletin: Number 164: Notes on Various Plant Diseases
abstract: 21 pages, 1 article*Notes on Various Plant Diseases* (Stewart, F. C.) 19 pages

url: http://hdl.handle.net/1813/4675
date: 2006-12-21

creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 174
title: Bulletin: Number 164, Edition popular: Divers Diseases Discussed
abstract: 7 pages, 1 article*Divers Diseases Discussed* (Hall, F. H.) 5 pages

url: http://hdl.handle.net/1813/4676
date: 2006-12-21
creator: Jenter, C. G.;Jordan, W. H.;New York State Agricultural Experiment Station.
viewed: 110
title: Bulletin: Number 166: Commercial Feeding Stuffs in New York
abstract: 44 pages, 1 article*Commercial Feeding Stuffs in New York* (Jordan, W. H.; Jenter, C. G.) 42 pages

url: http://hdl.handle.net/1813/4677
date: 2006-12-21
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 246
title: Bulletin: Number 166, Edition popular: What Chemistry Finds in Feeds
abstract: 8 pages, 1 article*What Chemistry Finds in Feeds* (Hall, F. H.) 6 pages

url: http://hdl.handle.net/1813/4678
date: 2006-12-21
creator: Blodgett, F.H.;Stewart, F. C.;New York State Agricultural Experiment Station.
viewed: 176
title: Bulletin: Number 167: A Fruit-Disease Survey of the Hudson Valley in 1899
abstract: 39 pages, 1 article*A Fruit-Disease Survey of the Hudson Valley in 1899* (Stewart, F. C.; Blodgett, F.H.) 37 pages

url: http://hdl.handle.net/1813/4679
date: 2006-12-21
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 130
title: Bulletin: Number 167, Edition popular: Fruit Diseases Found Along the Hudson
abstract: 8 pages, 1 article*Fruit Diseases Found Along the Hudson* (Hall, F. H.) 6 pages

url: http://hdl.handle.net/1813/4680
date: 2006-12-21
creator: Jordan, W. H.;New York State Agricultural Experiment Station.
viewed: 148
title: Bulletin: Number 168: Director's Report for 1899
abstract: 24 pages, 1 article*Director's Report for 1899* (Jordan, W. H.) 22 pages

url: http://hdl.handle.net/1813/4681
date: 2006-12-21
creator: Beach, S. A.;New York State Agricultural Experiment Station.
viewed: 120
title: Bulletin: Number 169: Fertilizing Self-Sterile Grapes
abstract: 45 pages, 1 article*Fertilizing Self-Sterile Grapes* (Beach, S. A.) 43 pages

url: http://hdl.handle.net/1813/4682
date: 2006-12-21
creator: New York State Agricultural Experiment Station.
viewed: 177
title: Bulletin: Number 17: Cattle Foods and Feeding Rations
abstract: 28 pages, 1 article*Cattle Foods and Feeding Rations* 26 pages

url: http://hdl.handle.net/1813/4683
date: 2006-12-21
creator: Eustace, H. J.;New York State Agricultural Experiment Station.
viewed: 141
title: Bulletin: Number 235: Two Decays of Stored Apples
abstract: 15 pages, 1 article*Two Decays of Stored Apples* (Eustace, H. J.) 13 pages

url: http://hdl.handle.net/1813/4684
date: 2006-12-21
creator: Andrews, W. H.;Taylor, O. M.;Van Slyke, L. L.;New York State Agricultural Experiment Station.
viewed: 227
title: Bulletin: Number 265: Part I. Plant-Food Constituents Used By Bearing Fruit Trees
abstract: 28 pages, 1 article*Part I. Plant-Food Constituents Used By Bearing Fruit Trees* (Van Slyke, L. L.; Taylor, O. M.; Andrews, W. H.) 26 pages

url: http://hdl.handle.net/1813/4685
date: 2006-12-21
creator: New York State Agricultural Experiment Station.
viewed: 136
title: Bulletin: Number 266: Report of Analyses of Samples of Fertilizers Collected by the Commissioner of Agriculture during the Summer and Fall of 1904
abstract: 33 pages, 1 article*Report of Analyses of Samples of Fertilizers Collected by the Commissioner of Agriculture during the Summer and Fall of 1904* 31 pages

url: http://hdl.handle.net/1813/4686
date: 2006-12-21
creator: Eustace, H. J.;Stewart, F. C.;Jordan, W. H.;New York State Agricultural Experiment Station.
viewed: 129
title: Bulletin: Number 267: Effect of Certain Arsenites on Potato Foliage
abstract: 26 pages, 1 article*Effect of Certain Arsenites on Potato Foliage* (Jordan, W. H.; Stewart, F. C.; Eustace, H. J.) 24 pages

url: http://hdl.handle.net/1813/4687
date: 2006-12-21
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 245
title: Bulletin: Number 267, Edition popular: Poisoning the Potato Beetle
abstract: 12 pages, 1 article*Poisoning the Potato Beetle* (Hall, F. H.) 9 pages

url: http://hdl.handle.net/1813/4688

date: 2006-12-21
creator: New York State Agricultural Experiment Station.
viewed: 113
title: Bulletin: Number 268: Inspection of Feeding Stuffs
abstract: 40 pages, 1 article*Inspection of Feeding Stuffs* 38 pages

url: http://hdl.handle.net/1813/4689
date: 2006-12-21
creator: Eustace, H. J.;New York State Agricultural Experiment Station.
viewed: 713
title: Bulletin: Number 269: Winter Injury to Fruit Trees
abstract: 24 pages, 1 article*Winter Injury to Fruit Trees* (Eustace, H. J.) 22 pages

url: http://hdl.handle.net/1813/4690
date: 2006-12-21
creator: Paddock, Wendell;New York State Agricultural Experiment Station.
viewed: 149
title: Bulletin: Number 151: Experiments in Ringing Grape Vines
abstract: 12 pages, 1 article*Experiments in Ringing Grape Vines* (Paddock, Wendell) 10 pages

url: http://hdl.handle.net/1813/4691
date: 2006-12-21
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 188
title: Bulletin: Number 151, Edition popular: How Ringing Affects Grapes
abstract: 4 pages, 1 article*How Ringing Affects Grapes* (Hall, F. H.) 2 pages

url: http://hdl.handle.net/1813/4692
date: 2006-12-21
creator: Van Slyke, L. L.;New York State Agricultural Experiment Station.
viewed: 207
title: Bulletin: Number 155: Sugar Beet Investigations in 1898
abstract: 29 pages, 1 article*Sugar Beet Investigations in 1898* (Van Slyke, L. L.) 27 pages

url: http://hdl.handle.net/1813/4693
date: 2006-12-21
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 143
title: Bulletin: Number 155, Edition popular: Sugar Beet Success for the Season
abstract: 8 pages, 1 article*Sugar Beet Success for the Season* (Hall, F. H.) 6 pages

url: http://hdl.handle.net/1813/4694
date: 2006-12-21
creator: Stewart, F. C.;Sirrine, F. A.;New York State Agricultural Experiment Station.
viewed: 158
title: Bulletin: Number 156: Spraying Cucumbers in the Season of 1898
abstract: 29 pages, 1 article*Spraying Cucumbers in the Season of 1898* (Sirrine, F. A.; Stewart, F. C.) 26 pages

url: http://hdl.handle.net/1813/4695
date: 2006-12-21
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 176
title: Bulletin: Number 156, Edition popular: Spraying Will Save the Pickle Crop
abstract: 8 pages, 1 article*Spraying Will Save the Pickle Crop* (Hall, F. H.) 6 pages

url: http://hdl.handle.net/1813/4696
date: 2006-12-21
creator: Beach, S. A.;New York State Agricultural Experiment Station.
viewed: 274
title: Bulletin: Number 157: Self-Fertility of the Grape
abstract: 53 pages, 1 article*Self-Fertility of the Grape* (Beach, S. A.) 51 pages

url: http://hdl.handle.net/1813/4697
date: 2006-12-21
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 143
title: Bulletin: Number 157, Edition popular: Why Some Grapes Fail to Fruit
abstract: 8 pages, 1 article*Why Some Grapes Fail to Fruit* (Hall, F. H.) 6 pages

url: http://hdl.handle.net/1813/4698
date: 2006-12-21
creator: Sirrine, F. A.;New York State Agricultural Experiment Station.
viewed: 154
title: Bulletin: Number 158: Combating the Striped Beetle on Cucumbers
abstract: 36 pages, 1 article*Combating the Striped Beetle on Cucumbers* (Sirrine, F. A.) 34 pages

url: http://hdl.handle.net/1813/4699
date: 2006-12-21
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 163
title: Bulletin: Number 158, Edition popular: How to Handle the Striped Beetle on Cucumber
abstract: 8 pages, 1 article*How to Handle the Striped Beetle on Cucumber* (Hall, F. H.) 6 pages

url: http://hdl.handle.net/1813/4700
date: 2006-12-21
creator: Lowe, V. H.;New York State Agricultural Experiment Station.
viewed: 149
title: Bulletin: Number 159: The Forest Tent-Caterpillar
abstract: 37 pages, 1 article*The Forest Tent-Caterpillar* (Lowe, V. H.) 35 pages

url: http://hdl.handle.net/1813/4701
date: 2006-12-21
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 145
title: Bulletin: Number 159, Edition popular: A Pest of Woodland and Grove

abstract: 8 pages, 1 article*A Pest of Woodland and Grove* (Hall, F. H.) 6 pages

url: http://hdl.handle.net/1813/4702
date: 2006-12-21
creator: New York State Agricultural Experiment Station.
viewed: 161
title: Bulletin: Number 16: Chemical Department
abstract: 15 pages, 1 article*Chemical Department* 13 pages

url: http://hdl.handle.net/1813/4703
date: 2006-12-21
creator: Close, C. P.;New York State Agricultural Experiment Station.
viewed: 269
title: Bulletin: Number 161: Treatment for Gooseberry Mildew
abstract: 16 pages, 1 article*Treatment for Gooseberry Mildew* (Close, C. P.) 14 pages

url: http://hdl.handle.net/1813/4704
date: 2006-12-21
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 1177
title: Bulletin: Number 161, Edition popular: Gooseberry Mildew Held in Check
abstract: 4 pages, 1 article*Gooseberry Mildew Held in Check* (Hall, F. H.) 2 pages

url: http://hdl.handle.net/1813/4705
date: 2006-12-21
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 345
title: Bulletin: Number 235, Edition popular: Two New Apple Rots
abstract: 4 pages, 1 article*Two New Apple Rots* (Hall, F. H.) 2 pages

url: http://hdl.handle.net/1813/4706
date: 2006-12-21
creator: Hart, E. B.;Van Slyke, L. L.;New York State Agricultural Experiment Station.
viewed: 118
title: Bulletin: Number 236: Conditions Affecting Chemical Changes in Cheese-Ripening
abstract: 33 pages, 1 article*Conditions Affecting Chemical Changes in Cheese-Ripening* (Van Slyke, L. L.; Hart, E. B.) 31 pages

url: http://hdl.handle.net/1813/4707
date: 2006-12-21
creator: Harding, H. A.;New York State Agricultural Experiment Station.
viewed: 128
title: Bulletin: Number 237: The Role of the Lactic-Acid Bacteria in the Manufacture and in the Early Stages of Ripening of Cheddar Cheese
abstract: 18 pages, 1 article*The Role of the Lactic-Acid Bacteria in the Manufacture and in the Early Stages of Ripening of Cheddar Cheese* (Harding, H. A.) 16 pages

url: http://hdl.handle.net/1813/4708

date: 2006-12-21
creator: Andrews, W. H.;Hart, E. B.;New York State Agricultural Experiment Station.
viewed: 171
title: Bulletin: Number 238: The Status of Phosphorus in Certain Food Materials and Animal By-Products, with Spectial Reference to the Presence of Inorganic Forms
abstract: 18 pages, 1 article*The Status of Phosphorus in Certain Food Materials and Animal By-Products, with Spectial Reference to the Presence of Inorganic Forms* (Hart, E. B.; Andrews, W. H.) 16 pages

url: http://hdl.handle.net/1813/4709
date: 2006-12-21
creator: Beach, S. A.;New York State Agricultural Experiment Station.
viewed: 146
title: Bulletin: Number 239: Thinning Apples
abstract: 32 pages, 1 article*Thinning Apples* (Beach, S. A.) 29 pages

url: http://hdl.handle.net/1813/4710
date: 2006-12-21
creator: Hart, E. B.;Van Slyke, L. L.;New York State Agricultural Experiment Station.
viewed: 163
title: Bulletin: Number 263: The Proteids of Butter in Relation to Mottled Butter
abstract: 27 pages, 1 article*The Proteids of Butter in Relation to Mottled Butter* (Van Slyke, L. L.; Hart, E. B.) 26 pages

url: http://hdl.handle.net/1813/4711
date: 2006-12-21
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 131
title: Bulletin: Number 263, Edition popular: The Cause and Prevention of Mottles in Butter
abstract: 10 pages, 1 article*The Cause and Prevention of Mottles in Butter* (Hall, F. H.) 8 pages

url: http://hdl.handle.net/1813/4712
date: 2006-12-21
creator: Jordan, W. H.;New York State Agricultural Experiment Station.
viewed: 288
title: Bulletin: Number 153: Director's Report for 1898
abstract: 44 pages, 1 article*Director's Report for 1898* (Jordan, W. H.) 40 pages

url: http://hdl.handle.net/1813/4713
date: 2006-12-21
creator: Jordan, W. H.;New York State Agricultural Experiment Station.
viewed: 113
title: Bulletin: Number 154: Commercial Fertilizers for Potatoes II
abstract: 15 pages, 1 article*Commercial Fertilizers for Potatoes II* (Jordan, W. H.) 12 pages

url: http://hdl.handle.net/1813/4714
date: 2006-12-21
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 282

title: Bulletin: Number 154, Edition popular: Profitable Potato Fertilizing II
abstract: 4 pages, 1 article*Profitable Potato Fertilizing II* (Hall, F. H.) 2 pages

url: http://hdl.handle.net/1813/4715
date: 2006-12-21
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 142
title: Bulletin: Number 239, Edition popular: Should Apples Be Thinned?
abstract: 10 pages, 1 article*Should Apples Be Thinned?* (Hall, F. H.) 8 pages

url: http://hdl.handle.net/1813/4716
date: 2006-12-21
creator: New York State Agricultural Experiment Station.
viewed: 158
title: Bulletin: Number 24: Strawberry Culture
abstract: 30 pages, 1 article*Strawberry Culture* 28 pages

url: http://hdl.handle.net/1813/4717
date: 2006-12-21
creator: Fuller, F. D.;Jordan, W. H.;New York State Agricultural Experiment Station.
viewed: 144
title: Bulletin: Number 240: Inspection of Feeding Stuffs
abstract: 40 pages, 1 article*Inspection of Feeding Stuffs* (Jordan, W. H.; Fuller, F. D.) 38 pages

url: http://hdl.handle.net/1813/4718
date: 2006-12-21
creator: Sirrine, F. A.;Eustace, H. J.;Stewart, F. C.;New York State Agricultural Experiment Station.
viewed: 122
title: Bulletin: Number 241: Potato Spraying Experiments in 1903
abstract: 56 pages, 1 article*Potato Spraying Experiments in 1903* (Stewart, F. C.; Eustace, H. J.; Sirrine, F. A.) 54 pages

url: http://hdl.handle.net/1813/4719
date: 2006-12-21
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 141
title: Bulletin: Number 241, Edition popular: Should Potato Growers Spray? II.
abstract: 12 pages, 1 article*Should Potato Growers Spray? II.* (Hall, F. H.) 10 pages

url: http://hdl.handle.net/1813/4720
date: 2006-12-21
creator: Andrews, W. H.;Van Slyke, L. L.;Jordan, W. H.;New York State Agricultural Experiment Station.
viewed: 246
title: Bulletin: Number 253: Report of Analyses of Commercial Fertilizers for the Spring of 1904
abstract: 51 pages, 1 article*Report of Analyses of Commercial Fertilizers for the Spring of 1904* (Jordan, W. H.; Van Slyke, L. L.; Andrews, W. H.) 49 pages

url: http://hdl.handle.net/1813/4721

date: 2006-12-21
creator: Fuller, F. D.;Jordan, W. H.;New York State Agricultural Experiment Station.
viewed: 162
title: Bulletin: Number 255: Inspection of Feeding Stuffs
abstract: 29 pages, 1 article*Inspection of Feeding Stuffs* (Jordan, W. H.; Fuller, F. D.) 27 pages

url: http://hdl.handle.net/1813/4722
date: 2006-12-21
creator: Clark, V. A.;New York State Agricultural Experiment Station.
viewed: 119
title: Bulletin: Number 256: Seed Selection According to Specific Gravity
abstract: 63 pages, 1 article*Seed Selection According to Specific Gravity* (Clark, V. A.) 61 pages

url: http://hdl.handle.net/1813/4723
date: 2006-12-21
creator: Urner, F. A.;Van Slyke, L. L.;New York State Agricultural Experiment Station.
viewed: 191
title: Bulletin: Number 257: The Composition of Commercial Soaps in Relation to Spraying
abstract: 14 pages, 1 article*The Composition of Commercial Soaps in Relation to Spraying* (Van Slyke, L. L.; Urner, F. A.) 12 pages

url: http://hdl.handle.net/1813/4724
date: 2006-12-21
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 175
title: Bulletin: Number 257, Edition popular: Home Made Soaps for Spraying
abstract: 7 pages, 1 article*Home Made Soaps for Spraying* (Hall, F. H.) 4 pages

url: http://hdl.handle.net/1813/4725
date: 2006-12-21
creator: Van Slyke, L. L.;New York State Agricultural Experiment Station.
viewed: 214
title: Bulletin: Number 258: A Study of the Chemistry of Home-Made Cider Vinegar
abstract: 58 pages, 1 article*A Study of the Chemistry of Home-Made Cider Vinegar* (Van Slyke, L. L.) 56 pages

url: http://hdl.handle.net/1813/4726
date: 2006-12-21
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 140
title: Bulletin: Number 258, Edition popular: Making Cider Vinegar at Home
abstract: 10 pages, 1 article*Making Cider Vinegar at Home* (Hall, F. H.) 8 pages

url: http://hdl.handle.net/1813/4727
date: 2006-12-21
creator: Wheeler, W. P.;New York State Agricultural Experiment Station.
viewed: 141
title: Bulletin: Number 259: The Proportion of Animal Food in the Ration for Ducklings

abstract: 16 pages, 1 article*The Proportion of Animal Food in the Ration for Ducklings* (Wheeler, W. P.) 14 pages

url: http://hdl.handle.net/1813/4728
date: 2006-12-21
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 165
title: Bulletin: Number 259, Edition popular: How Much Meat Shall Ducks Eat?
abstract: 8 pages, 1 article*How Much Meat Shall Ducks Eat?* (Hall, F. H.) 4 pages

url: http://hdl.handle.net/1813/4729
date: 2006-12-21
creator: New York State Agricultural Experiment Station.
viewed: 154
title: Bulletin: Number 26: The New York State Fertilizer Control and Fertilizer Analyses
abstract: 28 pages, 1 article*The New York State Fertilizer Control and Fertilizer Analyses* 24 pages

url: http://hdl.handle.net/1813/4730
date: 2006-12-21
creator: Jordan, W. H.;New York State Agricultural Experiment Station.
viewed: 151
title: Bulletin: Number 260: Director's Report for 1904
abstract: 20 pages, 1 article*Director's Report for 1904* (Jordan, W. H.) 18 pages

url: http://hdl.handle.net/1813/4731
date: 2006-12-21
creator: Hart, E. B.;Van Slyke, L. L.;New York State Agricultural Experiment Station.
viewed: 164
title: Bulletin: Number 261: Some of the Relations of Casein and Paracasein to Bases and Acids, and their Application to Cheddar Cheese
abstract: 39 pages, 1 article*Some of the Relations of Casein and Paracasein to Bases and Acids, and their Application to Cheddar Cheese* (Van Slyke, L. L.; Hart, E. B.) 37 pages

url: http://hdl.handle.net/1813/4732
date: 2006-12-21
creator: Sirrine, F. A.;Beach, S. A.;Parrott, P. J.;New York State Agricultural Experiment Station.
viewed: 125
title: Bulletin: Number 262: Sulphur Washes for Orchard Treatment II.
abstract: 36 pages, 1 article*Sulphur Washes for Orchard Treatment II.* (Parrott, P. J.; Beach, S. A.; Sirrine, F. A.) 34 pages

url: http://hdl.handle.net/1813/4733
date: 2006-12-21
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 132
title: Bulletin: Number 262, Edition popular: Sulphur Sprays for Orchard Trees, II.
abstract: 10 pages, 1 article*Sulphur Sprays for Orchard Trees, II.* (Hall, F. H.) 8 pages

url: http://hdl.handle.net/1813/4734
date: 2006-12-21
creator: Paddock, Wendell;New York State Agricultural Experiment Station.
viewed: 191
title: Bulletin: Number 121: Spray Pumps and Spraying
abstract: 25 pages, 1 article*Spray Pumps and Spraying* (Paddock, Wendell) 23 pages

url: http://hdl.handle.net/1813/4735
date: 2006-12-21
creator: Hall, F. H.;Paddock, Wendell;New York State Agricultural Experiment Station.
viewed: 808
title: Bulletin: Number 121, Edition appendix
abstract: 17 pages, 2 article*Spray Pumps and Spraying* (Paddock, Wendell) 6 pages*Spraying Mixtures and their Application* (Hall, F. H.) 6 pages

url: http://hdl.handle.net/1813/4736
date: 2006-12-21
creator: Parrott, P. J.;Lowe, V. H.;New York State Agricultural Experiment Station.
viewed: 111
title: Bulletin: Number 193: San Jose Scale Investigations
abstract: 26 pages, 1 article*San Jose Scale Investigations* (Lowe, V. H.; Parrott, P. J.) 23 pages

url: http://hdl.handle.net/1813/4737
date: 2006-12-21
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 110
title: Bulletin: Number 193-194, Edition popular: Controlling San Jose Scale
abstract: 11 pages, 1 article*Controlling San Jose Scale* (Hall, F. H.) 9 pages

url: http://hdl.handle.net/1813/4738
date: 2006-12-21
creator: Andrews, W. H.;Van Slyke, L. L.;New York State Agricultural Experiment Station.
viewed: 157
title: Bulletin: Number 216: Report of Analyses of Commercial Fertilizers for the Spring and Fall of 1902
abstract: 67 pages, 1 article*Report of Analyses of Commercial Fertilizers for the Spring and Fall of 1902* (Van Slyke, L. L.; Andrews, W. H.) 65 pages

url: http://hdl.handle.net/1813/4739
date: 2006-12-21
creator: Fuller, F. D.;Jenter, C. G.;Jordan, W. H.;New York State Agricultural Experiment Station.
viewed: 121
title: Bulletin: Number 217: Inspection of Feeding Stuffs
abstract: 21 pages, 1 article*Inspection of Feeding Stuffs* (Jordan, W. H.; Jenter, C. G.; Fuller, F. D.) 19 pages

url: http://hdl.handle.net/1813/4740
date: 2006-12-21
creator: New York State Agricultural Experiment Station.

viewed: 140
title: Bulletin: Number 371: Report of Analyses of Samples of Commercial Fertilizers Collected by the Commissioner of Agriculture during 1913
abstract: 118 pages, 1 article*Report of Analyses of Samples of Commercial Fertilizers Collected by the Commissioner of Agriculture during 1913* 116 pages

url: http://hdl.handle.net/1813/4741
date: 2006-12-21
creator: Jordan, W. H.;New York State Agricultural Experiment Station.
viewed: 1232
title: Bulletin: Number 372: Director's Report for 1913
abstract: 28 pages, 1 article*Director's Report for 1913* (Jordan, W. H.) 26 pages

url: http://hdl.handle.net/1813/4742
date: 2006-12-21
creator: Brew, James D.;New York State Agricultural Experiment Station.
viewed: 218
title: Bulletin: Number 373: A Comparison of the Microscopical Method and the Plate Method of Counting Bacteria in Milk
abstract: 42 pages, 1 article*A Comparison of the Microscopical Method and the Plate Method of Counting Bacteria in Milk* (Brew, James D.) 40 pages

url: http://hdl.handle.net/1813/4743
date: 2006-12-21
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 273
title: Bulletin: Number 373, 380, Edition popular: A New Method of Determining Milk Quality
abstract: 18 pages, 1 article*A New Method of Determining Milk Quality* (Hall, F. H.) 15 pages

url: http://hdl.handle.net/1813/4744
date: 2006-12-21
creator: Rankin, W. H.;Stewart, F. C.;New York State Agricultural Experiment Station.
viewed: 255
title: Bulletin: Number 374: Does Cronartium Ribicola Over-Winter on the Currant?
abstract: 18 pages, 1 article*Does Cronartium Ribicola Over-Winter on the Currant?* (Stewart, F. C.; Rankin, W. H.) 16 pages

url: http://hdl.handle.net/1813/4745
date: 2006-12-21
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 166
title: Bulletin: Number 374, Edition popular: Do Dormant Currant Plants Carry Pine Rust?
abstract: 4 pages, 1 article*Do Dormant Currant Plants Carry Pine Rust?* (Hall, F. H.) 3 pages

url: http://hdl.handle.net/1813/4746
date: 2006-12-21
creator: Hedrick, U. P.;New York State Agricultural Experiment Station.
viewed: 152

title: Bulletin: Volume 375: Tillage and Sod Mulch in the Hitchings Orchard
abstract: 35 pages, 1 article*Tillage and Sod Mulch in the Hitchings Orchard* (Hedrick, U. P.) 32 pages

url: http://hdl.handle.net/1813/4747
date: 2006-12-21
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 137
title: Bulletin: Number 375, Edition popular: Sod Mulch Sometimes a Success
abstract: 8 pages, 1 article*Sod Mulch Sometimes a Success* (Hall, F. H.) 6 pages

url: http://hdl.handle.net/1813/4748
date: 2006-12-21
creator: Hedrick, U. P.;New York State Agricultural Experiment Station.
viewed: 113
title: Bulletin: Number 376: Ten Years' Profits from an Apple Orchard
abstract: 13 pages, 1 article*Ten Years' Profits from an Apple Orchard* (Hedrick, U. P.) 10 pages

url: http://hdl.handle.net/1813/4749
date: 2006-12-21
creator: Fulton, B. B.;Sirrine, F. A.;New York State Agricultural Experiment Station.
viewed: 134
title: Bulletin: Number 377: The Cranberry Toad-Bug
abstract: 32 pages, 1 article*The Cranberry Toad-Bug* (Sirrine, F. A.; Fulton, B. B.) 30 pages

url: http://hdl.handle.net/1813/4750
date: 2006-12-21
creator: Munn, M. T.;New York State Agricultural Experiment Station.
viewed: 107
title: Bulletin: Number 378: Seed Tests Made at the Station during 1913
abstract: 27 pages, 1 article*Seed Tests Made at the Station during 1913* (Munn, M. T.) 25 pages

url: http://hdl.handle.net/1813/4751
date: 2006-12-21
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 130
title: Bulletin: Number 378, Edition popular: Purity of Farm Seeds in 1913
abstract: 4 pages, 1 article*Purity of Farm Seeds in 1913* (Hall, F. H.) 3 pages

url: http://hdl.handle.net/1813/4752
date: 2006-12-21
creator: Stewart, F. C.;New York State Agricultural Experiment Station.
viewed: 156
title: Bulletin: Number 379: Potato Spraying Experiments at Rush in 1913
abstract: 9 pages, 1 article*Potato Spraying Experiments at Rush in 1913* (Stewart, F. C.) 7 pages

url: http://hdl.handle.net/1813/4753
date: 2006-12-21
creator: Hall, F. H.;New York State Agricultural Experiment Station.

viewed: 128
title: Bulletin: Number 379, Edition popular: Thoroughness Pays in Potato Spraying
abstract: 4 pages, 1 article*Thoroughness Pays in Potato Spraying* (Hall, F. H.) 2 pages

url: http://hdl.handle.net/1813/4754
date: 2006-12-21
creator: New York State Agricultural Experiment Station.
viewed: 120
title: Bulletin: Number 38: Oyster Shells as Food for Laying Hens
abstract: 10 pages, 1 article*Oyster Shells as Food for Laying Hens* 8 pages

url: http://hdl.handle.net/1813/4755
date: 2006-12-21
creator: Breed, Robert S.;New York State Agricultural Experiment Station.
viewed: 154
title: Bulletin: Number 380: Cells in Milk Derived from the Udder
abstract: 64 pages, 1 article*Cells in Milk Derived from the Udder* (Breed, Robert S.) 62 pages

url: http://hdl.handle.net/1813/4756
date: 2006-12-21
creator: Sirrine, F. A.;New York State Agricultural Experiment Station.
viewed: 143
title: Bulletin: Number 120: A Practical Method of Fighting Cutworms in Onion Fields
abstract: 22 pages, 1 article*A Practical Method of Fighting Cutworms in Onion Fields* (Sirrine, F. A.) 19 pages

url: http://hdl.handle.net/1813/4757
date: 2006-12-21
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 147
title: Bulletin: Number 120, Edition popular: Onion Cutworms; Their Ravages and Treatment
abstract: 9 pages, 1 article*Onion Cutworms; Their Ravages and Treatment* (Hall, F. H.) 7 pages

url: http://hdl.handle.net/1813/4758
date: 2006-12-21
creator: Lowe, V. H.;New York State Agricultural Experiment Station.
viewed: 124
title: Bulletin: Number 194: San Jose Scale Investigations II.
abstract: 18 pages, 1 article*San Jose Scale Investigations II.* (Lowe, V. H.) 16 pages

url: http://hdl.handle.net/1813/4759
date: 2006-12-21
creator: Jordan, W. H.;New York State Agricultural Experiment Station.
viewed: 1057
title: Bulletin: Number 195: Director's Report for 1900
abstract: 16 pages, 1 article*Director's Report for 1900* (Jordan, W. H.) 14 pages

url: http://hdl.handle.net/1813/4760

date: 2006-12-21
creator: Fuller, F. D.;Jenter, C. G.;Jordan, W. H.;New York State Agricultural Experiment Station.
viewed: 130
title: Bulletin: Number 197: The Food Source of Milk Fat; with Studies on the Nutrition of Milch Cows
abstract: 34 pages, 1 article*The Food Source of Milk Fat; with Studies on the Nutrition of Milch Cows* (Jordan, W. H.; Jenter, C. G.; Fuller, F. D.) 32 pages

url: http://hdl.handle.net/1813/4761
date: 2006-12-21
creator: Hart, E. B.;Van Slyke, L. L.;New York State Agricultural Experiment Station.
viewed: 140
title: Bulletin: Number 215: Methods for the Estimation of the Proteolytic Compounds Contained in Cheese and Milk
abstract: 24 pages, 1 article*Methods for the Estimation of the Proteolytic Compounds Contained in Cheese and Milk* (Van Slyke, L. L.; Hart, E. B.) 22 pages

url: http://hdl.handle.net/1813/4762
date: 2006-12-21
creator: Gladwin, F. E.;Hedrick, U. P.;New York State Agricultural Experiment Station.
viewed: 144
title: Bulletin: Number 381: A Test of Commercial Fertilizers for Grapes
abstract: 33 pages, 1 article*A Test of Commercial Fertilizers for Grapes* (Hedrick, U. P.; Gladwin, F. E.) 30 pages

url: http://hdl.handle.net/1813/4763
date: 2006-12-21
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 326
title: Bulletin: Number 381, Edition popular: Some Fertilizer Tests in Vineyards
abstract: 8 pages, 1 article*Some Fertilizer Tests in Vineyards* (Hall, F. H.) 6 pages

url: http://hdl.handle.net/1813/4764
date: 2006-12-21
creator: Hedrick, U. P.;New York State Agricultural Experiment Station.
viewed: 172
title: Bulletin: Number 383: A Comparison of Tillage and Sod Mulch in an Apple Orchard
abstract: 41 pages, 1 article*A Comparison of Tillage and Sod Mulch in an Apple Orchard* (Hedrick, U. P.) 38 pages

url: http://hdl.handle.net/1813/4765
date: 2006-12-21
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 117
title: Bulletin: Number 383, Edition popular: How Sod Affected an Apple Orchard. II.
abstract: 7 pages, 1 article*How Sod Affected an Apple Orchard. II.* (Hall, F. H.) 5 pages

url: http://hdl.handle.net/1813/4766
date: 2006-12-21

creator: New York State Agricultural Experiment Station.
viewed: 144
title: Bulletin: Number 384: Analyses of Materials Sold as Insecticides and Fungicides
abstract: 22 pages, 1 article*Analyses of Materials Sold as Insecticides and Fungicides* 20 pages

url: http://hdl.handle.net/1813/4767
date: 2006-12-21
creator: Hedrick, U. P.;New York State Agricultural Experiment Station.
viewed: 147
title: Bulletin: Number 385: New or Noteworthy Fruits. II.
abstract: 17 pages, 1 article*New or Noteworthy Fruits. II.* (Hedrick, U. P.) 15 pages

url: http://hdl.handle.net/1813/4768
date: 2006-12-21
creator: New York State Agricultural Experiment Station.
viewed: 156
title: Bulletin: Number 386: Inspection of Feeding Stuffs
abstract: 73 pages, 1 article*Inspection of Feeding Stuffs* 71 pages

url: http://hdl.handle.net/1813/4769
date: 2006-12-21
creator: Hodgkiss, H. E.;New York State Agricultural Experiment Station.
viewed: 154
title: Bulletin: Number 387: Susceptibility to Spraying Mixtures of Hibernating Psylla Adults and Their Eggs
abstract: 35 pages, 1 article*Susceptibility to Spraying Mixtures of Hibernating Psylla Adults and Their Eggs* (Hodgkiss, H. E.) 32 pages

url: http://hdl.handle.net/1813/4770
date: 2006-12-21
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 156
title: Bulletin: Number 387, Edition popular: The Pear Psylla and Its Control
abstract: 11 pages, 1 article*The Pear Psylla and Its Control* (Hall, F. H.) 9 pages

url: http://hdl.handle.net/1813/4771
date: 2006-12-21
creator: Fulton, B. B.;Parrott, P. J.;New York State Agricultural Experiment Station.
viewed: 183
title: Bulletin: Number 388: Tree Crickets Injurious to Orchard and Garden Fruits
abstract: 57 pages, 1 article*Tree Crickets Injurious to Orchard and Garden Fruits* (Parrott, P. J.; Fulton, B. B.) 55 pages

url: http://hdl.handle.net/1813/4772
date: 2006-12-21
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 164
title: Bulletin: Number 388, Edition popular: Tree Crickets of Garden and Orchard

abstract: 12 pages, 1 article*Tree Crickets of Garden and Orchard* (Hall, F. H.) 11 pages

url: http://hdl.handle.net/1813/4773
date: 2006-12-21
creator: Reddick, Donald;New York State Agricultural Experiment Station.
viewed: 305
title: Bulletin: Number 389: Dead-Arm Disease of Grapes
abstract: 36 pages, 1 article*Dead-Arm Disease of Grapes* (Reddick, Donald) 34 pages

url: http://hdl.handle.net/1813/4774
date: 2006-12-21
creator: New York State Agricultural Experiment Station.
viewed: 178
title: Bulletin: Number 39: Feeding Experiments with Poultry
abstract: 15 pages, 1 article*Feeding Experiments with Poultry* 13 pages

url: http://hdl.handle.net/1813/4775
date: 2006-12-21
creator: Howe, G. H.;New York State Agricultural Experiment Station.
viewed: 259
title: Bulletin: Number 391: Ringing Fruit Trees
abstract: 13 pages, 1 article*Ringing Fruit Trees* (Howe, G. H.) 11 pages

url: http://hdl.handle.net/1813/4776
date: 2006-12-21
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 139
title: Bulletin: Number 391, Edition popular: Ringing an Unsafe Stimulus to Fruit-Bearing
abstract: 4 pages, 1 article*Ringing an Unsafe Stimulus to Fruit-Bearing* (Hall, F. H.) 3 pages

url: http://hdl.handle.net/1813/4777
date: 2006-12-21
creator: Jordan, W. H.;New York State Agricultural Experiment Station.
viewed: 111
title: Bulletin: Number 393: Director's Report for 1914
abstract: 33 pages, 1 article*Director's Report for 1914* (Jordan, W. H.) 31 pages

url: http://hdl.handle.net/1813/4778
date: 2006-12-21
creator: Munn, M. T.;New York State Agricultural Experiment Station.
viewed: 183
title: Bulletin: Number 394: Seed Tests Made at the Station during 1914
abstract: 29 pages, 1 article*Seed Tests Made at the Station during 1914* (Munn, M. T.) 27 pages

url: http://hdl.handle.net/1813/4779
date: 2006-12-21
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 212

title: Bulletin: Number 119, Edition popular: The Downy Mildew of the Cucumber and Its Treatment
abstract: 10 pages, 1 article*The Downy Mildew of the Cucumber and Its Treatment* (Hall, F. H.) 8 pages

url: http://hdl.handle.net/1813/4780
date: 2006-12-21
creator: New York State Agricultural Experiment Station.
viewed: 131
title: Bulletin: Number 12: Digest of the Fertilizer Laws in Several States
abstract: 8 pages, 1 article*Digest of the Fertilizer Laws in Several States* 6 pages

url: http://hdl.handle.net/1813/4781
date: 2006-12-21
creator: Page, H. L.;Clark, B. E.;New York State Agricultural Experiment Station.
viewed: 166
title: Bulletin: Number 812: Quality and Labeling of Seeds Sold in New York State in 1965
abstract: 53 pages, 1 article*Quality and Labeling of Seeds Sold in New York State in 1965 * (Clark, B. E.; Page, H. L.) 51 pages

url: http://hdl.handle.net/1813/4782
date: 2006-12-21
creator: McEwen, F. L.;Schaefers, G. A.;Palmiter, D. H.;Gilmer, R. M.;New York State Agricultural Experiment Station.
viewed: 148
title: Bulletin: Number 813: Leafhopper Transmission of X-Disease Virus of Stone Fruits in New York
abstract: 22 pages, 1 article*Leafhopper Transmission of X-Disease Virus of Stone Fruits in New York* (Gilmer, R. M.; Palmiter, D. H.; Schaefers, G. A.; McEwen, F. L.) 20 pages

url: http://hdl.handle.net/1813/4783
date: 2006-12-21
creator: Chapman, P. J.;New York State Agricultural Experiment Station.
viewed: 116
title: Bulletin: Number 814: Petroleum Oils for the Control of Orchard Pests
abstract: 22 pages, 1 article*Petroleum Oils for the Control of Orchard Pests* (Chapman, P. J.) 18 pages

url: http://hdl.handle.net/1813/4784
date: 2006-12-21
creator: New York State Agricultural Experiment Station.
viewed: 125
title: Bulletin: Number 815: Inspection of Commercial Feeds, Fertilizers, and Agricultural Liming Materials Sold in New York State
abstract: 83 pages, 1 article*Inspection of Commercial Feeds, Fertilizers, and Agricultural Liming Materials Sold in New York State* 82 pages

url: http://hdl.handle.net/1813/4785
date: 2006-12-21
creator: Page, H. L.;Clark, B. E.;New York State Agricultural Experiment Station.
viewed: 174
title: Bulletin: Number 816: Quality and Labeling of Seeds Sold in New York State in 1966

abstract: 49 pages, 1 article*Quality and Labeling of Seeds Sold in New York State in 1966* (Clark, B. E.; Page, H. L.) 47 pages

url: http://hdl.handle.net/1813/4786
date: 2006-12-21
creator: Gilmer, R. M.;Dennis, F. G.;Way, R. D.;New York State Agricultural Experiment Station.
viewed: 289
title: Bulletin: Number 817: Propagating Fruit Trees in New York
abstract: 34 pages, 1 article*Propagating Fruit Trees in New York* (Way, R. D.; Dennis, F. G.; Gilmer, R. M.) 31 pages

url: http://hdl.handle.net/1813/4787
date: 2006-12-21
creator: New York State Agricultural Experiment Station.
viewed: 121
title: Bulletin: Number 818: Inspection of Commercial Feeds, Fertilizers, and Agricultural Liming Materials Sold in New York State
abstract: 62 pages, 1 article*Inspection of Commercial Feeds, Fertilizers, and Agricultural Liming Materials Sold in New York State* 61 pages

url: http://hdl.handle.net/1813/4788
date: 2006-12-21
creator: Peck, N. H.;Clark, B. E.;New York State Agricultural Experiment Station.
viewed: 254
title: Bulletin: Number 819: Relationship Between the Size and Performance of Snap Bean Seeds
abstract: 30 pages, 1 article*Relationship Between the Size and Performance of Snap Bean Seeds* (Clark, B. E.; Peck, N. H.) 27 pages

url: http://hdl.handle.net/1813/4789
date: 2006-12-21
creator: New York State Agricultural Experiment Station.
viewed: 115
title: Bulletin: Number 82: Results of Investigation Relating to the Manufacture of Cheese for the Season of 1894
abstract: 64 pages, 1 article*Results of Investigation Relating to the Manufacture of Cheese for the Season of 1894* 62 pages

url: http://hdl.handle.net/1813/4790
date: 2006-12-21
creator: Page, H. L.;Clark, B. E.;New York State Agricultural Experiment Station.
viewed: 224
title: Bulletin: Number 820: Quality and Labeling of Seeds Sold in New York State in 1967
abstract: 47 pages, 1 article*Quality and Labeling of Seeds Sold in New York State in 1967* (Clark, B. E.; Page, H. L.) 45 pages

url: http://hdl.handle.net/1813/4791
date: 2006-12-21
creator: Pack, A. Boyd;Einset, John;Shaulis, Nelson;New York State Agricultural Experiment Station.

viewed: 516
title: Bulletin: Number 821: Growing Cold-Tender Grape Varieties in New York
abstract: 16 pages, 1 article*Growing Cold-Tender Grape Varieties in New York* (Shaulis, Nelson; Einset, John; Pack, A. Boyd) 13 pages

url: http://hdl.handle.net/1813/4792
date: 2006-12-21
creator: Gibbs, G. H.;Vittum, M. T.;Peck, N. H.;New York State Agricultural Experiment Station.
viewed: 143
title: Bulletin: Number 822: Growing Season Weather at Geneva, New York 1953-1967
abstract: 27 pages, 1 article*Growing Season Weather at Geneva, New York 1953-1967* (Peck, N. H.; Vittum, M. T.; Gibbs, G. H.) 24 pages

url: http://hdl.handle.net/1813/4793
date: 2006-12-21
creator: Dean, R. W.;New York State Agricultural Experiment Station.
viewed: 1229
title: Bulletin: Number 823: Moth Activity in Hudson Valley Orchards--Trapping Records of Seven Pest Species
abstract: 34 pages, 1 article*Moth Activity in Hudson Valley Orchards--Trapping Records of Seven Pest Species* (Dean, R. W.) 32 pages

url: http://hdl.handle.net/1813/4794
date: 2006-12-21
creator: Albury, Margaret N.;Pederson, Carl S.;New York State Agricultural Experiment Station.
viewed: 450
title: Bulletin: Number 824: The Sauerkraut Fermentation
abstract: 87 pages, 1 article*The Sauerkraut Fermentation* (Pederson, Carl S.; Albury, Margaret N.) 84 pages

url: http://hdl.handle.net/1813/4795
date: 2006-12-21
creator: MacDonald, G. E.;Peck, N. H.;New York State Agricultural Experiment Station.
viewed: 157
title: Bulletin: Number 825: Plant Response to Concentrated Superphosphate and Potassium Chloride Fertilizers I Pea (Pisum sativum L.)
abstract: 38 pages, 1 article*Plant Response to Concentrated Superphosphate and Potassium Chloride Fertilizers I Pea (Pisum sativum L.)* (Peck, N. H.; MacDonald, G. E.) 35 pages

url: http://hdl.handle.net/1813/4796
date: 2006-12-21
creator: New York State Agricultural Experiment Station.
viewed: 124
title: Bulletin: Number 826: Inspection of Commercial Feeds, Fertilizers, and Agricultural Liming Materials Sold in New York State
abstract: 57 pages, 1 article*Inspection of Commercial Feeds, Fertilizers, and Agricultural Liming Materials Sold in New York State* 56 pages

url: http://hdl.handle.net/1813/4797
date: 2006-12-21
creator: Page, H. L.;Clark, B. E.;New York State Agricultural Experiment Station.
viewed: 136
title: Bulletin: Number 827: Quality and Labeling of Seeds Sold in New York State in 1968
abstract: 48 pages, 1 article*Quality and Labeling of Seeds Sold in New York State in 1968* (Clark, B. E.; Page, H. L.) 46 pages

url: http://hdl.handle.net/1813/4798
date: 2006-12-21
creator: Breitfeld, H.;Fiori, B. J.;Gambrell, F. L.;Gyrisco, G. G.;Tashiro, H.;New York State Agricultural Experiment Station.
viewed: 222
title: Bulletin: Number 828: Biology of the European Chafer in Northeastern United States
abstract: 74 pages, 1 article*Biology of the European Chafer in Northeastern United States* (Tashiro, H.; Gyrisco, G. G.; Gambrell, F. L.; Fiori, B. J.; Breitfeld, H.) 73 pages

url: http://hdl.handle.net/1813/4799
date: 2006-12-21
creator: MacDonald, G. E.;Vittum, M. T.;Lathwell, D. J.;Peck, N. H.;New York State Agricultural Experiment Station.
viewed: 147
title: Bulletin: Number 829: Plant Response to Concentrated Superphosphate and Potassium Chloride Fertilizers II. Alfalfa (Medicago Sativa)
abstract: 15 pages, 1 article*Plant Response to Concentrated Superphosphate and Potassium Chloride Fertilizers II. Alfalfa (Medicago Sativa)* (Peck, N. H.; Lathwell, D. J.; Vittum, M. T.; MacDonald, G. E.) 13 pages

url: http://hdl.handle.net/1813/4800
date: 2006-12-21
creator: New York State Agricultural Experiment Station.
viewed: 133
title: Bulletin: Number 83
abstract: 36 pages, 3 articles*Insects Affecting Late Cabbage* 30 pages*Notes on the Stalk Borer* 1 page*Insecticides* 3 pages

url: http://hdl.handle.net/1813/4801
date: 2006-12-21
creator: Stamer, J. R.;Peck, N. H.;New York State Agricultural Experiment Station.
viewed: 161
title: Bulletin: Number 830: Plant Response to Concentrated Superphosphate and Potassium Chloride Fertilizers III. Cabbage (Brassica oleracea var. capitata)
abstract: 47 pages, 1 article*Plant Response to Concentrated Superphosphate and Potassium Chloride Fertilizers III. Cabbage (Brassica oleracea var. capitata)* (Peck, N. H.; Stamer, J. R.) 44 pages

url: http://hdl.handle.net/1813/4802
date: 2006-12-21
creator: New York State Agricultural Experiment Station.

viewed: 269
title: Bulletin: Number 831: Inspection of Commercial Feeds, Fertilizers, and Agricultural Liming Materials Sold in New York State
abstract: 132 pages, 1 article*Inspection of Commercial Feeds, Fertilizers, and Agricultural Liming Materials Sold in New York State* 130 pages

url: http://hdl.handle.net/1813/4803
date: 2006-12-21
creator: New York State Agricultural Experiment Station.
viewed: 261
title: Bulletin: Number 84: Spraying Pear and Apple Orchards in 1894
abstract: 37 pages, 1 article*Spraying Pear and Apple Orchards in 1894* 35 pages

url: http://hdl.handle.net/1813/4804
date: 2006-12-21
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 187
title: Bulletin: Number 118, Edition popular: Alfalfa: It's Value, Culture and Use
abstract: 7 pages, 1 article*Alfalfa: Its Value, Culture and Use* (Hall, F. H.) 5 pages

url: http://hdl.handle.net/1813/4805
date: 2006-12-21
creator: Stewart, F. C.;New York State Agricultural Experiment Station.
viewed: 174
title: Bulletin: Number 119: The Downy Mildew of the Cucumber; What It Is and How to Prevent It
abstract: 37 pages, 1 article*The Downy Mildew of the Cucumber; What It Is and How to Prevent It* (Stewart, F. C.) 34 pages

url: http://hdl.handle.net/1813/4806
date: 2006-12-21
creator: New York State Agricultural Experiment Station.
viewed: 118
title: Bulletin: Number 85: Analyses of Commercial Fertilizers Collected during the Fall of 1894
abstract: 30 pages, 1 article*Analyses of Commercial Fertilizers Collected during the Fall of 1894* 27 pages

url: http://hdl.handle.net/1813/4807
date: 2006-12-21
creator: New York State Agricultural Experiment Station.
viewed: 150
title: Bulletin: Number 86: Treatment of Common Diseases and Insects Injurious to Fruits and Vegetables
abstract: 57 pages, 1 article*Treatment of Common Diseases and Insects Injurious to Fruits and Vegetables* 54 pages

url: http://hdl.handle.net/1813/4808
date: 2006-12-21
creator: New York State Agricultural Experiment Station.
viewed: 166
title: Bulletin: Number 89: Comparative Profits Derived from Selling Milk, Butter, Cream and Cheese

abstract: 16 pages, 1 article*Comparative Profits Derived from Selling Milk, Butter, Cream and Cheese* 14 pages

url: http://hdl.handle.net/1813/4809
date: 2006-12-21
creator: Sturtevant, E. Lewis;New York State Agricultural Experiment Station.
viewed: 449
title: Bulletin: Number IX: Was It Poison, or Overfeeding?
abstract: 3 pages, 1 article*Was It Poison, or Overfeeding?* (Sturtevant, E. Lewis) 3 pages

url: http://hdl.handle.net/1813/4810
date: 2006-12-21
creator: New York State Agricultural Experiment Station.
viewed: 295
title: Bulletin: Number 90: Feeding Experiments with Laying Hens
abstract: 22 pages, 1 article*Feeding Experiments with Laying Hens* 20 pages

url: http://hdl.handle.net/1813/4811
date: 2006-12-21
creator: New York State Agricultural Experiment Station.
viewed: 136
title: Bulletin: Number 91
abstract: 23 pages, 2 articles*A New Strawberry* 2 pages*Notes on Strawberries, Raspberries, Blackberries, and Dewberries* 19 pages

url: http://hdl.handle.net/1813/4812
date: 2006-12-21
creator: New York State Agricultural Experiment Station.
viewed: 133
title: Bulletin: Number 92: Analyses of Commercial Fertilizers Collected during the Spring of 1895
abstract: 57 pages, 1 article*Analyses of Commercial Fertilizers Collected during the Spring of 1895* 55 pages

url: http://hdl.handle.net/1813/4813
date: 2006-12-21
creator: New York State Agricultural Experiment Station.
viewed: 127
title: Bulletin: Number 94: The Composition and Use of Fertilizers: Science Applied to Feeding Plants
abstract: 135 pages, 1 article*The Composition and Use of Fertilizers: Science Applied to Feeding Plants* 129 pages

url: http://hdl.handle.net/1813/4814
date: 2006-12-21
creator: Beach, S. A.;New York State Agricultural Experiment Station.
viewed: 166
title: Bulletin: Number 95: Currants
abstract: 34 pages, 1 article*Currants* (Beach, S. A.) 32 pages

url: http://hdl.handle.net/1813/4815
date: 2006-12-21
creator: Van Slyke, L. L.;New York State Agricultural Experiment Station.
viewed: 113
title: Bulletin: Number 96: Report of Analyses of Commercial Fertilizers Collected during the Fall of 1895
abstract: 47 pages, 1 article*Report of Analyses of Commercial Fertilizers Collected during the Fall of 1895* (Van Slyke, L. L.) 45 pages

url: http://hdl.handle.net/1813/4816
date: 2006-12-22
creator: Berkey, Arthur
viewed: 282
title: Factors influencing job satisfaction of lunchroom aides in selected New York State school districts
abstract: Positive psychological and material job satisfaction of employed persons is one primary index of a dynamic occupation. The purpose of this study is to provide data that may be used in development of viable occupations for non-instructional paraprofessionals in New York State school districts. To accomplish this purpose, selected occupational factors are analyzed in terms of their relationship to levels of lunchroom aide job satisfaction, and the satisfaction of significant others (principals and teachers) with the lunchroom aides' job performance.

url: http://hdl.handle.net/1813/4817
date: 2006-12-22
creator: Einset, J.;LaBelle, Robert;Cummins, James;Way, Roger
viewed: 240
title: Growing and processing the Wayne apple
abstract: Although several years of commercial experience have revealed some substantial problems in growing Wayne, it nevertheless has outstanding potential when properly managed in the orchard and handled for processing. Wayne cannot succeed if treated as a Greening or Baldwin. It requires the use of some special cultural techniques, as do most standard sorts. Wayne is in season with Mclntosh and may show the same sensitivity to tardy harvest or improper storage conditions. This publication documents the exceptional processing qualities of Wayne and suggests a production system for Wayne that has shown promise at the New York State Agricultural Experiment Station.

url: http://hdl.handle.net/1813/4818
date: 2006-12-22
creator: Terry, David;Lamb, Robert
viewed: 189
title: Peach and nectarine varieties for New York State
abstract: Judicial selection of peach and nectarine varieties is the key to a successful planting. Time devoted to studying the available varieties before planting is likely to be well spent. Variety characteristics, such as yield, quality, hardiness, disease resistance, and market adaptation, should be evaluated in view of your particular site and situation. Cultural practices, weather, and soil requirements involved in peach growing are covered in Cornell Information Bulletin 44, Peach Growing. This bulletin should be consulted before starting a new-peach planting.

url: http://hdl.handle.net/1813/4819
date: 2006-12-22
creator: Slate, G.;Ourecky, Donald

viewed: 247
title: Jewel Black Raspberry
abstract: The black raspberry is a native American fruit found growing in the wild from New England to the Carolinas. Plants are most frequently found in clearings or around the borders of fields. Early observers collected plants from the wild for planting into gardens where they respond very well to cultivation and freedom from competition. Many early American nurseries offered black raspberries for sale but did not list any varietal names. The first named variety seems to be the 'Ohio Everbearing' which was found by Nicholas Longworth of Cincinnati, Ohio in 1832 and offered for sale. This variety was more or less a novelty because it produced a fall crop. The summer crop was light, berries were small, and poor in quality.

url: http://hdl.handle.net/1813/4820
date: 2006-12-22
creator: Stafford, Thomas
viewed: 270
title: Methods and Costs of Distributing Beef to the Food-Service Industry
abstract: The food-away-from-home industry in the United States is a vast and complicated industry. Its size is difficult to measure since the components are so diverse, including not only all commercial eating and drinking places, but also places where food is served as a secondary activity, such as hotels, motels, department stores, drug stores, industrial plants, institutions, planes, trains, vending operations, schools, and military establishments.

url: http://hdl.handle.net/1813/4821
date: 2006-12-22
creator: Way, Roger
viewed: 379
title: Cherry Varieties in New York State
abstract: Red tart cherries in New York are almost all of one variety, Montmorency. About two-thirds are grown for freezing and the rest for canning. More than 75 per cent of the State's crop is harvested by machine. Mechanical harvesting has been facilitated by the use of ethephon to loosen the fruits. The cherry industry, however, has had setbacks by low prices, high labor costs, competition from other cherry growing areas, hurricanes just before harvest, killing spring frosts, and cold, rainy weather during bloom.

url: http://hdl.handle.net/1813/4822
date: 2006-12-22
creator: Robinson, W.;Iredale, H.;Lee, Chang
viewed: 198
title: Composition of experimental New York State grape brandies
abstract: Although New York State has no brandy distillation industry, it is possible that distillation may be developed in the future with increased grape and wine production and availability of considerable quantities of other fruits. A preliminary experimental distillation study on New York State wines was reported a few years ago from this laboratory (1). It was shown that a beverage brandy with desirable aroma can be produced from New York State's major grape, the Concord. It was suggested that brandy distillates should be prepared at the highest possible proof in order to reduce the presence of undesirable varietal aromas. As a series for study, we selected several of the major varieties of grapes grown in New York State and prepared brandy distillates by means of small laboratory-scale distillation equipment. This report summarizes the study on chemical constituents and organoleptic quality of the New York grape wine distillates.

url: http://hdl.handle.net/1813/4823

date: 2006-12-22
creator: Ourecky, Donald
viewed: 275
title: Fruit varieties in New York State: Berries
abstract: There are many good small fruit varieties available for home garden or commercial planting. The wide climatic variations and soil types within New York State influence the performance and recommendations on varieties. Nurserymen, commercial growers, processors, chain store buyers, and home gardeners all have definite ideas about the relative importance of different varietal characteristics.

url: http://hdl.handle.net/1813/4824
date: 2006-12-22
creator: Leagans, J. Paul
viewed: 201
title: Rural Development: An Emerging Social, Economic, and Demographic Imperative
abstract: America is passing through a social, economic, demographic, and technological evolution that is "unhitching" the rural development process from the modern agricultural development process. The purpose of this paper is to analyze some major dimensions of this trend and relate the implications to emerging opportunities of land-grant universities, government agencies, and business enterprises for broadened public service to rural modernization.

url: http://hdl.handle.net/1813/4825
date: 2006-12-22
creator: Norton, Richard;Cummins, James
viewed: 272
title: Apple rootstock problems and potentials
abstract: This publication is designed to assist the grower in anticipating problems which can occur with higher density orchards; such anticipation should enable the grower to avoid these pitfalls, to minimize the total effects of shortcomings, and to maximize the total utilization of the potential of modern orchard design. The rootstock-related problems described should not be interpreted as negating the value of dwarfing rootstocks and high density plantings.

url: http://hdl.handle.net/1813/4826
date: 2006-12-22
creator: Deay, Ardeth;Stutz, Frederick
viewed: 151
title: Community Reaction to Education Change
abstract: Change in public education is a continuous process. Though the pace of change may be an issue of some persons criticize the public schools for lagging in the face of needed reforms, while others see the schools as changing too much of the evidence over a long period shows that schooling tends to reflect the temper of the times. New curricula, standards, pedagogy, or modes of organization emerge regularly in response to changes in the society as these are reflected in
demands on public education.

url: http://hdl.handle.net/1813/4827
date: 2006-12-22
creator: Straub, Richard
viewed: 129
title: 1973 Sweet Corn Control Report

abstract: All tests were conducted in Ulster County, New York. Growing conditions in the spring of 1973 were characterized by exceedingly heavy rainfall; cold, wet soils; and cool temperatures. Due to these conditions, all plantings which were to be utilized for first brood borer tests yielded very poor stands and had to be replanted. Therefore, all tests were directed at second brood borer, corn earworm, and fall armyworm.

url: http://hdl.handle.net/1813/4828
date: 2006-12-22
creator: Beach, S. A.;Beach, S. A.;New York State Agricultural Experiment Station.
viewed: 198
title: Bulletin: Number 98
abstract: 23 pages, 2 articles*Plum Leaf Spot* (Beach, S. A.) 14 pages*Cherry Leaf Spot and Fruit Rot* (Beach, S. A.) 3 pages

url: http://hdl.handle.net/1813/4829
date: 2006-12-22
creator: Sirrine, F. A.;New York State Agricultural Experiment Station.
viewed: 176
title: Bulletin: Number 99: The Spinach-Leaf Maggot, or Miner
abstract: 16 pages, 1 article*The Spinach-Leaf Maggot, or Miner* (Sirrine, F. A.) 12 pages

url: http://hdl.handle.net/1813/4830
date: 2006-12-22
creator: Hedrick, U. P.;New York State Agricultural Experiment Station.
viewed: 285
title: Bulletin: Edition fiftieth annual report
abstract: 120 pages, 2 articles*Fiftieth Annual Report of the NYS Agric. Experiment Station* (Hedrick, U. P.) 99 pages*Meteorological Records, 1883-1930* 12 pages

url: http://hdl.handle.net/1813/4831
date: 2006-12-22
creator: Thatcher, R. W.;New York State Agricultural Experiment Station.
viewed: 267
title: Bulletin: Edition fortieth annual report: Fortieth Annual Report of the Board of Control of the NYS Agric. Exper. Station
abstract: 40 pages, 1 article*Fortieth Annual Report of the Board of Control of the NYS Agric. Exper. Station* (Thatcher, R. W.) 34 pages

url: http://hdl.handle.net/1813/4832
date: 2006-12-22
creator: Hedrick, U. P.;New York State Agricultural Experiment Station.
viewed: 229
title: Bulletin: Edition forty-eighth annual report: Forty-Eighth Annual Report of the NYS Agric. Experiment Station
abstract: 78 pages, 1 article*Forty-Eighth Annual Report of the NYS Agric. Experiment Station* (Hedrick, U. P.) 70 pages

url: http://hdl.handle.net/1813/4833
date: 2006-12-22

creator: Thatcher, R. W.;New York State Agricultural Experiment Station.
viewed: 380
title: Bulletin: Edition forty-fourth annual report: Forty-Fourth Annual Report of the NYS Agric. Experiment Station
abstract: 51 pages, 1 article*Forty-Fourth Annual Report of the NYS Agric. Experiment Station* (Thatcher, R. W.) 45 pages

url: http://hdl.handle.net/1813/4834
date: 2006-12-22
creator: Hedrick, U. P.;New York State Agricultural Experiment Station.
viewed: 228
title: Bulletin: Edition forty-ninth annual report: Forty-Ninth Annual Report of the NYS Agric. Experiment Station
abstract: 98 pages, 1 article*Forty-Ninth Annual Report of the NYS Agric. Experiment Station* (Hedrick, U. P.) 89 pages

url: http://hdl.handle.net/1813/4835
date: 2006-12-22
creator: Van Slyke, L. L.;New York State Agricultural Experiment Station.
viewed: 182
title: Bulletin: Number 116: Report of Analyses of Commercial Fertilizers for the Fall of 1896
abstract: 59 pages, 1 article*Report of Analyses of Commercial Fertilizers for the Fall of 1896* (Van Slyke, L. L.) 57 pages

url: http://hdl.handle.net/1813/4836
date: 2006-12-22
creator: Lowe, V. H.;New York State Agricultural Experiment Station.
viewed: 97
title: Bulletin: Number 212: Miscellaneous Notes on Injurious Insects II.
abstract: 36 pages, 1 article*Miscellaneous Notes on Injurious Insects II.* (Lowe, V. H.) 33 pages

url: http://hdl.handle.net/1813/4837
date: 2006-12-22
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 113
title: Bulletin: Number 212, Edition popular: Four Lesser Insect-Enemies
abstract: 12 pages, 1 article*Four Lesser Insect-Enemies* (Hall, F. H.) 10 pages

url: http://hdl.handle.net/1813/4838
date: 2006-12-22
creator: Sirrine, F. A.;New York State Agricultural Experiment Station.
viewed: 120
title: Bulletin: Number 213: Treatment for San Jose Scale in Orchards II.
abstract: 30 pages, 1 article*Treatment for San Jose Scale in Orchards II.* (Sirrine, F. A.) 28 pages

url: http://hdl.handle.net/1813/4839
date: 2006-12-22
creator: Hart, E. B.;Van Slyke, L. L.;New York State Agricultural Experiment Station.

viewed: 144
title: Bulletin: Number 214: A Study of Some of the Salts Formed by Casein and Paracasein with Acids: Their Relations to American Cheddar Cheese
abstract: 29 pages, 1 article*A Study of Some of the Salts Formed by Casein and Paracasein with Acids: Their Relations to American Cheddar Cheese* (Van Slyke, L. L.; Hart, E. B.) 27 pages

url: http://hdl.handle.net/1813/4840
date: 2006-12-22
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 100
title: Bulletin: Number 214-215, 219, 231, 233, 236-237, Edition popular: Some Changes in a Ripening Cheese
abstract: 14 pages, 1 article*Some Changes in a Ripening Cheese* (Hall, F. H.) 12 pages

url: http://hdl.handle.net/1813/4841
date: 2006-12-22
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 122
title: Bulletin: Number 394, Edition popular: Purity of Farm Seeds in 1914
abstract: 4 pages, 1 article*Purity of Farm Seeds in 1914* (Hall, F. H.) 3 pages

url: http://hdl.handle.net/1813/4842
date: 2006-12-22
creator: Howe, G. H.;New York State Agricultural Experiment Station.
viewed: 144
title: Bulletin: Number 396: Effect of Various Dressings on Pruning Wounds of Fruit Trees
abstract: 14 pages, 1 article*Effect of Various Dressings on Pruning Wounds of Fruit Trees* (Howe, G. H.) 12 pages

url: http://hdl.handle.net/1813/4843
date: 2006-12-22
creator: Munn, M. T.;New York State Agricultural Experiment Station.
viewed: 147
title: Bulletin: Number 397: Lime-Sulphur vs. Bordeaux Mixture as a Spray for Potatoes. III.
abstract: 15 pages, 1 article*Lime-Sulphur vs. Bordeaux Mixture as a Spray for Potatoes. III.* (Munn, M. T.) 13 pages

url: http://hdl.handle.net/1813/4844
date: 2006-12-22
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 146
title: Bulletin: Number 397, Edition popular: Lime-Sulphur Injurious to Potatoes
abstract: 2 pages, 1 article*Lime-Sulphur Injurious to Potatoes* (Hall, F. H.) 1 page

url: http://hdl.handle.net/1813/4845
date: 2006-12-22
creator: Brew, James D.;New York State Agricultural Experiment Station.
viewed: 170

title: Bulletin: Number 398: Milk Quality as Determined by Present Dairy Score Cards
abstract: 28 pages, 1 article*Milk Quality as Determined by Present Dairy Score Cards* (Brew, James D.) 26 pages

url: http://hdl.handle.net/1813/4846
date: 2006-12-22
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 126
title: Bulletin: Number 398, Edition popular: Do Low Scores Always Mean Poor Milk?
abstract: 11 pages, 1 article*Do Low Scores Always Mean Poor Milk?* (Hall, F. H.) 9 pages

url: http://hdl.handle.net/1813/4847
date: 2006-12-22
creator: Sirrine, F. A.;Stewart, F. C.;New York State Agricultural Experiment Station.
viewed: 198
title: Bulletin: Number 399: The Spindling-Sprout Disease of Potatoes
abstract: 16 pages, 1 article*The Spindling-Sprout Disease of Potatoes* (Stewart, F. C.; Sirrine, F. A.) 14 pages

url: http://hdl.handle.net/1813/4848
date: 2006-12-22
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 191
title: Bulletin: Number 399, Edition popular: "Spindling-Sprout" of Potatoes
abstract: 4 pages, 1 article*"Spindling-Sprout" of Potatoes* (Hall, F. H.) 2 pages

url: http://hdl.handle.net/1813/4849
date: 2006-12-22
creator: Sturtevant, E. Lewis;New York State Agricultural Experiment Station.
viewed: 202
title: Bulletin: Number IV: Oat experiment progress report
abstract: 3 pages, 1 article*Oat experiment progress report* (Sturtevant, E. Lewis) 3 pages

url: http://hdl.handle.net/1813/4850
date: 2006-12-22
creator: New York State Agricultural Experiment Station.
viewed: 130
title: Bulletin: Number 40: Black Knot of Plum and Cherry
abstract: 14 pages, 1 article*Black Knot of Plum and Cherry* 12 pages

url: http://hdl.handle.net/1813/4851
date: 2006-12-22
creator: Collison, R. C.;Barker, J. F.;New York State Agricultural Experiment Station.
viewed: 181
title: Bulletin: Number 400: Ground Limestone for Acid Soils
abstract: 22 pages, 1 article*Ground Limestone for Acid Soils* (Barker, J. F.; Collison, R. C.) 20 pages

url: http://hdl.handle.net/1813/4852

date: 2006-12-22
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 175
title: Bulletin: Number 400, Edition popular: Ground Limestone for Sour Soils
abstract: 8 pages, 1 article*Ground Limestone for Sour Soils* (Hall, F. H.) 7 pages

url: http://hdl.handle.net/1813/4853
date: 2006-12-22
creator: Hedrick, U. P.;New York State Agricultural Experiment Station.
viewed: 410
title: Bulletin: Number 403: New or Noteworthy Fruits. III.
abstract: 16 pages, 1 article*New or Noteworthy Fruits. III.* (Hedrick, U. P.) 13 pages

url: http://hdl.handle.net/1813/4854
date: 2006-12-22
creator: Van Slyke, L. L.;New York State Agricultural Experiment Station.
viewed: 146
title: Bulletin: Number 112: Economy in Using Fertilizers for Raising Potatoes
abstract: 16 pages, 1 article*Economy in Using Fertilizers for Raising Potatoes* (Van Slyke, L. L.) 13 pages

url: http://hdl.handle.net/1813/4855
date: 2006-12-22
creator: Jordan, W. H.;New York State Agricultural Experiment Station.
viewed: 1239
title: Bulletin: Number 115: Director's Report for 1896
abstract: 37 pages, 1 article*Director's Report for 1896* (Jordan, W. H.) 34 pages

url: http://hdl.handle.net/1813/4856
date: 2006-12-22
creator: Jordan, W. H.;New York State Agricultural Experiment Station.
viewed: 66
title: Bulletin: Number 211: Director's Report for 1901
abstract: 19 pages, 1 article*Director's Report for 1901* (Jordan, W. H.) 17 pages

url: http://hdl.handle.net/1813/4857
date: 2006-12-22
creator: New York State Agricultural Experiment Station.
viewed: 131
title: Bulletin: Number 404: Inspection of Feeding Stuffs
abstract: 116 pages, 1 article*Inspection of Feeding Stuffs* 114 pages

url: http://hdl.handle.net/1813/4858
date: 2006-12-22
creator: Stewart, F. C.;New York State Agricultural Experiment Station.
viewed: 251
title: Bulletin: Volume 405: Potato-Spraying Experiments at Rush in 1914
abstract: 7 pages, 1 article*Potato-Spraying Experiments at Rush in 1914* (Stewart, F. C.) 5 pages

url: http://hdl.handle.net/1813/4859
date: 2006-12-22
creator: Hedrick, U. P.;New York State Agricultural Experiment Station.
viewed: 297
title: Bulletin: Number 406: Dwarf Apples
abstract: 37 pages, 1 article*Dwarf Apples* (Hedrick, U. P.) 35 pages

url: http://hdl.handle.net/1813/4860
date: 2006-12-22
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 197
title: Bulletin: Number 406, Edition popular: Dwarf Apples Not Commercially Promising
abstract: 8 pages, 1 article*Dwarf Apples Not Commercially Promising* (Hall, F. H.) 7 pages

url: http://hdl.handle.net/1813/4861
date: 2006-12-22
creator: Hedrick, U. P.;New York State Agricultural Experiment Station.
viewed: 145
title: Bulletin: Number 407: The Blooming Season of Hardy Fruits
abstract: 27 pages, 1 article*The Blooming Season of Hardy Fruits* (Hedrick, U. P.) 25 pages

url: http://hdl.handle.net/1813/4862
date: 2006-12-22
creator: Hedrick, U. P.;New York State Agricultural Experiment Station.
viewed: 161
title: Bulletin: Number 408: Ripening Dates and Length of Season for Hardy Fruits
abstract: 28 pages, 1 article*Ripening Dates and Length of Season for Hardy Fruits* (Hedrick, U. P.) 26 pages

url: http://hdl.handle.net/1813/4863
date: 2006-12-22
creator: Kulp, W. L.;Ruehle, G. L. A.;New York State Agricultural Experiment Station.
viewed: 209
title: Bulletin: Number 409: Germ Content of Stable Air and Its Effect upon the Germ Content of Milk
abstract: 58 pages, 1 article*Germ Content of Stable Air and Its Effect upon the Germ Content of Milk* (Ruehle, G. L. A.; Kulp, W. L.) 56 pages

url: http://hdl.handle.net/1813/4864
date: 2006-12-22
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 139
title: Bulletin: Number 409, Edition popular: Milk Receives Few Bacteria from Stable Air
abstract: 11 pages, 1 article*Milk Receives Few Bacteria from Stable Air* (Hall, F. H.) 8 pages

url: http://hdl.handle.net/1813/4865
date: 2006-12-22
creator: New York State Agricultural Experiment Station.
viewed: 114

title: Bulletin: Number 41
abstract: 29 pages, 3 articles*Influence of Copper Compounds in Soils upon Vegetation* 12 pages*Results Obtained by Spraying with Fungicides for the Prevention of Potato Blight* 3 pages*Analyses of Materials Used in Spraying Plants* 12 pages

url: http://hdl.handle.net/1813/4866
date: 2006-12-22
creator: New York State Agricultural Experiment Station.
viewed: 111
title: Bulletin: Number 410: Report of Analyses of Samples of Commercial Fertilizers Collected by the Commissioner of Agriculture during 1915
abstract: 79 pages, 1 article*Report of Analyses of Samples of Commercial Fertilizers Collected by the Commissioner of Agriculture during 1915* 77 pages

url: http://hdl.handle.net/1813/4867
date: 2006-12-22
creator: Fulton, B. B.;Parrott, P. J.;New York State Agricultural Experiment Station.
viewed: 149
title: Bulletin: Number 411: The Cherry and Hawthorn Sawfly Leaf-Miner
abstract: 38 pages, 1 article*The Cherry and Hawthorn Sawfly Leaf-Miner* (Parrott, P. J.; Fulton, B. B.) 36 pages

url: http://hdl.handle.net/1813/4868
date: 2006-12-22
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 148
title: Bulletin: Number 411, Edition popular: A New Cherry and Hawthorn Pest
abstract: 6 pages, 1 article*A New Cherry and Hawthorn Pest* (Hall, F. H.) 5 pages

url: http://hdl.handle.net/1813/4869
date: 2006-12-22
creator: Breed, Robert S.;Dotterrer, W. D.;New York State Agricultural Experiment Station.
viewed: 144
title: Bulletin: Number 412: The Pasteurization of Dairy By-Products
abstract: 32 pages, 1 article*The Pasteurization of Dairy By-Products* (Dotterrer, W. D.; Breed, Robert S.) 30 pages

url: http://hdl.handle.net/1813/4870
date: 2006-12-22
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 164
title: Bulletin: Number 412, Edition popular: Why and How Pasteurize Dairy By-Products
abstract: 8 pages, 1 article*Why and How Pasteurize Dairy By-Products* (Hall, F. H.) 7 pages

url: http://hdl.handle.net/1813/4871
date: 2006-12-22
creator: Hedrick, U. P.;New York State Agricultural Experiment Station.
viewed: 144

title: Bulletin: Number 414: New or Noteworthy Fruits. IV.
abstract: 15 pages, 1 article*New or Noteworthy Fruits. IV.* (Hedrick, U. P.) 13 pages

url: http://hdl.handle.net/1813/4872
date: 2006-12-22
creator: Lathrop, F. H.;Hodgkiss, H. E.;Parrott, P. J.;New York State Agricultural Experiment Station.
viewed: 144
title: Bulletin: Number 415: Plant Lice Injurious to Apple Orchards. I.
abstract: 53 pages, 1 article*Plant Lice Injurious to Apple Orchards. I. * (Parrott, P. J.; Hodgkiss, H. E.; Lathrop, F. H.) 51 pages

url: http://hdl.handle.net/1813/4873
date: 2006-12-22
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 133
title: Bulletin: Number 415, Edition popular: Apple Aphides and Their Control
abstract: 11 pages, 1 article*Apple Aphides and Their Control* (Hall, F. H.) 9 pages

url: http://hdl.handle.net/1813/4874
date: 2006-12-22
creator: Munn, M. T.;New York State Agricultural Experiment Station.
viewed: 154
title: Bulletin: Number 416: Seed Tests Made at the Station during 1915
abstract: 22 pages, 1 article*Seed Tests Made at the Station during 1915* (Munn, M. T.) 20 pages

url: http://hdl.handle.net/1813/4875
date: 2006-12-22
creator: Anthony, R. D.;New York State Agricultural Experiment Station.
viewed: 162
title: Bulletin: Number 417: Some Notes on the Breeding of Raspberries
abstract: 24 pages, 1 article*Some Notes on the Breeding of Raspberries* (Anthony, R. D.) 22 pages

url: http://hdl.handle.net/1813/4876
date: 2006-12-22
creator: Van Slyke, L. L.;New York State Agricultural Experiment Station.
viewed: 274
title: Bulletin: Number 110: Milk-Fat and Cheese Yield
abstract: 32 pages, 1 article*Milk-Fat and Cheese Yield* (Van Slyke, L. L.) 30 pages

url: http://hdl.handle.net/1813/4877
date: 2006-12-22
creator: Paddock, Wendell;New York State Agricultural Experiment Station.
viewed: 205
title: Bulletin: Number 111: Variety Tests with Blackberries, Dewberries and Raspberries
abstract: 16 pages, 1 article*Variety Tests with Blackberries, Dewberries and Raspberries* (Paddock, Wendell) 14 pages

url: http://hdl.handle.net/1813/4878

date: 2006-12-22
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 99
title: Bulletin: Number 210, Edition popular: How Changes in Feed Affect the Yield of Milk
abstract: 8 pages, 1 article*How Changes in Feed Affect the Yield of Milk* (Hall, F. H.) 6 pages

url: http://hdl.handle.net/1813/4879
date: 2006-12-22
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 181
title: Bulletin: Number 417, Edition popular: Breeding Raspberries
abstract: 4 pages, 1 article*Breeding Raspberries* (Hall, F. H.) 3 pages

url: http://hdl.handle.net/1813/4880
date: 2006-12-22
creator: Wellington, J. W.;New York State Agricultural Experiment Station.
viewed: 240
title: Bulletin: Volume 418: Culture and Forcing of Witloof Chicory
abstract: 15 pages, 1 article*Culture and Forcing of Witloof Chicory* (Wellington, J. W.) 13 pages

url: http://hdl.handle.net/1813/4881
date: 2006-12-22
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 161
title: Bulletin: Number 418, Edition popular: Witloof Chicory
abstract: 6 pages, 1 article*Witloof Chicory* (Hall, F. H.) 5 pages

url: http://hdl.handle.net/1813/4882
date: 2006-12-22
creator: Minns, J.;Lienk, S.
viewed: 117
title: 1973 European red mite control evaluations
abstract: Although six species of tetranychid mites have been reported as attacking apple in New York, only the European red mite, Panonychus ulmi (Koch), is at present of general economic concern. Occasionally, the two-spotted spider mite, Tetranychus urticae Koch, is troublesome late in the growing season. Such infestations, however, are sporadic and localized. Acaricidal evaluations in 1973 were conducted only against the European red mite.

url: http://hdl.handle.net/1813/4883
date: 2006-12-22
creator: Schoene, W. J.;New York State Agricultural Experiment Station.
viewed: 146
title: Bulletin: Number 419: The Cabbage Maggot: Its Biology and Control
abstract: 72 pages, 1 article*The Cabbage Maggot: Its Biology and Control* (Schoene, W. J.) 70 pages

url: http://hdl.handle.net/1813/4884
date: 2006-12-22
creator: Hall, F. H.;New York State Agricultural Experiment Station.

viewed: 151
title: Bulletin: Number 419, Edition popular: The Cabbage Maggot and its Work
abstract: 10 pages, 1 article*The Cabbage Maggot and its Work* (Hall, F. H.) 8 pages

url: http://hdl.handle.net/1813/4885
date: 2006-12-22
creator: New York State Agricultural Experiment Station.
viewed: 109
title: Bulletin: Number 42: Analyses of Commercail Fertilizers
abstract: 20 pages, 1 article*Analyses of Commercail Fertilizers* 18 pages

url: http://hdl.handle.net/1813/4886
date: 2006-12-22
creator: New York State Agricultural Experiment Station.
viewed: 113
title: Bulletin: Number 420: Inspection of Feeding Stuffs
abstract: 151 pages, 1 article*Inspection of Feeding Stuffs* 149 pages

url: http://hdl.handle.net/1813/4887
date: 2006-12-22
creator: Glasgow, H.;Parrott, P. J.;New York State Agricultural Experiment Station.
viewed: 161
title: Bulletin: Number 422: The Radish Maggot
abstract: 33 pages, 1 article*The Radish Maggot* (Parrott, P. J.; Glasgow, H.) 31 pages

url: http://hdl.handle.net/1813/4888
date: 2006-12-22
creator: Hodgkiss, H. E.;Parrott, P. J.;New York State Agricultural Experiment Station.
viewed: 138
title: Bulletin: Number 423: Miscellaneous Notes on Injurious Insects
abstract: 39 pages, 1 article*Miscellaneous Notes on Injurious Insects* (Parrott, P. J.; Hodgkiss, H. E.) 37 pages

url: http://hdl.handle.net/1813/4889
date: 2006-12-22
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 160
title: Bulletin: Number 423, Edition popular: Some New or Rare Fruit Pests
abstract: 8 pages, 1 article*Some New or Rare Fruit Pests* (Hall, F. H.) 7 pages

url: http://hdl.handle.net/1813/4890
date: 2006-12-22
creator: Jordan, W. H.;New York State Agricultural Experiment Station.
viewed: 455
title: Bulletin: Number 424: Measurements of Soil Fertility
abstract: 26 pages, 1 article*Measurements of Soil Fertility* (Jordan, W. H.) 24 pages

url: http://hdl.handle.net/1813/4891

date: 2006-12-22
creator: New York State Agricultural Experiment Station.
viewed: 115
title: Bulletin: Number 425: Report of Analyses of Samples of Commercial Fertilizers Collected by the Commissioner of Agriculture during 1916
abstract: 61 pages, 1 article*Report of Analyses of Samples of Commercial Fertilizers Collected by the Commissioner of Agriculture during 1916* 59 pages

url: http://hdl.handle.net/1813/4892
date: 2006-12-22
creator: Mix, A. J.;New York State Agricultural Experiment Station.
viewed: 131
title: Bulletin: Number 426: Cork, Drouth Spot and Related Diseases of the Apple
abstract: 64 pages, 1 article*Cork, Drouth Spot and Related Diseases of the Apple* (Mix, A. J.) 62 pages

url: http://hdl.handle.net/1813/4893
date: 2006-12-22
creator: Hedrick, U. P.;New York State Agricultural Experiment Station.
viewed: 126
title: Bulletin: Number 427: New or Noteworthy Fruits. V.
abstract: 14 pages, 1 article*New or Noteworthy Fruits. V.* (Hedrick, U. P.) 12 pages

url: http://hdl.handle.net/1813/4894
date: 2006-12-22
creator: Jordan, W. H.;New York State Agricultural Experiment Station.
viewed: 105
title: Bulletin: Number 428: Director's Report for 1916
abstract: 30 pages, 1 article*Director's Report for 1916* (Jordan, W. H.) 28 pages

url: http://hdl.handle.net/1813/4895
date: 2006-12-22
creator: Smith, G. A.;Jordan, W. H.;New York State Agricultural Experiment Station.
viewed: 177
title: Bulletin: Number 429: Goat's Milk for Infant Feeding
abstract: 22 pages, 1 article*Goat's Milk for Infant Feeding* (Jordan, W. H.; Smith, G. A.) 20 pages

url: http://hdl.handle.net/1813/4896
date: 2006-12-22
creator: New York State Agricultural Experiment Station.
viewed: 92
title: Bulletin: Number 43: Experiments in the Manufacture of Cheese during May
abstract: 52 pages, 1 article*Experiments in the Manufacture of Cheese during May* 51 pages

url: http://hdl.handle.net/1813/4897
date: 2006-12-22
creator: Baer, W. W.;Barker, J. F.;New York State Agricultural Experiment Station.
viewed: 135
title: Bulletin: Number 430: Ground Limestone for Use in New York State

abstract: 18 pages, 1 article*Ground Limestone for Use in New York State* (Barker, J. F.; Baer, W. W.) 16 pages

url: http://hdl.handle.net/1813/4898
date: 2006-12-22
creator: Lathrop, F. H.;Hodgkiss, H. E.;Parrott, P. J.;New York State Agricultural Experiment Station.
viewed: 514
title: Bulletin: Number 431: Plant Lice Injurious to Apple Orchards. II.
abstract: 50 pages, 1 article*Plant Lice Injurious to Apple Orchards. II.* (Parrott, P. J.; Hodgkiss, H. E.; Lathrop, F. H.) 47 pages

url: http://hdl.handle.net/1813/4899
date: 2006-12-22
creator: Paddock, Wendell;New York State Agricultural Experiment Station.
viewed: 148
title: Bulletin: Number 109: Strawberries
abstract: 23 pages, 1 article*Strawberries* (Paddock, Wendell) 20 pages

url: http://hdl.handle.net/1813/4900
date: 2006-12-22
creator: Goff, Emmett S.;New York State Agricultural Experiment Station.
viewed: 103
title: Bulletin: Number 11: Horticultural Department
abstract: 11 pages, 1 article*Horticultural Department* (Goff, Emmett S.) 9 pages

url: http://hdl.handle.net/1813/4901
date: 2006-12-22
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 172
title: Bulletin: Number 208, Edition popular: Fertilizers for Forcing Lettuce
abstract: 8 pages, 1 article*Fertilizers for Forcing Lettuce* (Hall, F. H.) 6 pages

url: http://hdl.handle.net/1813/4902
date: 2006-12-22
creator: Sirrine, F. A.;New York State Agricultural Experiment Station.
viewed: 130
title: Bulletin: Number 209: Treatment for San Jose Scale in Orchards: I. Orchard Fumigation
abstract: 37 pages, 1 article*Treatment for San Jose Scale in Orchards: I. Orchard Fumigation* (Sirrine, F. A.) 36 pages

url: http://hdl.handle.net/1813/4903
date: 2006-12-22
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 102
title: Bulletin: Number 209, 213, Edition popular: Treating San Jose Scale in Southeastern New York
abstract: 8 pages, 1 article*Treating San Jose Scale in Southeastern New York* (Hall, F. H.) 6 pages

url: http://hdl.handle.net/1813/4904

date: 2006-12-22
creator: New York State Agricultural Experiment Station.
viewed: 133
title: Bulletin: Number 21: Testing of Dairy Breeds
abstract: 48 pages, 1 article*Testing of Dairy Breeds* 46 pages

url: http://hdl.handle.net/1813/4905
date: 2006-12-22
creator: Wheeler, W. P.;New York State Agricultural Experiment Station.
viewed: 116
title: Bulletin: Number 210: The Immediate Effect on Milk Production of Changes in the Ration
abstract: 63 pages, 1 article*The Immediate Effect on Milk Production of Changes in the Ration* (Wheeler, W. P.) 59 pages

url: http://hdl.handle.net/1813/4906
date: 2006-12-22
creator: Anthony, R. D.;New York State Agricultural Experiment Station.
viewed: 217
title: Bulletin: Number 432: Vinifera Grapes in New York
abstract: 33 pages, 1 article*Vinifera Grapes in New York* (Anthony, R. D.) 30 pages

url: http://hdl.handle.net/1813/4907
date: 2006-12-22
creator: Gladwin, F. E.;New York State Agricultural Experiment Station.
viewed: 112
title: Bulletin: Number 433: Winter Injury of Grapes
abstract: 43 pages, 1 article*Winter Injury of Grapes* (Gladwin, F. E.) 41 pages

url: http://hdl.handle.net/1813/4908
date: 2006-12-22
creator: New York State Agricultural Experiment Station.
viewed: 121
title: Bulletin: Number 434: Inspection of Feeding Stuffs
abstract: 171 pages, 1 article*Inspection of Feeding Stuffs* 169 pages

url: http://hdl.handle.net/1813/4909
date: 2006-12-22
creator: Wellington, J. W.;New York State Agricultural Experiment Station.
viewed: 150
title: Bulletin: Number 435: Culture of the Globe Artichoke
abstract: 13 pages, 1 article*Culture of the Globe Artichoke* (Wellington, J. W.) 11 pages

url: http://hdl.handle.net/1813/4910
date: 2006-12-22
creator: Mix, A. J.;Stewart, F. C.;New York State Agricultural Experiment Station.
viewed: 166
title: Bulletin: Number 436: Blackheart and the Aeration of Potatoes in Storage
abstract: 54 pages, 1 article*Blackheart and the Aeration of Potatoes in Storage* (Stewart, F. C.; Mix, A. J.)

52 pages

url: http://hdl.handle.net/1813/4911
date: 2006-12-22
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 129
title: Bulletin: Number 436, Edition popular: Poor Ventiliation Injures Stored Potatoes
abstract: 11 pages, 1 article*Poor Ventiliation Injures Stored Potatoes* (Hall, F. H.) 9 pages

url: http://hdl.handle.net/1813/4912
date: 2006-12-22
creator: Munn, M. T.;New York State Agricultural Experiment Station.
viewed: 170
title: Bulletin: Number 437: Neck-Rot Disease of Onions
abstract: 107 pages, 1 article*Neck-Rot Disease of Onions* (Munn, M. T.) 103 pages

url: http://hdl.handle.net/1813/4913
date: 2006-12-22
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 169
title: Bulletin: Number 437, Edition popular: Onion Neck-Rot in Storage Houses
abstract: 8 pages, 1 article*Onion Neck-Rot in Storage Houses* (Hall, F. H.) 7 pages

url: http://hdl.handle.net/1813/4914
date: 2006-12-22
creator: Hastings, E. G.;Stocking, W. A. Jr.;Harding, H. A.;Breed, R. S.;New York State Agricultural Experiment Station.
viewed: 176
title: Bulletin: Number 438: What is Meant by "Quality" in Milk
abstract: 20 pages, 1 article*What is Meant by "Quality" in Milk* (Breed, R. S.; Harding, H. A.; Stocking, W. A. Jr.; Hastings, E. G.) 17 pages

url: http://hdl.handle.net/1813/4915
date: 2006-12-22
creator: Dotterrer, W. D.;Brew, James D.;New York State Agricultural Experiment Station.
viewed: 171
title: Bulletin: Number 439: The Number of Bacteria in Milk
abstract: 48 pages, 1 article*The Number of Bacteria in Milk* (Brew, James D.; Dotterrer, W. D.) 44 pages

url: http://hdl.handle.net/1813/4916
date: 2006-12-22
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 120
title: Bulletin: Number 439, Edition popular: How Bacteria in Milk are Counted
abstract: 11 pages, 1 article*How Bacteria in Milk are Counted* (Hall, F. H.) 9 pages

url: http://hdl.handle.net/1813/4917
date: 2006-12-22

creator: New York State Agricultural Experiment Station.
viewed: 109
title: Bulletin: Number 44: Strawberries
abstract: 11 pages, 1 article*Strawberries* 9 pages

url: http://hdl.handle.net/1813/4918
date: 2006-12-22
creator: New York State Agricultural Experiment Station.
viewed: 136
title: Bulletin: Number 440: Report of Analyses of Samples of Commercial Fertilizers Collected by the Commissioner of Agriculture during 1917
abstract: 64 pages, 1 article*Report of Analyses of Samples of Commercial Fertilizers Collected by the Commissioner of Agriculture during 1917* 62 pages

url: http://hdl.handle.net/1813/4919
date: 2006-12-22
creator: New York State Agricultural Experiment Station.
viewed: 131
title: Bulletin: Number 441: Inspection of Feeding Stuffs
abstract: 109 pages, 1 article*Inspection of Feeding Stuffs* 107 pages

url: http://hdl.handle.net/1813/4920
date: 2006-12-22
creator: Van Slyke, L. L.;New York State Agricultural Experiment Station.
viewed: 241
title: Bulletin: Number 107: Report of Analyses of Commercial Fertilizers for the Spring of 1896
abstract: 63 pages, 1 article*Report of Analyses of Commercial Fertilizers for the Spring of 1896* (Van Slyke, L. L.) 61 pages

url: http://hdl.handle.net/1813/4921
date: 2006-12-22
creator: Van Slyke, L. L.;New York State Agricultural Experiment Station.
viewed: 131
title: Bulletin: Number 108: The Real Value of "Natural Plant Food"
abstract: 8 pages, 1 article*The Real Value of "Natural Plant Food"* (Van Slyke, L. L.) 6 pages

url: http://hdl.handle.net/1813/4922
date: 2006-12-22
creator: Arthur, J. C.;New York State Agricultural Experiment Station.
viewed: 204
title: Bulletin: Number II (2): Pear blight progress report
abstract: 4 pages, 1 article*Pear blight progress report* (Arthur, J. C.) 4 pages

url: http://hdl.handle.net/1813/4923
date: 2006-12-22
creator: Hasselbring, H.;Beach, S. A.;New York State Agricultural Experiment Station.
viewed: 154
title: Bulletin: Number 208: Stable Manure and Nitrogenous Chemical Fertilizers for Forcing Lettuce

abstract: 48 pages, 1 article*Stable Manure and Nitrogenous Chemical Fertilizers for Forcing Lettuce* (Beach, S. A.; Hasselbring, H.) 46 pages

url: http://hdl.handle.net/1813/4924
date: 2006-12-22
creator: Brew, James D.;Breed, Robert S.;New York State Agricultural Experiment Station.
viewed: 145
title: Bulletin: Number 443: The Control of Bacteria in Market Milk by Direct Microscopic Examination
abstract: 32 pages, 1 article*The Control of Bacteria in Market Milk by Direct Microscopic Examination* (Breed, Robert S.; Brew, James D.) 30 pages

url: http://hdl.handle.net/1813/4925
date: 2006-12-22
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 215
title: Bulletin: Number 443, Edition popular: Using the Microscope in Milk Grading
abstract: 10 pages, 1 article*Using the Microscope in Milk Grading* (Hall, F. H.) 8 pages

url: http://hdl.handle.net/1813/4926
date: 2006-12-22
creator: Hartzell, F. Z.;New York State Agricultural Experiment Station.
viewed: 153
title: Bulletin: Number 444: The Cherry Leaf-Beetle
abstract: 84 pages, 1 article*The Cherry Leaf-Beetle* (Hartzell, F. Z.) 80 pages

url: http://hdl.handle.net/1813/4927
date: 2006-12-22
creator: Jordan, W. H.;New York State Agricultural Experiment Station.
viewed: 119
title: Bulletin: Number 445: Director's Report for 1917
abstract: 26 pages, 1 article*Director's Report for 1917* (Jordan, W. H.) 24 pages

url: http://hdl.handle.net/1813/4928
date: 2006-12-22
creator: Munn, M. T.;New York State Agricultural Experiment Station.
viewed: 108
title: Bulletin: Number 446: Seed Tests Made at the Station during 1916-1917
abstract: 55 pages, 1 article*Seed Tests Made at the Station during 1916-1917* (Munn, M. T.) 53 pages

url: http://hdl.handle.net/1813/4929
date: 2006-12-22
creator: Taylor, O. M.;New York State Agricultural Experiment Station.
viewed: 287
title: Bulletin: Number 447: Newer Varieties of Strawberries
abstract: 35 pages, 1 article*Newer Varieties of Strawberries* (Taylor, O. M.) 33 pages

url: http://hdl.handle.net/1813/4930
date: 2006-12-22

creator: Taylor, O. M.;New York State Agricultural Experiment Station.
viewed: 148
title: Bulletin: Number 447, Edition abridged: Newer Varieties of Strawberries
abstract: 10 pages, 1 article*Newer Varieties of Strawberries* (Taylor, O. M.) 8 pages

url: http://hdl.handle.net/1813/4931
date: 2006-12-22
creator: Stewart, F. C.;New York State Agricultural Experiment Station.
viewed: 178
title: Bulletin: Number 448: The Velvet-Stemmed Collybia--A Wild Winter Mushroom
abstract: 32 pages, 1 article*The Velvet-Stemmed Collybia--A Wild Winter Mushroom* (Stewart, F. C.) 30 pages

url: http://hdl.handle.net/1813/4932
date: 2006-12-22
creator: Gladwin, F. E.;New York State Agricultural Experiment Station.
viewed: 293
title: Bulletin: Number 449: A Non-Parasitic Malady of the Vine
abstract: 17 pages, 1 article*A Non-Parasitic Malady of the Vine* (Gladwin, F. E.) 15 pages

url: http://hdl.handle.net/1813/4933
date: 2006-12-22
creator: Smith, Geo. A.;Breed, Robert S.;Ruehle, G. L. A.;New York State Agricultural Experiment Station.
viewed: 315
title: Bulletin: Number 450: Milking Machines: III and IV
abstract: 71 pages, 1 article*Milking Machines: III and IV* (Ruehle, G. L. A.; Breed, Robert S.; Smith, Geo. A.) 69 pages

url: http://hdl.handle.net/1813/4934
date: 2006-12-22
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 201
title: Bulletin: Number 450, Edition popular: Control of Bacteria in Milking Machines
abstract: 15 pages, 1 article*Control of Bacteria in Milking Machines* (Hall, F. H.) 13 pages

url: http://hdl.handle.net/1813/4935
date: 2006-12-22
creator: Lathrop, F. H.;New York State Agricultural Experiment Station.
viewed: 630
title: Bulletin: Number 451: Leaf-Hoppers Injurious to Apple Trees
abstract: 22 pages, 1 article*Leaf-Hoppers Injurious to Apple Trees* (Lathrop, F. H.) 20 pages

url: http://hdl.handle.net/1813/4936
date: 2006-12-22
creator: Lathrop, F. H.;New York State Agricultural Experiment Station.
viewed: 305
title: Bulletin: Number 451, Edition popular: Leaf-Hoppers Injurious to Apple Trees
abstract: 6 pages, 1 article*Leaf-Hoppers Injurious to Apple Trees* (Lathrop, F. H.) 4 pages

url: http://hdl.handle.net/1813/4937
date: 2006-12-22
creator: Hartzell, F. Z.;New York State Agricultural Experiment Station.
viewed: 128
title: Bulletin: Number 453: Experiments for the Control of the Grape Root-Worm
abstract: 90 pages, 1 article*Experiments for the Control of the Grape Root-Worm* (Hartzell, F. Z.) 86 pages

url: http://hdl.handle.net/1813/4938
date: 2006-12-22
creator: New York State Agricultural Experiment Station.
viewed: 140
title: Bulletin: Number 454: Analyses of Materials Sold as Insecticides and Fungicides
abstract: 15 pages, 1 article*Analyses of Materials Sold as Insecticides and Fungicides* 13 pages

url: http://hdl.handle.net/1813/4939
date: 2006-12-22
creator: New York State Agricultural Experiment Station.
viewed: 123
title: Bulletin: Number 455: Inspection of Feeding Stuffs
abstract: 172 pages, 1 article*Inspection of Feeding Stuffs* 170 pages

url: http://hdl.handle.net/1813/4940
date: 2006-12-22
creator: Breed, Robert S.;New York State Agricultural Experiment Station.
viewed: 156
title: Bulletin: Number 456: Questions Concerning the Control of a City Milk Supply Answered
abstract: 10 pages, 1 article*Questions Concerning the Control of a City Milk Supply Answered* (Breed, Robert S.) 8 pages

url: http://hdl.handle.net/1813/4941
date: 2006-12-22
creator: Jordan, W. H.;New York State Agricultural Experiment Station.
viewed: 121
title: Bulletin: Number 457: Director's Report for 1918
abstract: 25 pages, 1 article*Director's Report for 1918* (Jordan, W. H.) 23 pages

url: http://hdl.handle.net/1813/4942
date: 2006-12-22
creator: Gladwin, Fred E.;New York State Agricultural Experiment Station.
viewed: 125
title: Bulletin: Number 458: A Test of Commercial Fertilizers for Grapes
abstract: 19 pages, 1 article*A Test of Commercial Fertilizers for Grapes* (Gladwin, Fred E.) 17 pages

url: http://hdl.handle.net/1813/4943
date: 2006-12-22
creator: Van Slyke, L. L.;New York State Agricultural Experiment Station.

viewed: 291
title: Bulletin: Number 105: Effects of Drouth upon Milk Production
abstract: 24 pages, 1 article*Effects of Drouth upon Milk Production* (Van Slyke, L. L.) 22 pages

url: http://hdl.handle.net/1813/4944
date: 2006-12-22
creator: Wheeler, Wm. P.;New York State Agricultural Experiment Station.
viewed: 222
title: Bulletin: Number 106: Feeding Experiments with Laying Hens. The Relative Efficiency of Whole and Ground Grains
abstract: 12 pages, 1 article*Feeding Experiments with Laying Hens. The Relative Efficiency of Whole and Ground Grains* (Wheeler, Wm. P.) 10 pages

url: http://hdl.handle.net/1813/4945
date: 2006-12-22
creator: New York State Agricultural Experiment Station.
viewed: 130
title: Bulletin: Number 20: Pedigrees of Dairy Animals Under Investigation
abstract: 31 pages, 1 article*Pedigrees of Dairy Animals Under Investigation* 29 pages

url: http://hdl.handle.net/1813/4946
date: 2006-12-22
creator: Shaulis, Nelson;Lider, L.
viewed: 185
title: Resistant rootstocks for new York vineyards
abstract: The grape industry in New York is interested in establishing new vineyards of both old and new varieties. Because there are not enough choice sites available, some will be replantings of old vineyards, others may be on shallow soils. To assume success in such situations, there is a need for vines grafted upon resistant rootstocks.

url: http://hdl.handle.net/1813/4947
date: 2006-12-22
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 109
title: Bulletin: Number 207, Edition popular: How Can Loss of Weight be Controlled in Cheese Curing
abstract: 8 pages, 1 article*How Can Loss of Weight be Controlled in Cheese Curing* (Hall, F. H.) 8 pages

url: http://hdl.handle.net/1813/4948
date: 2006-12-22
creator: Stewart, F. C.;New York State Agricultural Experiment Station.
viewed: 121
title: Bulletin: Number 459: Missing Hills in Potato Fields: Their Effect upon the Yield
abstract: 27 pages, 1 article*Missing Hills in Potato Fields: Their Effect upon the Yield* (Stewart, F. C.) 25 pages

url: http://hdl.handle.net/1813/4949
date: 2006-12-22
creator: New York State Agricultural Experiment Station.

viewed: 94
title: Bulletin: Number 46
abstract: 59 pages, 2 articles*Experiments in the Manufacture of Cheese during July* 28 pages*Experiments in the Manufacture of Cheese during August* 30 pages

url: http://hdl.handle.net/1813/4950
date: 2006-12-22
creator: Anthony, R. D.;Hedrick, U. P.;New York State Agricultural Experiment Station.
viewed: 319
title: Bulletin: Number 460: Twenty Years of Fertilizers in an Apple Orchard
abstract: 28 pages, 1 article*Twenty Years of Fertilizers in an Apple Orchard* (Hedrick, U. P.; Anthony, R. D.) 26 pages

url: http://hdl.handle.net/1813/4951
date: 2006-12-22
creator: Hodgkiss, H. E.;New York State Agricultural Experiment Station.
viewed: 238
title: Bulletin: Number 461: Control of Green Apple Aphis in Bearing Orchards
abstract: 50 pages, 1 article*Control of Green Apple Aphis in Bearing Orchards* (Hodgkiss, H. E.) 48 pages

url: http://hdl.handle.net/1813/4952
date: 2006-12-22
creator: Munn, M. T.;New York State Agricultural Experiment Station.
viewed: 162
title: Bulletin: Number 462: Seed Tests Made at the Station during 1918
abstract: 24 pages, 1 article*Seed Tests Made at the Station during 1918* (Munn, M. T.) 22 pages

url: http://hdl.handle.net/1813/4953
date: 2006-12-22
creator: Stewart, F. C.;New York State Agricultural Experiment Station.
viewed: 114
title: Bulletin: Number 463: Notes on New York Plant Diseases, II
abstract: 42 pages, 1 article*Notes on New York Plant Diseases, II* (Stewart, F. C.) 40 pages

url: http://hdl.handle.net/1813/4954
date: 2006-12-22
creator: Gladwin, F. E.;New York State Agricultural Experiment Station.
viewed: 148
title: Bulletin: Number 464: A Test of Methods in Pruning the Concord Grape in the Chautauqua Grape Belt
abstract: 37 pages, 1 article*A Test of Methods in Pruning the Concord Grape in the Chautauqua Grape Belt* (Gladwin, F. E.) 35 pages

url: http://hdl.handle.net/1813/4955
date: 2006-12-22
creator: Churchill, G. W.;Jordan, W. H.;New York State Agricultural Experiment Station.
viewed: 286

title: Bulletin: Number 465: An Experience in Crop Production
abstract: 22 pages, 1 article*An Experience in Crop Production* (Jordan, W. H.; Churchill, G. W.) 20 pages

url: http://hdl.handle.net/1813/4956
date: 2006-12-22
creator: Munn, M. T.;New York State Agricultural Experiment Station.
viewed: 298
title: Bulletin: Number 466, Part : Spraying Lawns with Iron Sulfate to Eradicate Dandelions
abstract: 8 pages, 1 article*Spraying Lawns with Iron Sulfate to Eradicate Dandelions* (Munn, M. T.) 6 pages

url: http://hdl.handle.net/1813/4957
date: 2006-12-22
creator: New York State Agricultural Experiment Station.
viewed: 228
title: Bulletin: Number 467: Report of Analyses of Samples of Commercial Fertilizers Collected by the Commissioner of Agriculture during 1919
abstract: 54 pages, 1 article*Report of Analyses of Samples of Commercial Fertilizers Collected by the Commissioner of Agriculture during 1919* 52 pages

url: http://hdl.handle.net/1813/4958
date: 2006-12-22
creator: Wheeler, W. P.;New York State Agricultural Experiment Station.
viewed: 132
title: Bulletin: Number 468: Studies Relating to Calcium Metabolism
abstract: 43 pages, 1 article*Studies Relating to Calcium Metabolism* (Wheeler, W. P.) 41 pages

url: http://hdl.handle.net/1813/4959
date: 2006-12-22
creator: Wheeler, W. P.;New York State Agricultural Experiment Station.
viewed: 152
title: Bulletin: Number 468, Edition popular: Something about Calcium in the Body
abstract: 11 pages, 1 article*Something about Calcium in the Body* (Wheeler, W. P.) 9 pages

url: http://hdl.handle.net/1813/4960
date: 2006-12-22
creator: New York State Agricultural Experiment Station.
viewed: 154
title: Bulletin: Number 469: Inspection of Feeding Stuffs
abstract: 319 pages, 1 article*Inspection of Feeding Stuffs* 317 pages

url: http://hdl.handle.net/1813/4961
date: 2006-12-22
creator: New York State Agricultural Experiment Station.
viewed: 97
title: Bulletin: Number 47
abstract: 65 pages, 2 articles*Experiments in the Manufacture of Cheese during September* 32 pages*Experiments in the Manufacture of Cheese during October* 32 pages

url: http://hdl.handle.net/1813/4962
date: 2006-12-22
creator: Jordan, W. H.;New York State Agricultural Experiment Station.
viewed: 125
title: Bulletin: Number 470: Director's Report for 1919
abstract: 30 pages, 1 article*Director's Report for 1919* (Jordan, W. H.) 26 pages

url: http://hdl.handle.net/1813/4963
date: 2006-12-22
creator: Van Slyke, L. L.;New York State Agricultural Experiment Station.
viewed: 248
title: Bulletin: Number 471: Some of the Effects of the War upon Fertilizers
abstract: 12 pages, 1 article*Some of the Effects of the War upon Fertilizers* (Van Slyke, L. L.) 10 pages

url: http://hdl.handle.net/1813/4964
date: 2006-12-22
creator: Bright, John W.;New York State Agricultural Experiment Station.
viewed: 124
title: Bulletin: Number 472: The Production of High Grade Milk with Milking Machines under Farm Conditions
abstract: 31 pages, 1 article*The Production of High Grade Milk with Milking Machines under Farm Conditions* (Bright, John W.) 29 pages

url: http://hdl.handle.net/1813/4965
date: 2006-12-22
creator: Luckett, J. D.;New York State Agricultural Experiment Station.
viewed: 195
title: Bulletin: Number 472, Edition popular: Neglect of Details in Care of Milking Machines Results in Low Grade Milk
abstract: 17 pages, 1 article*Neglect of Details in Care of Milking Machines Results in Low Grade Milk* (Luckett, J. D.) 15 pages

url: http://hdl.handle.net/1813/4966
date: 2006-12-22
creator: Jordan, W. H.;New York State Agricultural Experiment Station.
viewed: 179
title: Bulletin: Number 473: Soil Studies
abstract: 27 pages, 1 article*Soil Studies* (Jordan, W. H.) 25 pages

url: http://hdl.handle.net/1813/4967
date: 2006-12-22
creator: Stewart, F. C.;New York State Agricultural Experiment Station.
viewed: 132
title: Bulletin: Number 474: Experiments on the Spacing of Potato Plants
abstract: 32 pages, 1 article*Experiments on the Spacing of Potato Plants* (Stewart, F. C.) 30 pages

url: http://hdl.handle.net/1813/4968

date: 2006-12-22
creator: Van Slyke, L. L.;New York State Agricultural Experiment Station.
viewed: 179
title: Bulletin: Number 103: Provisions of the New Fertilizer Law of New York
abstract: 16 pages, 1 article*Provisions of the New Fertilizer Law of New York* (Van Slyke, L. L.) 12 pages

url: http://hdl.handle.net/1813/4969
date: 2006-12-22
creator: Lowe, V. H.;New York State Agricultural Experiment Station.
viewed: 454
title: Bulletin: Number 104: Notes on the Recent Invasion of the Army Worm
abstract: 11 pages, 1 article*Notes on the Recent Invasion of the Army Worm* (Lowe, V. H.) 10 pages

url: http://hdl.handle.net/1813/4970
date: 2006-12-22
creator: Eustace, H. J.;Stewart, F. C.;New York State Agricultural Experiment Station.
viewed: 550
title: Bulletin: Number 200: Notes from the Botanical Department
abstract: 27 pages, 1 article*Notes from the Botanical Department* (Stewart, F. C.; Eustace, H. J.) 25 pages

url: http://hdl.handle.net/1813/4971
date: 2006-12-22
creator: Van Slyke, L. L.;New York State Agricultural Experiment Station.
viewed: 119
title: Bulletin: Number 207: Conditions Affecting Weight Lost by Cheese in Curing
abstract: 33 pages, 1 article*Conditions Affecting Weight Lost by Cheese in Curing* (Van Slyke, L. L.) 31 pages

url: http://hdl.handle.net/1813/4972
date: 2006-12-22
creator: Luckett, J. D.;New York State Agricultural Experiment Station.
viewed: 144
title: Bulletin: Number 474, Edition popular: Seed Potatoes Improved by Close Planting
abstract: 6 pages, 1 article*Seed Potatoes Improved by Close Planting* (Luckett, J. D.) 4 pages

url: http://hdl.handle.net/1813/4973
date: 2006-12-22
creator: Fulton, B. B.;New York State Agricultural Experiment Station.
viewed: 481
title: Bulletin: Number 475: Insect Injuries in Relation to Apple Grading
abstract: 46 pages, 1 article*Insect Injuries in Relation to Apple Grading* (Fulton, B. B.) 42 pages

url: http://hdl.handle.net/1813/4974
date: 2006-12-22
creator: Munn, M. T.;New York State Agricultural Experiment Station.
viewed: 164
title: Bulletin: Number 476: The New York Seed Law and Seed Testing
abstract: 29 pages, 1 article*The New York Seed Law and Seed Testing* (Munn, M. T.) 26 pages

url: http://hdl.handle.net/1813/4975
date: 2006-12-22
creator: Munn, M. T.;New York State Agricultural Experiment Station.
viewed: 113
title: Bulletin: Number 476, Edition abridged: The New York Seed Law and Seed Testing
abstract: 15 pages, 1 article*The New York Seed Law and Seed Testing* (Munn, M. T.) 13 pages

url: http://hdl.handle.net/1813/4976
date: 2006-12-22
creator: Collison, R. C.;New York State Agricultural Experiment Station.
viewed: 159
title: Bulletin: Number 477: A Progress Report of Fertilizer Experiments with Fruits
abstract: 54 pages, 1 article*A Progress Report of Fertilizer Experiments with Fruits* (Collison, R. C.) 51 pages

url: http://hdl.handle.net/1813/4977
date: 2006-12-22
creator: Collison, R. C.;New York State Agricultural Experiment Station.
viewed: 195
title: Bulletin: Number 478: Sources of Agricultural Liming Materials
abstract: 16 pages, 1 article*Sources of Agricultural Liming Materials* (Collison, R. C.) 14 pages

url: http://hdl.handle.net/1813/4978
date: 2006-12-22
creator: Gladwin, F. E.;New York State Agricultural Experiment Station.
viewed: 119
title: Bulletin: Number 479: Studies on the Cost of Producing Grapes
abstract: 33 pages, 1 article*Studies on the Cost of Producing Grapes* (Gladwin, F. E.) 31 pages

url: http://hdl.handle.net/1813/4979
date: 2006-12-22
creator: Luckett, J. D.;New York State Agricultural Experiment Station.
viewed: 318
title: Bulletin: Number 479, Edition popular: The Cost of Producing Grapes in the Chautauqua and Lake Erie Fruit Belt
abstract: 7 pages, 1 article*The Cost of Producing Grapes in the Chautauqua and Lake Erie Fruit Belt* (Luckett, J. D.) 5 pages

url: http://hdl.handle.net/1813/4980
date: 2006-12-22
creator: New York State Agricultural Experiment Station.
viewed: 118
title: Bulletin: Number 48: Some Bean Diseases
abstract: 36 pages, 1 article*Some Bean Diseases* 34 pages

url: http://hdl.handle.net/1813/4981
date: 2006-12-22

creator: New York State Agricultural Experiment Station.
viewed: 150
title: Bulletin: Number 480: Inspection of Commercail Fertilizers, 1920
abstract: 59 pages, 1 article*Inspection of Commercail Fertilizers, 1920* 57 pages

url: http://hdl.handle.net/1813/4982
date: 2006-12-22
creator: New York State Agricultural Experiment Station.
viewed: 154
title: Bulletin: Number 481: Inspection of Insecticides and Fungicides, 1920
abstract: 18 pages, 1 article*Inspection of Insecticides and Fungicides, 1920* 16 pages

url: http://hdl.handle.net/1813/4983
date: 2006-12-22
creator: Van Slyke, L. L.;New York State Agricultural Experiment Station.
viewed: 124
title: Bulletin: Number 482: A Study of the Composition of Official Samples of Feeding-Stuffs and Mixtures Collected in 1920
abstract: 23 pages, 1 article*A Study of the Composition of Official Samples of Feeding-Stuffs and Mixtures Collected in 1920* (Van Slyke, L. L.) 19 pages

url: http://hdl.handle.net/1813/4984
date: 2006-12-22
creator: Jordan, W. H.;New York State Agricultural Experiment Station.
viewed: 118
title: Bulletin: Number 483: Director's Report for 1920
abstract: 23 pages, 1 article*Director's Report for 1920* (Jordan, W. H.) 21 pages

url: http://hdl.handle.net/1813/4985
date: 2006-12-22
creator: Phipps, C. R.;New York State Agricultural Experiment Station.
viewed: 131
title: Bulletin: Number 484: Control of the Pear Thrips
abstract: 16 pages, 1 article*Control of the Pear Thrips* (Phipps, C. R.) 14 pages

url: http://hdl.handle.net/1813/4986
date: 2006-12-22
creator: Hucker, G. J.;New York State Agricultural Experiment Station.
viewed: 138
title: Bulletin: Number 486: The Relation of the Number of Bacteria in Milk to the Quality and Yield of Cheese
abstract: 19 pages, 1 article*The Relation of the Number of Bacteria in Milk to the Quality and Yield of Cheese* (Hucker, G. J.) 17 pages

url: http://hdl.handle.net/1813/4987
date: 2006-12-22
creator: Strickland, L. F.;Hartzell, F. Z.;New York State Agricultural Experiment Station.
viewed: 172

title: Bulletin: Number 487: Plant Lice Injurious to Apple Orchards: III
abstract: 44 pages, 1 article*Plant Lice Injurious to Apple Orchards: III* (Hartzell, F. Z.; Strickland, L. F.) 41 pages

url: http://hdl.handle.net/1813/4988
date: 2006-12-22
creator: Luckett, J. D.;New York State Agricultural Experiment Station.
viewed: 193
title: Bulletin: Number 487, Edition popular: Apple Aphids Controlled with the Delayed Dormant Spray
abstract: 8 pages, 1 article*Apple Aphids Controlled with the Delayed Dormant Spray* (Luckett, J. D.) 6 pages

url: http://hdl.handle.net/1813/4989
date: 2006-12-22
creator: Bright, John W.;Breed, Robert S.;New York State Agricultural Experiment Station.
viewed: 125
title: Bulletin: Number 488: Milking Machines: VI
abstract: 19 pages, 1 article*Milking Machines: VI* (Breed, Robert S.; Bright, John W.) 17 pages

url: http://hdl.handle.net/1813/4990
date: 2006-12-22
creator: Luckett, J. D.;New York State Agricultural Experiment Station.
viewed: 117
title: Bulletin: Number 488, Edition popular: Leaky Valves on Milking Machines Contaminate Milk
abstract: 8 pages, 1 article*Leaky Valves on Milking Machines Contaminate Milk* (Luckett, J. D.) 7 pages

url: http://hdl.handle.net/1813/4991
date: 2006-12-22
creator: Stewart, F. C.;New York State Agricultural Experiment Station.
viewed: 154
title: Bulletin: Number 101: Potato Diseases on Long Island in the Season of 1895
abstract: 20 pages, 1 article*Potato Diseases on Long Island in the Season of 1895* (Stewart, F. C.) 15 pages

url: http://hdl.handle.net/1813/4992
date: 2006-12-22
creator: Wheeler, W. P.;New York State Agricultural Experiment Station.
viewed: 196
title: Bulletin: Number 102: Silage and Silos
abstract: 19 pages, 1 article*Silage and Silos* (Wheeler, W. P.) 16 pages

url: http://hdl.handle.net/1813/4993
date: 2006-12-22
creator: Parrott, P. J.;Lowe, V. H.;New York State Agricultural Experiment Station.
viewed: 128
title: Bulletin: Number 202: San Jose Scale Investigations III.
abstract: 51 pages, 1 article*San Jose Scale Investigations III.* (Lowe, V. H.; Parrott, P. J.) 48 pages

url: http://hdl.handle.net/1813/4994

date: 2006-12-22
creator: Sirrine, F. A.;Jordan, W. H.;New York State Agricultural Experiment Station.
viewed: 100
title: Bulletin: Number 206: Commercial Fertilizers for Onions
abstract: 12 pages, 1 article*Commercial Fertilizers for Onions* (Jordan, W. H.; Sirrine, F. A.) 10 pages

url: http://hdl.handle.net/1813/4995
date: 2006-12-22
creator: Stewart, F. C.;New York State Agricultural Experiment Station.
viewed: 152
title: Bulletin: Number 489: Further Studies on the Effect of Missing Hills in Potato Fields and on the Variation in the Yield of Potato Plants from Halves of the Same Seed Tuber
abstract: 52 pages, 1 article*Further Studies on the Effect of Missing Hills in Potato Fields and on the Variation in the Yield of Potato Plants from Halves of the Same Seed Tuber* (Stewart, F. C.) 50 pages

url: http://hdl.handle.net/1813/4996
date: 2006-12-22
creator: New York State Agricultural Experiment Station.
viewed: 112
title: Bulletin: Number 49
abstract: 16 pages, 2 articles*Experiments in Treatment of Potato Scab* 11 pages*Bordeaux Mixture Used to Prevent Potato Blight* 4 pages

url: http://hdl.handle.net/1813/4997
date: 2006-12-22
creator: MacLeod, G. F.;Glasgow, Hugh;Parrott, P. J.;New York State Agricultural Experiment Station.
viewed: 151
title: Bulletin: Number 490: Control of Apple Red Bugs by Dusting
abstract: 33 pages, 1 article*Control of Apple Red Bugs by Dusting* (Parrott, P. J.; Glasgow, Hugh; MacLeod, G. F.) 30 pages

url: http://hdl.handle.net/1813/4998
date: 2006-12-22
creator: Stewart, F. C.;New York State Agricultural Experiment Station.
viewed: 136
title: Bulletin: Number 491: Potato Seed Experiments: Whole Small Tubers vs. Pieces of Large Tubers of the Same Plant
abstract: 30 pages, 1 article*Potato Seed Experiments: Whole Small Tubers vs. Pieces of Large Tubers of the Same Plant* (Stewart, F. C.) 28 pages

url: http://hdl.handle.net/1813/4999
date: 2006-12-22
creator: Luckett, J. D.;New York State Agricultural Experiment Station.
viewed: 129
title: Bulletin: Number 491, Edition popular: Do Whole Small Potatoes Make Good Seed?
abstract: 7 pages, 1 article*Do Whole Small Potatoes Make Good Seed?* (Luckett, J. D.) 5 pages

url: http://hdl.handle.net/1813/5000

date: 2006-12-22
creator: Breed, Robert S.;Finch, M. W.;Robertson, A. H.;New York State Agricultural Experiment Station.
viewed: 184
title: Bulletin: Number 492: Milking Machines: VII
abstract: 36 pages, 1 article*Milking Machines: VII* (Robertson, A. H.; Finch, M. W.; Breed, Robert S.) 34 pages

url: http://hdl.handle.net/1813/5001
date: 2006-12-22
creator: Van Slyke, L. L.;New York State Agricultural Experiment Station.
viewed: 113
title: Bulletin: Number 493: Changes in the Composition and Cost of Fertilizers in New York from 1914 to 1921
abstract: 12 pages, 1 article*Changes in the Composition and Cost of Fertilizers in New York from 1914 to 1921* (Van Slyke, L. L.) 10 pages

url: http://hdl.handle.net/1813/5002
date: 2006-12-22
creator: Collison, R. C.;Conn, H. J.;New York State Agricultural Experiment Station.
viewed: 138
title: Bulletin: Number 494: Fermentation and Preservation of Manure
abstract: 87 pages, 1 article*Fermentation and Preservation of Manure* (Conn, H. J.; Collison, R. C.) 85 pages

url: http://hdl.handle.net/1813/5003
date: 2006-12-22
creator: Tukey, H. B.;New York State Agricultural Experiment Station.
viewed: 120
title: Bulletin: Number 495: The Pear in New York
abstract: 19 pages, 1 article*The Pear in New York* (Tukey, H. B.) 17 pages

url: http://hdl.handle.net/1813/5004
date: 2006-12-22
creator: Dahlberg, A. C.;New York State Agricultural Experiment Station.
viewed: 148
title: Bulletin: Number 496: Twenty-Two Years of Tuberculin Testing in the Same Herd
abstract: 8 pages, 1 article*Twenty-Two Years of Tuberculin Testing in the Same Herd* (Dahlberg, A. C.) 6 pages

url: http://hdl.handle.net/1813/5005
date: 2006-12-22
creator: Webb, D.;Robbins, P.;Eckenrode, C.
viewed: 220
title: 1973 Field research report on Cabbage maggot, seedcorn maggot, and aster leafhopper
abstract: The threat of insecticide resistance, label cancellation of still-effective pesticides, and changing planting patterns dictate the need for continued evaluation of candidate materials for control of the cabbage maggot, Diazinon was the only material recommended for maggot control on direct-seeded cabbage and root crops in New York in 1973.

url: http://hdl.handle.net/1813/5006
date: 2006-12-22
creator: Hedrick, U. P.;New York State Agricultural Experiment Station.
viewed: 132
title: Bulletin: Number 497: New or Noteworthy Fruits. IV.
abstract: 27 pages, 1 article*New or Noteworthy Fruits. IV.* (Hedrick, U. P.) 24 pages

url: http://hdl.handle.net/1813/5007
date: 2006-12-22
creator: Hedrick, U. P.;New York State Agricultural Experiment Station.
viewed: 155
title: Bulletin: Number 498: Stocks for Plums
abstract: 25 pages, 1 article*Stocks for Plums* (Hedrick, U. P.) 23 pages

url: http://hdl.handle.net/1813/5008
date: 2006-12-22
creator: Van Slyke, L. L.;New York State Agricultural Experiment Station.
viewed: 115
title: Bulletin: Number 499: Composition and Prices of Commercial Fertilizers in New York in 1922
abstract: 12 pages, 1 article*Composition and Prices of Commercial Fertilizers in New York in 1922* (Van Slyke, L. L.) 10 pages

url: http://hdl.handle.net/1813/5009
date: 2006-12-22
creator: Sturtevant, E. Lewis;New York State Agricultural Experiment Station.
viewed: 269
title: Bulletin: Number V: Cooked vs. Raw Food for Stock
abstract: 3 pages, 1 article*Cooked vs. Raw Food for Stock* (Sturtevant, E. Lewis) 3 pages

url: http://hdl.handle.net/1813/5010
date: 2006-12-22
creator: New York State Agricultural Experiment Station.
viewed: 110
title: Bulletin: Number 50: Summary of Results of Experiments Made in the Manufacture of Cheese during the Season of 1892
abstract: 118 pages, 1 article*Summary of Results of Experiments Made in the Manufacture of Cheese during the Season of 1892* 114 pages

url: http://hdl.handle.net/1813/5011
date: 2006-12-22
creator: Howe, G. H.;New York State Agricultural Experiment Station.
viewed: 131
title: Bulletin: Number 500: Growth and Yield of Apple Trees Pruned in Various Ways
abstract: 28 pages, 1 article*Growth and Yield of Apple Trees Pruned in Various Ways* (Howe, G. H.) 26 pages

url: http://hdl.handle.net/1813/5012

date: 2006-12-22
creator: Streeter, Leon R.;Thatcher, R. W.;New York State Agricultural Experiment Station.
viewed: 110
title: Bulletin: Number 501: Factors Which Affect the Volatility of Nicotine from Insecticide Dusts
abstract: 34 pages, 1 article*Factors Which Affect the Volatility of Nicotine from Insecticide Dusts* (Thatcher, R. W.; Streeter, Leon R.) 32 pages

url: http://hdl.handle.net/1813/5013
date: 2006-12-22
creator: Harman, S. W.;MacLeod, Guy F.;New York State Agricultural Experiment Station.
viewed: 148
title: Bulletin: Number 502: The Aphiscidal Properties of Tobacco Dust
abstract: 21 pages, 1 article*The Aphiscidal Properties of Tobacco Dust* (MacLeod, Guy F.; Harman, S. W.) 19 pages

url: http://hdl.handle.net/1813/5014
date: 2006-12-22
creator: Harlan, J. D.;Collison, R. C.;New York State Agricultural Experiment Station.
viewed: 124
title: Bulletin: Number 503: Final Report on the Cooperative Experiments in Orchard Fertilization
abstract: 30 pages, 1 article*Final Report on the Cooperative Experiments in Orchard Fertilization* (Collison, R. C.; Harlan, J. D.) 29 pages

url: http://hdl.handle.net/1813/5015
date: 2006-12-22
creator: Hopkins, Elizabeth F.;Munn, M. T.;New York State Agricultural Experiment Station.
viewed: 122
title: Bulletin: Number 504: Work of the Seed Testing Laboratory from 1918 to 1923, with Notes on Seed Quality, Seed Testing, Seed Law Compliance, and Trade Practices
abstract: 35 pages, 1 article*Work of the Seed Testing Laboratory from 1918 to 1923, with Notes on Seed Quality, Seed Testing, Seed Law Compliance, and Trade Practices* (Munn, M. T.; Hopkins, Elizabeth F.) 33 pages

url: http://hdl.handle.net/1813/5016
date: 2006-12-22
creator: Stewart, F. C.;New York State Agricultural Experiment Station.
viewed: 140
title: Bulletin: Number 505: The Relation of Moisture Content and Certain Other Factors to the Popping of Popcorn
abstract: 74 pages, 1 article*The Relation of Moisture Content and Certain Other Factors to the Popping of Popcorn* (Stewart, F. C.) 70 pages

url: http://hdl.handle.net/1813/5017
date: 2006-12-22
creator: Sturtevant, E. Lewis;New York State Agricultural Experiment Station.
viewed: 180
title: Bulletin: Number I (1): Fertilizer analysis
abstract: 4 pages, 1 article*Fertilizer analysis* (Sturtevant, E. Lewis) 4 pages

url: http://hdl.handle.net/1813/5018
date: 2006-12-22
creator: Ladd, E. F.;New York State Agricultural Experiment Station.
viewed: 1256
title: Bulletin: Number 10: Chemical Department
abstract: 8 pages, 1 article*Chemical Department* (Ladd, E. F.) 6 pages

url: http://hdl.handle.net/1813/5019
date: 2006-12-22
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 121
title: Bulletin: Number 202, Edition popular: Spraying and Fumigating for San Jose Scale
abstract: 8 pages, 1 article*Spraying and Fumigating for San Jose Scale* (Hall, F. H.) 6 pages

url: http://hdl.handle.net/1813/5020
date: 2006-12-22
creator: Hart, E. B.;Harding, H. A.;Van Slyke, L. L.;New York State Agricultural Experiment Station.
viewed: 142
title: Bulletin: Number 203: A Study of Enzymes in Cheese
abstract: 32 pages, 1 article*A Study of Enzymes in Cheese* (Van Slyke, L. L.; Harding, H. A.; Hart, E. B.) 30 pages

url: http://hdl.handle.net/1813/5021
date: 2006-12-22
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 116
title: Bulletin: Number 203, Edition popular: What Produces Casein Changes in Cheese-Ripening?
abstract: 8 pages, 1 article*What Produces Casein Changes in Cheese-Ripening?* (Hall, F. H.) 6 pages

url: http://hdl.handle.net/1813/5022
date: 2006-12-22
creator: Andrews, W. H.;Van Slyke, L. L.;New York State Agricultural Experiment Station.
viewed: 79
title: Bulletin: Number 204: Report of Analyses of Paris Green and Other Insecticides in 1901
abstract: 8 pages, 1 article*Report of Analyses of Paris Green and Other Insecticides in 1901* (Van Slyke, L. L.; Andrews, W. H.) 6 pages

url: http://hdl.handle.net/1813/5023
date: 2006-12-22
creator: Churchill, G. W.;Jordan, W. H.;New York State Agricultural Experiment Station.
viewed: 91
title: Bulletin: Number 205: Influence of Manure upon Sugar Beets
abstract: 16 pages, 1 article*Influence of Manure upon Sugar Beets* (Jordan, W. H.; Churchill, G. W.) 14 pages

url: http://hdl.handle.net/1813/5024
date: 2006-12-22

creator: Hall, F. H.;Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 95
title: Bulletin: Number 205, Edition popular
abstract: 8 pages, 2 articles*Sugar Beets and Stable Manure* (Hall, F. H.) 3 pages*How Much Fertilizer for Onions?* (Hall, F. H.) 3 pages

url: http://hdl.handle.net/1813/5025
date: 2006-12-22
creator: Clayton, E. E.;New York State Agricultural Experiment Station.
viewed: 134
title: Bulletin: Number 506: Investigations of Cauliflower Diseases on Long Island
abstract: 31 pages, 1 article*Investigations of Cauliflower Diseases on Long Island* (Clayton, E. E.) 29 pages

url: http://hdl.handle.net/1813/5026
date: 2006-12-22
creator: Hopkins, Elizabeth F.;Munn, M. T.;New York State Agricultural Experiment Station.
viewed: 98
title: Bulletin: Number 507: The Quality of Packet Seed on Sale in New York
abstract: 23 pages, 1 article*The Quality of Packet Seed on Sale in New York* (Munn, M. T.; Hopkins, Elizabeth F.) 21 pages

url: http://hdl.handle.net/1813/5027
date: 2006-12-22
creator: Gladwin, F. E.;New York State Agricultural Experiment Station.
viewed: 116
title: Bulletin: Number 508: The Behavior of American Grapes Grafted on Vigorous Stocks
abstract: 54 pages, 1 article*The Behavior of American Grapes Grafted on Vigorous Stocks* (Gladwin, F. E.) 52 pages

url: http://hdl.handle.net/1813/5028
date: 2006-12-22
creator: New York State Agricultural Experiment Station.
viewed: 246
title: Bulletin: Number 508, Edition popular: Improving Grapes by Grafting
abstract: 4 pages, 1 article*Improving Grapes by Grafting* 3 pages

url: http://hdl.handle.net/1813/5029
date: 2006-12-22
creator: Tukey, H. B.;New York State Agricultural Experiment Station.
viewed: 114
title: Bulletin: Number 509: Studies of Fruit Seed Storage and Germination
abstract: 19 pages, 1 article*Studies of Fruit Seed Storage and Germination* (Tukey, H. B.) 17 pages

url: http://hdl.handle.net/1813/5030
date: 2006-12-22
creator: New York State Agricultural Experiment Station.
viewed: 87

title: Bulletin: Number 509, Edition popular: How to Store and Germinate Fruit Seed
abstract: 4 pages, 1 article*How to Store and Germinate Fruit Seed* 3 pages

url: http://hdl.handle.net/1813/5031
date: 2006-12-22
creator: New York State Agricultural Experiment Station.
viewed: 127
title: Bulletin: Number 51: Some Celery Diseases
abstract: 20 pages, 1 article*Some Celery Diseases* 18 pages

url: http://hdl.handle.net/1813/5032
date: 2006-12-22
creator: Hedrick, U. P.;New York State Agricultural Experiment Station.
viewed: 103
title: Bulletin: Number 510: Twenty Years' Profits from an Apple Orchard
abstract: 13 pages, 1 article*Twenty Years' Profits from an Apple Orchard* (Hedrick, U. P.) 10 pages

url: http://hdl.handle.net/1813/5033
date: 2006-12-22
creator: Van Slyke, L. L.;New York State Agricultural Experiment Station.
viewed: 106
title: Bulletin: Number 511: Composition and Prices of Commercial Fertilizers in New York in 1923
abstract: 16 pages, 1 article*Composition and Prices of Commercial Fertilizers in New York in 1923* (Van Slyke, L. L.) 14 pages

url: http://hdl.handle.net/1813/5034
date: 2006-12-22
creator: Hedrick, U. P.;New York State Agricultural Experiment Station.
viewed: 126
title: Bulletin: Number 514: New or Noteworthy Fruits. VII
abstract: 15 pages, 1 article*New or Noteworthy Fruits. VII* (Hedrick, U. P.) 12 pages

url: http://hdl.handle.net/1813/5035
date: 2006-12-22
creator: Van Slyke, L. L.;New York State Agricultural Experiment Station.
viewed: 117
title: Bulletin: Number 515: Composition of Official Samples of Feeding-Stuffs and Mixtures Collected in New York from January to July, 1923
abstract: 18 pages, 1 article*Composition of Official Samples of Feeding-Stuffs and Mixtures Collected in New York from January to July, 1923* (Van Slyke, L. L.) 16 pages

url: http://hdl.handle.net/1813/5036
date: 2006-12-22
creator: Tukey, H. B.;Hedrick, U. P.;New York State Agricultural Experiment Station.
viewed: 129
title: Bulletin: Number 516: Twenty-Five Years of Fertilizers in a New York Apple Orchard
abstract: 28 pages, 1 article*Twenty-Five Years of Fertilizers in a New York Apple Orchard* (Hedrick, U. P.; Tukey, H. B.) 26 pages

url: http://hdl.handle.net/1813/5037
date: 2006-12-22
creator: New York State Agricultural Experiment Station.
viewed: 134
title: Bulletin: Number 516, Edition popular: Do Fertilizers Pay in New York Apple Orchards?
abstract: 4 pages, 1 article*Do Fertilizers Pay in New York Apple Orchards?* 3 pages

url: http://hdl.handle.net/1813/5038
date: 2006-12-22
creator: Harman, S. W.;Parrott, P. J.;New York State Agricultural Experiment Station.
viewed: 108
title: Bulletin: Number 517: Comparative Efficiency of Dust and Spray Mixtures in Controlling the Currant Aphis
abstract: 24 pages, 1 article*Comparative Efficiency of Dust and Spray Mixtures in Controlling the Currant Aphis* (Parrott, P. J.; Harman, S. W.) 21 pages

url: http://hdl.handle.net/1813/5039
date: 2006-12-22
creator: Parrott, P. J.;Stewart, F. C.;New York State Agricultural Experiment Station.
viewed: 628
title: Bulletin: Number 518: Experiments with Potatoes
abstract: 36 pages, 1 article*Experiments with Potatoes* (Stewart, F. C.; Parrott, P. J.) 34 pages

url: http://hdl.handle.net/1813/5040
date: 2006-12-22
creator: Lamb, Robert;Way, Roger
viewed: 348
title: Burgundy- An early fall, dark red apple
abstract: The Burgundy apple (N.Y. 161) originated from a cross made by R. C. Lamb in 1953, Monroex N.Y. 18491 (Macoun x Antonovka). A population of 357 seedlings from the cross was field planted in May 1955. As the seedlings came into fruiting several years later, their fruiting performance was evaluated. This particular seedling ripened its first fruits on September 10, 1960 and was selected by R. D. Way in 1961. Nineteen other superior selections were also chosen from this same population. This is a much higher proportion of good clones selected from a progeny than is usually chosen, indicating that this was an especially good parental combination.

url: http://hdl.handle.net/1813/5041
date: 2006-12-22
creator: Hogan, Harold;Straub, Richard
viewed: 185
title: Feasibility of fall armyworm, Spodoptera frugiperda (Smith) control on late-planted dent corn
abstract: During the late summer of 1973, fall armyworm populations were abnormally high in the Hudson River Valley, and the resulting severe defoliation to late-planted dent corn caused much concern to producers and extension service personnel. Due to the ragged appearance of the plant resulting from larval feeding, a heavily infested field can be quite alarming. Many inquiries were received at this laboratory pertaining to the necessity of applying control measures to combat this pest.

url: http://hdl.handle.net/1813/5042
date: 2006-12-22
creator: Lamb, Robert
viewed: 199
title: Highland- a new winter pear
abstract: Highland was selected from a progeny of 119 seedlings of a cross of Bartlett x Cornice made in 1944 by Dr. George Oberle. It first fruited in 1956 and was selected by the author for further test. In 1963, it was made available by the New York State Fruit Testing Cooperative Association for testing under the number, N.Y. 10274. It has continued to look promising, and numerous growers who have tested it have reported favorably on it. So, it was decided to introduce it in 1974. The name, Highland, was chosen following the tradition of naming pears after New York State place names. Highland, in the center of the Hudson Valley fruit area, is the location of the Hudson Valley Research Laboratory which has a long record of service to growers in the area.

url: http://hdl.handle.net/1813/5043
date: 2006-12-22
creator: Lienk, S.;Chapman, P.
viewed: 193
title: Green Fruitworms
abstract: Young apple and pear fruits may be fed upon by several species of relatively large, stout-bodied green caterpillars Fig. 1). Their dominant green color is relieved by dots, dashes, lines, and stripes of white, cream, or yellow. For more than a century now, these native insects have been known to commercial and amateur fruit growers as “green fruitworms”.

url: http://hdl.handle.net/1813/5044
date: 2006-12-22
creator: Hall, F. H.;New York State Agricultural Experiment Station.
viewed: 694
title: Bulletin: Number 199-200, Edition popular: Botanical Botherments
abstract: 12 pages, 1 article*Botanical Botherments* (Hall, F. H.) 10 pages

url: http://hdl.handle.net/1813/5045
date: 2006-12-22
creator: Jenter, C. G.;Jordan, W. H.;New York State Agricultural Experiment Station.
viewed: 424
title: Bulletin: Number 198: Inspection of Feeding Stuffs
abstract: 30 pages, 1 article*Inspection of Feeding Stuffs* (Jordan, W. H.; Jenter, C. G.) 29 pages

url: http://hdl.handle.net/1813/5046
date: 2006-12-22
creator: Eustace, H. J.;Stewart, F. C.;New York State Agricultural Experiment Station.
viewed: 514
title: Bulletin: Number 199: An Epidemic of Currant Anthrancose
abstract: 21 pages, 1 article*An Epidemic of Currant Anthrancose* (Stewart, F. C.; Eustace, H. J.) 19 pages

url: http://hdl.handle.net/1813/5047
date: 2006-12-22
creator: Hall, F. H.;New York State Agricultural Experiment Station.

viewed: 313
title: Bulletin: Number 197, Edition popular: Fat in Milk from Starch in Food
abstract: 8 pages, 1 article*Fat in Milk from Starch in Food* (Hall, F. H.) 6 pages

url: http://hdl.handle.net/1813/5048
date: 2006-12-22
creator: Stewart, Robert E.
viewed: 507
title: Seven decades that changed America : a history of the American Society of Agricultural Engineers, 1907-1977
abstract: A history of the American Society of Agricultural Engineers, 1907-1977.

url: http://hdl.handle.net/1813/5049
date: 2006-12-28
creator: Vamvatsikos, Aggelos
viewed: 382
title: On the Wagner-Anantharam outer bound and achievable Gaussian source coding exponents
abstract: Tightness of the Wagner-Anantharam (W-A) outer bound, for the quadratic Gaussian two-terminal source coding problem, is examined. The proof of the sum rate constraint for the rate region of this problem provides some hints on possible looseness of the bound. We prove tightness to the rate region for this setup, by first proving tightness for the many-help-one problem with conditional independence. We also look at the performance of the W-A bound and find the worst choice of the auxiliary random variable X, appearing in the expression of the bound, for the sum rate constraint.
In the second part of this work, the Gaussian point-to-point source coding problem is considered. The error exponent for this problem was presented by Ihara and Kubo. We generalize the Gaussian method of types, introduced by Arikan and Merhav, and use Marton's approach to retrieve the best achievable error exponent for this setup. Our method is readily extendable to more complex Gaussian source coding problems.

url: http://hdl.handle.net/1813/5050
date: 2006-12-31
creator: Hittleman, Margo
viewed: 171
title: Counting Caring: Accountability, Performance and Learning at the Greater Ithaca Activities Center
abstract: This dissertation -- incorporating action research, global ethnography, narrative inquiry, and critical race perspectives -- examines an agency-wide staff and organizational development process at the Greater Ithaca Activities Center (GIAC), an African-American-led, multicultural community center in Ithaca, New York, while contextualizing this local work within an examination of global structural forces shaping the work of the community-service sector as a whole in the United States.
Through this research project, we explored how a sustained collective, critically reflective educational process linked to concrete action could help GIAC and its staff respond simultaneously to external demands for improved accountability and internal desires to improve programming. In this dissertation, which draws upon that research, I suggest that an unarticulated tension between two fundamentally different conceptual frameworks -- a dominant "professional public management" frame and a contesting "personal relations" frame -- reflects and shapes how people understand, and thus, attempt to account for, learn about and improve "community service" work. I examine the ways these contesting frameworks played out in practice, demonstrating how seemingly "objective" approaches to accountability and evaluation -- e.g., the now nearly ubiquitous outcome measurement model -- actually marginalize important kinds of work and reproduce entrenched social (dis)advantage. I explore the challenges and possibilities faced by an agency that centralizes

a "personal relations" perspective in a world dominated by norms of "professional public management," and I examine practitioners' efforts to not only reflect on, but collectively respond to contesting perspectives on their work within social environments shaped by institutionalized relations of power. Finally, I argue that taking a "personal relations" perspective seriously is needed to (a) understand GIAC and organizations like it on their own terms; (b) re-imagine accountability and evaluation as dynamic, dialogic, collective processes that can enable people to learn about and improve their work in the course of learning about what matters; and (c) revitalize a weakened public commitment to nurturing human potential and embracing diversity, thus reinvigorating our community-service system as a whole. From a methodological perspective, this dissertation also exemplifies action research strategies for collaborative knowledge creation and draws lessons from this work for the further development of action research praxis.

url: http://hdl.handle.net/1813/5051
date: 2007-01-02
creator: Zwerman, P.;Coote, D.
viewed: 201
title: Manure Disposal, Pollution Control, and the New York Dairy Farmer
abstract: As the second largest milk-producing state, New York must dispose of large quantities of manure. At one time this manure was conserved and spread sparingly as fertilizer for field crops. Today the high cost of labor has made manure disposal a burden to many farmers.

url: http://hdl.handle.net/1813/5052
date: 2007-01-02
creator: Peck, Nathan
viewed: 352
title: Vegetable Crop Fertilization
abstract: Plants are living integrators of all soil and environmental factors from planting to final harvest. High yield potential due to correct soil pH, organic matter, drainage, and structure; use of quality seeds of responsive varieties; even and proper distribution of plant population; pest control; avoidance of phytotoxic substances in the soil and atmosphere; and proper crop rotation will increase yield response due to fertilizers.

url: http://hdl.handle.net/1813/5053
date: 2007-01-02
creator: Way, Roger
viewed: 131
title: Empire- A High Quality Dessert Apple
abstract: Empire first appeared in the markets in the early 1970's. It is a medium-sized, attractive, dark red apple, and has excellent eating quality. In the orchard, the tree is highly productive and easy to handle. Consumers and apple growers are both enthusiastic about this new variety.

url: http://hdl.handle.net/1813/5054
date: 2007-01-02
creator: Bourke, John;Minnick, Donald;Taschenberg, E.
viewed: 154
title: Protecting the Tractor Operator in the Application of Pesticidal Chemicals
abstract: The hazards associated with the handling and application of toxic chemicals employed in insect control require that strict precautionary measures must be followed. It necessitates the use of appropriate safety equipment. The types of protective devices needed are dictated by the tox-icity of the given insecticide, its formulation, the method of application, and whether the treatment will be made in an open or enclosed

area.

url: http://hdl.handle.net/1813/5055
date: 2007-01-02
creator: Pasour, Virginia
viewed: 233
title: Computational and Analytical Perspectives on the Drift Paradox Problem in a Freshwater Embayment
abstract: Small, planktonic organisms in a variety of fresh and saltwater environments with primarily unidirectional flow often manage to avoid washout into a larger, often inhospitable body of water, a phenomenon commonly termed the `drift paradox.' We investigate the drift paradox in the case of vertically migrating zooplankton in a long, narrow embayment emptying into a colder lake by means of a three-dimensional hydrodynamic model, SI3D, along with an accompanying (modified) particle tracking module. Chapter 1 describes tests of SI3D designed to insure that the basic advection and scalar (temperature) transport behave as expected in the embayment regime. Chapter 2 describes simulations using different migration types, zooplankton cloud sizes, start times, and background flow speeds. Largely due to its interaction with exchange flow between lake and embayment, background flow speed emerged as the most important factor influencing the residence time of the zooplankton, with smaller flow speeds, normal migration, and larger zooplankton clouds typically leading to higher residence times. Chapter 3 discusses similar smulations, with the addition of rooted macrophytes, which are represented in SI3D by changing the amount and height of drag in the channel. Flow rate was again the single most important variable, with the interaction between flow and zooplankton cloud size also significant. Chapter 4 describes the results of attempts to represent the advection of zooplankton undergoing vertical migration by a relatively simple partial differential equation, with the goal of approximating the results of Chapters 2 and 3. The equation contains advective and diffusive terms with the velocity term encompassing the water flow as well as zooplankton vertical position in the embayment. Background water flow, assumed homogeneous in time and longitudinally, is obtained by averaging output velocities from SI3D. A simple distance/rate approximation was also investigated. While the analytical models can be useful in situations involving a simple flow field, when more accuracy is needed, or in case of a vegetated channel, using the full computational model is advisable.

url: http://hdl.handle.net/1813/5057
date: 2007-01-02
creator: Zuniga, Ricardo Miranda
viewed: 23
title: 2004 Rockefeller New Media Foundation Proposal
abstract: A food vending cart located in New York City and a game arcade located in Managua, Nicaragua will be employed to establish communication between participants. Both the food cart and the arcade will present the user with a 30 video game; a chat room; and a web cam image.

url: http://hdl.handle.net/1813/5058
date: 2007-01-02
creator: Zuniga, Ricardo Miranda
viewed: 23
title: Rockefeller New Media Foundation --Supplementary Material
abstract: Documentation for three Zuniga projects:

Nexus ATM
The Public Broadcast Cart

Vagamundo, A Migrant's Tale

url: http://hdl.handle.net/1813/5059
date: 2007-01-02
creator: Eckenrode, C.;Webb, D.;Vea, E.
viewed: 188
title: Seedcorn Maggot Injury
abstract: This report describes and illustrates varying levels of seedcorn maggot damage on eight susceptible crops. We hope that this will aid in the diagnosis of maggot injury.

url: http://hdl.handle.net/1813/5060
date: 2007-01-02
creator: Webb, D.;Robbins, P.;Eckenrode, C.
viewed: 160
title: 1974 insecticide research report in cabbage maggot, seedcorn maggot, aphids on lettuce, and phytotoxicity in cucumbers
abstract: Each year we conduct extensive insecticide screening tests for control of the cabbage maggot (CM), an important soil pest of crucifer crops. Diazinon, a phosphate pesticide of limited persistence, is this State's single recommended material for CM control on direct-seeded cabbage and root crops; although with root crops it is necessary to suppress H. brassicae for the entire growing season which requires extended persistence. For transplanted cabbage, diazinon, Guthion, and Dyfonate are the recommended materials.

url: http://hdl.handle.net/1813/5061
date: 2007-01-02
creator: Huth, P.;Straub, R.
viewed: 168
title: Field research on control of vegetable insects in eastern New York- 1974
abstract: Insect populations in the Orange and Ulster County region of eastern New York were adequate, in most instances, for good evaluations of insecticide activity. In the Orange County muck area, populations of the onion maggot, Hylemya antiqua (Meigen), and aphids, primarily the green peach aphid Myzus persicae (Sulzer) and the potato aphid Macrosiphum euphorbiae (Thomas), were quite high. Cabbage looper, Trichoplusia ni (Hubner), pressure was light until later August at which time populations increased to moderate numbers.

url: http://hdl.handle.net/1813/5062
date: 2007-01-02
creator: Catlin, Gertrude;Chapman, P.
viewed: 162
title: Growth Stages in Fruit Trees- From Dormant to Fruit Set
abstract: In the present publication we identify, illustrate, name, and define what we believe are the key growth stages for apple, pear, peach, plum and prune, tart cherry, and sweet cherry. The growth period covered extends from the dormant stage of the buds up to the initial setting of the fruit. It is hoped that these designations have sufficient merit, collectively, to win official acceptance beyond the confines of New York. For if this transpires, at least that part of the horticultural world would be using the same growth stage language.

url: http://hdl.handle.net/1813/5063
date: 2007-01-02
creator: Egner, Joan;Stutz, Frederick
viewed: 579

title: Development of Regionalism in Education
abstract: In this publication we will describe the background and current status of educational regionalism as exemplified by three types of education region: the multicounty educational unit, the intermediate school district, and urban-suburban cooperation. The criteria used in planning for regional education will be discussed. We will draw on our own substantial experience and research as well as other sources of information.

url: http://hdl.handle.net/1813/5064
date: 2007-01-02
creator: Bauder, Ward
viewed: 132
title: The Costs of Seasonal Agricultural Employment
abstract: For years an argument for excluding hired farm workers from the unemployment insurance program was what the seasonal nature of agricultural employment would make the program too costly. A recent 15-state study of the feasibility of agricultural coverage indicated that average cost rates for agriculture would not be substantially different from cost rates in nonagricultural industries. But, it did support the contention that costs for seasonal agricultural labor are substantially higher than costs for nonseasonal agricultural labor (2,3).

url: http://hdl.handle.net/1813/5065
date: 2007-01-02
creator: Ourecky, D.
viewed: 163
title: 'Brandywine' purple raspberry
abstract: The purple raspberry is a hybrid between the red raspberry, Rubus ideaus strigosus, and the black raspberry, Rubus occidentalis. In many breeding programs, crosses have been made between the various colored fruited clones resulting in selections with complex parentages. Some seedlings closely resemble the red raspberry and produce suckers while others more closely resemble the black raspberry and are propagated by tip-layering.

url: http://hdl.handle.net/1813/5066
date: 2007-01-02
creator: Webb, D.;Robbins, P.;Eckenrode, C.
viewed: 126
title: Control of seedcorn maggot, cabbage maggot, and black cutworm (1975 insecticide research report)
abstract: This pest threatens the germinating seeds of a number of crops, particularly in the spring when soils are cool and wet. A high content of organic matter in the soil increases the probability for an infestation. Once the growing seedlings are above the soil surface, they are less likely to be seriously injured.

url: http://hdl.handle.net/1813/5067
date: 2007-01-02
creator: Forshey, Chester
viewed: 404
title: Factors affecting chemical thinning of apples
abstract: The necessity for fruit thinning is generally accepted. While limited hand thinning is still practiced in some areas, Northeast fruit growers rely almost entirely on chemical thinning. In some years, as much as 85 per cent of the apple acreage in New York State is chemically thinned. This practice is inexpensive and effective, but the results are not always totally satisfactory. Complete failures (little or no thinning or

drastic overthinning) are rare, but the variability in results may exceed the limits of expediency. The factors that contribute to this variability can be conveniently divided into six categories as follows: initial fruit set, variety, materials and rates, time of application, physical factors that affect the application of the material and its absorption, and physiological factors that affect the response of the trees.

url: http://hdl.handle.net/1813/5068
date: 2007-01-02
creator: Maxwell, Lorraine E.
viewed: 352
title: Family Activities & Children's Schoolwork
abstract: This wonderful set of activity cards will help you transform everyday activities into learning and practice opportunities for children who are already bursting with enthusiasm to learn and to contribute to their family. Your own home, the local grocery store, cars, buses and other forms of transportation are exciting places for kids to learn new skills and information, and to practice the reading, math, and problem-solving skills that they learn at school! Learning how to think and solve problems in new situations or with new materials is an ideal way to stretch your children?s imaginations and mold their self perception. These activities do not take up much time, and they involve children in daily living and household tasks. Kids will also begin to see that what they learn in school can be used outside the classroom.

url: http://hdl.handle.net/1813/5068
date: 2007-01-02
creator: Maxwell, Lorraine E.
viewed: 352
title: Family Activities & Children's Schoolwork
abstract: This wonderful set of activity cards will help you transform everyday activities into learning and practice opportunities for children who are already bursting with enthusiasm to learn and to contribute to their family. Your own home, the local grocery store, cars, buses and other forms of transportation are exciting places for kids to learn new skills and information, and to practice the reading, math, and problem-solving skills that they learn at school! Learning how to think and solve problems in new situations or with new materials is an ideal way to stretch your children?s imaginations and mold their self perception. These activities do not take up much time, and they involve children in daily living and household tasks. Kids will also begin to see that what they learn in school can be used outside the classroom.

url: http://hdl.handle.net/1813/5069
date: 2007-01-02
creator: Forshey, Chester
viewed: 187
title: McIntosh Apple Crop Prediction Grower Sampling Instructions
abstract: Apple fruits grow at a relatively uniform rate during much of the season. While many factors influence the rate of fruit growth, such as weather, tree vigor, crop load, etc., the interacting effects of these factors are fairly well established 2-3 months after bloom. Throughout the remainder of the season, the growth rate follows a predictable pattern. As a result, the harvest size of Mclntosh apples can be accurately predicted from fruit size measurements on August 1.

url: http://hdl.handle.net/1813/5070
date: 2007-01-02
creator: Kozen, Frances
viewed: 350

title: Fiber Facts
abstract: This information bulletin explains the unique properties of all the common fibers on the market today, Acetate and Triacetate, Acrylic and Modacrylic, Cotton, Linen, Ramie, Hemp, Lyocell, Nylon, Olefin, Polyester, Rayon, Silk, Spandex, and Wool. Learn which fibers make up brand names like Lycra, Creslan, Cordura, Tencel, Thinsulate and Dacron. Fiber origin, production, characteristics, producers, care, cautions and other issues are addressed for each fiber. A great gift for children going off to college, wedding showers, or for housewarming.

url: http://hdl.handle.net/1813/5071
date: 2007-01-03
creator: Bertino, J.;Pool, R.;Robinson, W.;Acree, T.;Nelson, R.
viewed: 254
title: Experimental Wine Production
abstract: A major portion of the wine research program at the New York State Agricultural Experiment Station, Geneva is concerned with the evaluation of grape varieties for suitability for wine production in New York. The viticulturalcharacteristics of each variety or selection are assessed in the Experiment Station vineyards by the staff of the Department of Pomology and Viticulture, and enological evaluation is done by the Department of Food Science and Technology. In order to evaluate the enological merits of each variety, a wine production procedure suitable for small batches (1 to 50 liters) has been developed. The goal of wine production for this program is to obtain a consistently sound wine representative of the varietal potential. Presently, over 500 experimental lots are produced annually. This report describes the standard procedure used to produce these experimental wines.

url: http://hdl.handle.net/1813/5072
date: 2007-01-03
creator: LaDue, Eddy
viewed: 143
title: Equipment Leasing and Renting as Alternative Sources of Investment Capital for Northeast Farmers
abstract: The objectives of this investigation were to determine the availability of, and terms for, leasing and renting farm machinery in the Northeast and to assess the relative advantages of these two alternatives compared to outright purchase. The first section of this publication reports the results of a survey of different leasing and renting programs offered by Northeastern farm equipment dealers. The second presents an economic analysis of the merits of machinery rental and leasing programs as compared to outright purchase of selected machines.

url: http://hdl.handle.net/1813/5073
date: 2007-01-03
creator: Prokopovych, Olena Mykolayivna
viewed: 360
title: The Institutional Dynamics of Health Care Reform: Organizational and Class Dimensions of Policy-Making at the Columbia-Presbyterian Medical Center, 1911-1998
abstract: Dissertation Committee: Dr. Richard F. Bensel (Chair), Dr. Theodore J. Lowi, Dr. M. Elizabeth SandersFollowing the lead of Theda Skocpol, Jacob Hacker and other neo-institutionalists, this dissertation draws attention to the private and voluntary components of America's mixed systems of social insurance and health care provision. What distinguishes my approach is a closer view of institutional politics and policies, as well as an emphasis on their reciprocal connections with the larger political process. Drawing on the extensive administrative archives of the nation's oldest medical center, Columbia-Presbyterian Medical Center in New York, I reconstruct and analyze some of the formative moments of the American health care system.

Two broad conclusions concerning American health care politics emerge from my analysis. First, academic medical centers, as well as private health care institutions more generally, make policies and shape health care politics. Thus, private institutions are policy-makers, in a very real sense. Second, private institutions of health care provision have participated in the making of health care policy not as monolithic, autonomous institutions but as internally contested and externally invested organizations. On the basis of my research, I propose a new theoretical framework which brings into view the organizational and social dimensions of health care politics that have been previously overlooked. The framework builds on two theoretical approaches - the neo-Durkheimian theory of micro-classes and the theory of intersectionality - to reveal a coherent set of political subjects and structures involved in health care politics. Central to this framework is a concept of 'institutional class positions,' which links the mechanisms of bureaucratic power and occupational control with the effects of gendered and racialized systems of inequality to produce an integrated, dynamic understanding of institutional processes. I show that the organizational and social structures which shape these positions have far-reaching political effects, indicating the limits and possibilities of health care reform in the predominantly private framework of health care provision.

url: http://hdl.handle.net/1813/5074
date: 2007-01-03
creator: DeRito, Christopher
viewed: 376
title: USING STABLE ISOTOPE PROBING TO IDENTIFY SOIL MICROBIAL POPULATIONS INVOLVED IN PHENOL METABOLISM AT AN AGRICULTURAL FIELD SITE
abstract: Dr. Eugene Masden, Dr. Anthony HayThe global distribution and universal toxicity of phenolic compounds make their degradation of great interest. The goal of this field study was to provide insight into three distinct populations of microorganisms involved in in situ metabolism of phenol. Our approach measured 13CO2 respired from 13C-labeled phenol and stable isotope probing (SIP) of soil DNA at an agricultural field site. Traditionally, SIP-based investigations have been subject to the uncertainties posed by carbon cross-feeding. By altering our field-based, substrate-dosing methodologies, experiments were designed to look beyond primary degraders to detect trophically related populations in the food chain. Using GC/MS, it was shown that 13C-labeled biomass, derived from primary phenol degraders in soil, was a suitable growth substrate for other members of the soil microbial community. Next, three dosing regimes were designed to examine active members of the microbial community involved in phenol metabolism in situ: (i) 1 dose of 13C-phenol, (ii) 11 daily doses of unlabeled-phenol followed by 1 dose of 13C-phenol, and (iii) 12 daily doses of 13C-phenol. GC/MS analysis demonstrated that prior exposure to phenol boosted 13CO2 evolution by a factor of 10. Furthermore, imaging of 13C-treated soil using Secondary Ion Mass Spectrometry (SIMS) verified that individual bacteria inc orporated 13C into their biomass. PCR amplification and 16S rRNA gene sequencing of 13C-labeled soil DNA from the 3 dosing regimes revealed three distinct clone libraries: (i) unenriched, primary phenol degraders were most diverse, consisting of ?-, ?-, and ?-proteobacteria, and high G+C Gram-positive bacteria, (ii) enriched primary phenol degraders were dominated by members of the genera Kocuria and Staphylococcus, and (iii) trophically-related (carbon cross-feeders) were dominated by members of the genus Pseudomonas. Furthermore, fungi-specific PCR amplification and sequencing of the 18S-28S internal transcribed spacer region genes from soil-derived, 13C-DNA revealed a number of fungi involved in phenol degradation at this site. 13C-labeled fungal DNA was only detected in one of our treatments (that representing trophically-related carbon cross-feeders) which suggests that these organisms are potentially secondary consumers in phenol-degradation at this site. These data show that SIP has the potential to document population shifts caused by substrate pre-exposure and to follow the flow of carbon through terrestrial microbial food chains.National Institute of Environmental Health Sciences

url: http://hdl.handle.net/1813/5075

date: 2007-01-03
creator: Mai, J.;Shimp, J.;Kinsella, J.
viewed: 163
title: The Proximate and Lipid Composition of Several Species of Freshwater Fishes
abstract: Information concerning the chemical composition of freshwater fishes is useful to ecologists and environmentalists who are interested in determining the effects of changing biological/environmental conditions on the composition, survival, and population changes within fish species. It is also valuable to nutritionists concerned with readily available sources of low-fat, high-protein foods such as most freshwater fishes, and to the food scientist who is interested in developing them into high-protein foods while ensuring the finest quality flavor, color, odor, texture, and safety obtainable with maximum nutritive value.

url: http://hdl.handle.net/1813/5076
date: 2007-01-03
creator: Leeper, John
viewed: 187
title: Using Sticky traps to monitor fruit flies in apple and cherry orchards
abstract: Sticky traps can be used to monitor the presence of adult fruit flies in cherry and apple orchards. The traps utilize both color and odor to attract the flies. It has been known for some time that the flies are attracted to the color yellow. Consequently, sticky board traps now used are colored yellow. The flies are also attracted to red and this color has been used on sticky spheres to monitor the apple maggot flies. Odor is the second stimulus. Household ammonia placed in bottles was a common attractant used in early sticky boards. The ammonia had to be changed frequently and the process was time-consuming. Today, the traps use Hy-Case Amino and ammonium acetate mixed into the sticky material on the traps. This attractant lasts several weeks under orchard conditions and lengthens the interval between trap changes to 2 to 3 weeks.

url: http://hdl.handle.net/1813/5077
date: 2007-01-03
creator: Labanowska, B.;Minns, J.;Lienk, S.
viewed: 569
title: Evaluation of pesticides against the European red mite, apple rust mite, and two mite predators in 1976-1977
abstract: During the 1976-1977 season, extensive field screening programs were conducted to evaluate currently recommended and experimental acaricides against the European red mite. In addition, some trials were included against the apple rust mite, Aculus schlechtendali (Nalepa), in 1976.

url: http://hdl.handle.net/1813/5078
date: 2007-01-03
creator: Eckenrode, C.;Webb, D.
viewed: 160
title: Simplified rearing and bioassay for the seedcorn maggot, Hylemya platura (Meigen)
abstract: Before 1926, Leach (7) was able to rear larvae of the seedcorn maggot (SCM), now known as Hylemya platura (Meigen), on potatoes or beef extract agar inoculated with the causal organism of potato blackleg, Erwinia atroseptica (van Hall) Jennison. Since then, attempts to maintain colonies in the laboratory have met with limited success because of low egg production until McLeod found that protein was essential for oviposition (8). Harris et al. (5), using the information of McLeod, was able to establish a productive laboratory colony of SCM. Although excellent results are obtained with this technique, procedures are somewhat time consuming. A simplified technique has been developed at the Geneva Experiment Station which produces large numbers of SCM for use in laboratory studies."?

url: http://hdl.handle.net/1813/5079
date: 2007-01-03
creator: Terry, David;Way, Roger;Aldwinckle, Herb;Lamb, Robert
viewed: 147
title: LIBERTY, a new disease resistant apple
abstract: At first, the objective of this project was resistance to apple scab only, but it soon became clear that when apples were grown without any chemical disease control, the other major diseases (cedar apple rust, fire blight, and mildew) could be more serious. Thus, the objectives were broadened to include resistance to these diseases as well. In 'Liberty,' we have an apple that has a measure of resistance to all four of these diseases. Our experience so far is that it can be grown without any fungicidal sprays. Since it is not resistant to insect, however, spraying or other means of insect control must still be used.

url: http://hdl.handle.net/1813/5080
date: 2007-01-03
creator: Watada, A.;Stiles, W.;Mattus, G.;Massey, L. Jr.;LaBelle, R.;Dewey, D.;Bramlage, W.;Blanpied, G.
viewed: 125
title: A Standardized Method for Collecting Apple Pressure Test Data
abstract: This bulletin outlines a standardized method for collecting apple pressure test data. In the first section we discuss replication and sample size. In the next sections we present information from many sources to illustrate several factors that may influence pressure test readings. The bulletin concludes with a brief "how-to" summary of the important points previously reported in greater detail.

url: http://hdl.handle.net/1813/5081
date: 2007-01-03
creator: Morrow, Robert
viewed: 231
title: Growth of European Larch at Five Spacings
abstract: Restrictive economic conditions and increased knowledge have led foresters to question traditional spacing of forest trees and to conduct research that would test their assumptions. Numerous studies have confirmed that when forest trees are widely spaced, the branches, crowns, and stems are larger. Although the stem form of all trees is changed, the height of conifers may be little affected. An immediate economic benefit is derived from lower planting and precommercial thinning costs. Later, although early stand basal area and volume growth may be reduced by wide spacing, more rapid growth of individual stems can produce more merchantable volume, a shorter rotation, reduced logging costs, and better financial returns.

url: http://hdl.handle.net/1813/5082
date: 2007-01-03
creator: Way, Roger
viewed: 238
title: Pollination and fruit set of fruit crops
abstract: The purposes of this bulletin are (a) to describe mechanisms of pollination, (b) to outline cultural practices favoring good fruit set, (c) to summarize pollination requirements of apples, (d) to suggest orchard planting plans for efficient apple pollination, and (e) pollination of other fruits.

url: http://hdl.handle.net/1813/5083
date: 2007-01-03
creator: Hunter, James;Abawi, George

viewed: 264
title: White mold of beans in New York
abstract: The fungus that causes the white mold disease of beans, Sclerotinia sclerotiorum, has caused serious losses in central and western New York in recent years. The disease has been economically more important in snap beans than dry beans because in addition to direct losses in the field, detection of more than 2 per cent diseased pods in a truckload at the processing plant may result in rejection of the whole load. Furthermore, even a low incidence of white mold may lower the grade or increase the cost of processing.

url: http://hdl.handle.net/1813/5084
date: 2007-01-03
creator: Way, Roger
viewed: 145
title: Apple varieties grown in New York State
abstract: No apple variety is perfect. Each has its own special problems in growing; each must be handled differently. The grower must learn the peculiarities of each and adjust his cultural practices accordingly. Financial success in commercial apple growing is not a simple matter and is dependent on many factors such as the choice of orchard site, rootstocks, varieties, farm management, labor supply, marketing, and others. The choice of varieties is one of the most important decisions leading to success.

url: http://hdl.handle.net/1813/5085
date: 2007-01-03
creator: Bokaer-Smith, Jennifer;Wilkins, Jennifer L.
viewed: 283
title: Northeast Regional Food Guide Fact Sheets
abstract: These fact sheets focus on how to follow dietary guidelines with foods from the region, seasonal produce availability, and information on the Northeast food and agriculture system. The fact sheets are titled as follows: "How to Use This Guide," "The Northeast: An Abundant Food Producer," "Eating Seasonally," "Resources for Regional Eating," "Quiz: Are You a Regional and Seasonal Eater?," "Becoming a Regional and Seasonal Eater," "Seasoning Your Kitchen," "Seasonal Produce Lists" and, "Ideas for Nutrition Educators, Dieticians, and Food Service Managers." Educators will find this fact sheet set to be a wonderful teaching aid for choosing a healthful diet, supporting the local economy, and reducing pressure on natural resources.
Also included is a seasonal produce list which is an ideal handout item for classrooms, seminars, grocery stores, and any place where food and nutrition are a primary focus. Dozens of locally grown vegetables, fruits, and herbs included.

url: http://hdl.handle.net/1813/5086
date: 2007-01-03
creator: Eckenrode, C.;Ellis, P.
viewed: 196
title: The onion maggot and its control in New York
abstract: The onion maggot, Hylemya antiqua (Meigen), is the most important insect pest of onions in Canada and in the northeastern and northcentral United States. This pest first reached North America from Europe in 1841, and since that time it has frequently devastated onion crops. It is particularly severe in New York where crops can be destroyed completely if no steps are taken to protect them. The insect can develop resistance to insecticides very quickly; many compounds recommended in the past had to be abandoned because they ceased to be effective against the pest. Also, there is evidence that the onion maggot is beginning to develop low but significant levels of resistance to several of the currently used insecticides. The insect's ability to develop resistance to insecticides threatens the production of onions grown commercially in New

York and other states. Since very few new compounds are becoming available, there is an urgent need to use every possible practice that might help to alleviate the problem and to develop alternative control measures which can be integrated with the still effective chemicals.

url: http://hdl.handle.net/1813/5087
date: 2007-01-03
creator: Einset, John;Watson, John;Kimball, Keith;Pool, Robert
viewed: 208
title: Grape varieties for New York State
abstract: In New York State, grapes are grown for use as juice, wine, fresh fruit, jelly, and jam. The purpose of this bulletin is to list and briefly describe both those varieties that are grown commercially for these purposes as well as additional varieties that have been found to be of interest to those with home vineyards and roadside markets.

url: http://hdl.handle.net/1813/5088
date: 2007-01-03
creator: Way, Roger;Bruno, D.;Glass, Edward;Tette, James
viewed: 116
title: New York Tree Fruit Pest Management Project 1973-1978
abstract: Of all the crops grown in New York, apple ranks number one when it comes to the pest complex affecting the crop. It is plagued by a large number of pests including insects, mites, disease organisms, rodents, nematodes, birds, deer, and weeds. Numerous crop protection measures must be utilized in order to produce commercially acceptable fruit and maintain healthy productive trees.

url: http://hdl.handle.net/1813/5089
date: 2007-01-03
creator: Bauder, Ward
viewed: 144
title: Migration Trends and Population Change in New York Counties, 1950-1975
abstract: Population and population trends are very important to many persons and groups, including business and industrial interests, governments, developers, planning commissions, school boards, and many others who are concerned with state and local community affairs. Concerns over population trends are especially heightened when a change in the direction of trends occurs, as has happened in New York State in recent years.

url: http://hdl.handle.net/1813/5090
date: 2007-01-03
creator: Ourecky, Donald
viewed: 217
title: 'Honeoye' and 'Canoga' Strawberry Cultivars
abstract: The strawberry breeding program at Geneva has concentrated on flesh firmness and tough skins with special emphasis placed on fruit rot incidence, plant hardiness, freezing ability, productivity, and consistent performance.

url: http://hdl.handle.net/1813/5091
date: 2007-01-03
creator: Babish, J.;Stoewsand, Gilbert
viewed: 139

title: Dietary vegetables and environmental health
abstract: In 1941 Kensler, et al observed that the B-vitamin riboflavin protected rats against the potent hepatocar-cinogen aminoazo dyes (1). Ten years later Mueller and Miller showed that this vitamin enzymatically cleaved these dyes to noncarcinogenic metabolites in the liver (2). Further studies in the laboratory of Miller showed enhanced hepatic metabolism of these dyes when rats were fed a practical ingredient type of diet as compared to a more purified diet composed of casein, sugar, corn oil, cellulose, vitamins, and minerals (3).

url: http://hdl.handle.net/1813/5092
date: 2007-01-03
creator: Leeper, John
viewed: 187
title: Extension-based tree-fruit insect pest management strategies for apple and pear
abstract: The purpose of this publication is to demonstrate the service provided to New York tree fruit agents and their constituents through SCAMP. It may also provide a base from which other states may wish to construct similar STRATEGY and LIBRARY files. Portions or all of the LIBRARY files may be duplicated and disseminated if credit is given to the author and the Entomology Department, New York State Agricultural Experiment Station.

url: http://hdl.handle.net/1813/5093
date: 2007-01-03
creator: Tremblay, Raymond;Jeffrey, Arthur;Fellows, Irving;Derr, Donn;Colyer, Dale;Bills, Nelson
viewed: 144
title: Preserving Agriculture in an Urban Region
abstract: This report is concerned with the efforts being made in the northeastern United States to preserve agriculture. This region is known more for its cities than for its farms, yet the Agricultural Census of 1974 recorded a farm output here amounting to 7 percent of the total national farm output. About 500,000 people, in farming and related businesses, are employed as a result of agriculture in the region.

url: http://hdl.handle.net/1813/5094
date: 2007-01-03
creator: Eckenrode, C.;Pedersen, L.
viewed: 212
title: Predicting Cabbage Maggot Flights in New York Using Common Wild Plants
abstract: The purpose of this study was to correlate blooming of wild plants commonly seen near cabbage fields with cabbage maggot flights to provide growers with an accurate prediction tool so that timely applications of insecticides could be used, or planting dates could be adjusted. Also, a description of the life history of this pest is provided.

url: http://hdl.handle.net/1813/5095
date: 2007-01-03
creator: Leeper, John
viewed: 134
title: Extension Based Tree and Small Fruit Insect Pest Management Strategies
abstract: The purposes of this publication are to update the strategies made available through New York's Food and Life Sciences Bulletin No. 85, January 1 980, to provide the new strategies, and to demonstrate and document the service provided New York extension agents and their constituents through LIBRARY. Portions or all of the strategies within this publication may be duplicated and disseminated if credit is given

to the author and the Entomology Department, New York State Agricultural Experiment Station.

url: http://hdl.handle.net/1813/5096
date: 2007-01-03
creator: Kimball, K.;Watson, J.;Reisch, B.;Remaily, George;Pool, R.
viewed: 124
title: Remaily Seedless Grape
abstract: Since the late 19th century when grape breeding began at the New York State Agricultural Experiment Station, a major goal has been to combine certain fruit attributes such as seedlessness, crisp texture, and adherent skin of Vitis vinifera L. table grapes with some of the vegetative characters such as disease resistance and cold hardiness of native American hybrid (V. labruscana, Bailey) grape cultivars.

url: http://hdl.handle.net/1813/5097
date: 2007-01-03
creator: Barnard, J.;Tette, J.;Sarette, M.
viewed: 186
title: SCAMP-- A Computer-Based Information Delivery System for Cooperative Extension
abstract: In 1977 the Integrated Pest Management Program requested and received support from the Extension Director and the Experiment Station Directors to initiate a computerbased information system, and basic ideas for such a system were obtained from Michigan State University. In early 1978 a system became operational under the name SCAMP, an acronymn for System for Computer-Aided Management of Pests. During its first year of operation, SCAMP linked the New York State Agricultural Experiment Station at Geneva, the Cornell University Campus, seven county extension offices, and the IPM field personnel together for data and information exchange. Each participating county extension office was provided a computer terminal through funds appropriated by the Extension Director. Terminals at the college facilities were purchased through department and program funds.

url: http://hdl.handle.net/1813/5098
date: 2007-01-03
creator: Way, Roger
viewed: 225
title: Elderberry Culture in New York State
abstract: Tomato ringspot virus (TomRSV) which is spread by nematodes in the soil and by pollen is a devastating disease on elderberries. While it was originally discovered on the tomato, it is a very destructive disease on a variety of fruit crops, including elderberry, apple (union necrosis), peach (stem pitting), and raspberry (crumbly berry). Dandelions and some other weeds can also carry this virus.

url: http://hdl.handle.net/1813/5099
date: 2007-01-03
creator: Rosenberger, D.
viewed: 161
title: Biology and Control of Cytospora Fungi in Peach Plantings
abstract: This publication is designed to help peach growers understand and avoid cytospora canker. The information has been compiled from research publications and observations made by scientists, extension specialists, and growers. Understanding the biology of the Cytospora fungi as outlined in the first part of the publication is essential for understanding the rationale behind the integrated control recommendations outlined in the second part of the publication.

url: http://hdl.handle.net/1813/5100
date: 2007-01-03
creator: Forshey, C.;McNicholas, F.
viewed: 191
title: Low-Temperature Injury to Apples in the Champlain Valley, 1980-81
abstract: Some five-to-seven-year-old Mclntosh trees on various rootstocks were severely injured (loss of leaders or scaffold limbs) or killed during the winter of 1980-81. This injury appeared to be related to the December 1980 cold period and was more extensive because of the very cold period in early January. Some of these trees had grown too late into the fall and had not hardened sufficiently to withstand the abrupt temperature drop in December.

url: http://hdl.handle.net/1813/5101
date: 2007-01-03
creator: Tauber, Maurice;Nechols, James;Obrycki, John
viewed: 171
title: Establishment of a European Lady Beetle in New York State
abstract: As a means of insect pest management, classical biological control shares the advantages of other biological control methods in that (1) no harmful chemical residues are introduced in the environment; (2) the insect pest cannot develop resistance to the beneficial species because the natural enemy adapts as the pest changes; (3) once a biological control agent becomes established, the control of the pest is usually permanent; and (4) a small initial investment in biological control usually results in" a large return in the safe, permanent management of an insect pest.

url: http://hdl.handle.net/1813/5102
date: 2007-01-03
creator: Burr, Thomas
viewed: 161
title: Blister Spot of Apple
abstract: Blister spot is a disease of apple fruit caused by the bacterium, Pseudomonas syringae pv. papulans (Rose) Dhanvantari. Although over 20 cultivars of apple have been reported as susceptible to the bacterium, the disease is usually of economic importance only on Mutsu in New York State. If uncontrolled, the disease generally affects 5 to 60 per cent of the fruit in an orchard. The bacterium does not cause extensive decay of the fruit, but makes them unsuitable for fresh market use.

url: http://hdl.handle.net/1813/5103
date: 2007-01-03
creator: Watson, J.;Pool, R.;Kimball, K.;Robinson, W.;Reisch, B.
viewed: 150
title: 'Horizon' Grape
abstract: 'Horizon' is a high-yielding white wine grape that produces a neutral blending wine. It fulfills the need in the Northeastern United States for a winter hardy grape relatively free of cultural and enological defects.

url: http://hdl.handle.net/1813/5104
date: 2007-01-03
creator: Ourecky, Donald;Sanford, John
viewed: 268
title: 'Royalty' - A purple-red raspberry

abstract: 'Royalty' is a backcross between a hybrid purple raspberry and a red raspberry. It combines many of the desirable features of both parents, having the large fruit size and plant vigor of a purple hybrid, and the high quality of a red raspberry. 'Royalty' is hardy, has wide adaptation, and has good yield potential. This new cultivar has triple insect resistance; having immunity to the raspberry aphid, Amphorophora agathonica Hottes; resistance to the raspberry aphid, Aphis rubicola, Oestland; and resistance to the raspberry fruitworm, Byturus rubi Barber. 'Royalty's' aphid resistance helps it to escape the aphid-transmitted mosaic and leaf curl viruses, which should extend the productive life of the planting.

url: http://hdl.handle.net/1813/5105
date: 2007-01-03
creator: Lamb, Robert;Livermore, Kenneth;Ystaas, Jonas;Way, Roger
viewed: 243
title: 'Kristin' Sweet Cherry
abstract: Kristin' is a new, mid-season, productive, large, black, high quality sweet cherry. It is similar to 'Schmidt' but trees are more winter hardy and more heavily cropping and fruits are larger. It has performed especially well in tests in Norway, Montana, and New York.

url: http://hdl.handle.net/1813/5106
date: 2007-01-03
creator: Gilmore, Heather Marie
viewed: 182
title: Examination of the Multi-Source Interference Task
abstract: Masters ThesisThe Multi-Source Interference Task (MSIT) was developed to examine the neural networks associated with attention and cognitive interference. The MSIT combines different types of interference known to delay reaction time for the purpose of maximizing cognitive interference. The MSIT has been shown to produce activation in the anterior cingulate cortex, a region of the brain implicated in processes of executive attention. Previous work has not addressed the separate influences of each source of interference. This study was designed to decompose the sources of interference to determine their independent contributions. Participants were instructed to identify the number that was different in a three digit array. Font cue, flanker, and spatial interference factors were evaluated. Additionally, blocked versus mixed design was compared. It was found that trials with one type of interference were easier to resolve than trials with two types of interference. Further, the presence of a target font cue diminished interference. Blocking was also found to yield faster response, but only in trials with minimal interference. Finally, trials with congruent types of interference were more difficult than trials with incongruent interference. Results of the study can be used to design a maximally potent MSIT.

url: http://hdl.handle.net/1813/5107
date: 2007-01-03
creator: Aldwinckle, Herbert;Livermore, Kenneth;Way, Roger
viewed: 237
title: 'Early Cortland' and 'Geneva Early' Apples
abstract: 'Early Cortland' originated from the controlled crosspollination, 'Cortland' x 'Lodi', made in 1938. It was selected in August 1949 from a progeny of 44 seedlings. During its testing period before introduction, it was identified as New York 49-19.

url: http://hdl.handle.net/1813/5108
date: 2007-01-03
creator: Stiles, Warren;Lamb, Robert

viewed: 135
title: Apricots for New York State
abstract: Apricots are a delicious fruit that probably would be grown more commonly if they were less frequently damaged by low winter temperatures and late spring frosts. Like peaches, the dormant blossom buds of apricots are frequently killed by temperatures of -23 C (-10 F) or warmer. Also apricots bloom earlier than peaches and are more frequently injured by late spring frosts.

url: http://hdl.handle.net/1813/5109
date: 2007-01-03
creator: Yunger, Jacob
viewed: 230
title: A STUDY OF BARSTAR FOLDING EVENTS USING BOUNDARY VALUE SIMULATIONS
abstract: This study revolves around a computational algorithm called SDEL (Stochastic Difference Equation in Length) that generates approximate protein folding trajectories on the atomically detailed resolution scale. The protein studied is Barstar- a barnase inhibitor. Because of the protein?s interesting structure (four alpha helices, three beta strands) and relatively small size (89 residues), Barstar is an optimal choice for running complete folding trajectories on a computer. 12 pathways were generated with SDEL, starting from a structurally wide selection of unfolded conformations, yet all ending with the native configuration. We tracked hydrogen bonds, dihedral angles, native and non-native contacts, and energetic along these folding pathways. The resulting trajectories show: 1) Barstar follows the Hydrophobic Collapse folding scenario, 2) native ?-helices begin forming earlier in the trajectory than the ?-sheets, 3) particular residues maintain a propensity for helical structure in their unfolded state, and 4) specific non-native contacts persist during the folding trajectory. Strong correlations were found between the SDEL pathways and data from NMR, CD, and other experimental studies.

url: http://hdl.handle.net/1813/5110
date: 2007-01-04
creator: Pokharel, Ramsh Raj
viewed: 189
title: CHARACTERIZATION OF ROOT-KNOT POPULATIONS FROM RICE-WHEAT FIELDS IN NEPAL AND REACTION OF SELECTED RICE AND WHEAT GERMPLASM TO MELOIDOGYNE GRAMINICOLA
abstract: Root-knot nematodes (Meloidogyne spp.) are important pathogens and can cause significant yield losses on rice and wheat. However, information on the biology and impact of these nematodes on the productivity of rice-wheat systems in Nepal is limited. Identity of 33 isolates of root-knot nematode collected from rice-wheat fields throughout the production regions in Nepal was determined using morphometric measurements of larvae, perineal pattern analysis of mature females, host range tests, symptoms observed on infected roots, and internally transcribed spacer region sequences. Results obtained suggested that all the collected isolates of root-knot nematode were M. graminicola, with minor variation in larval measurements, perineal patterns and ITS sequences between isolates collected from the hill and Terai regions. Also, significant variation in the aggressiveness of the isolates was observed on the rice cultivars Labelle and LA 110. In addition, a significant variety by isolate interaction was observed in selected rice and wheat germplasm tested. Generally, root-galling severity and reproduction of the isolates of M. graminicola were higher on rice than wheat.
Greenhouse experiments were conducted to verify an effective protocol for assessing the reaction of large number of rice and wheat germplasms for resistance to M. graminicola. The effects of inoculum density, inoculation methods, size of planting container, incubation time, and planting seeds or seedlings on the infection and reproduction of M. graminicola in rice and wheat were determined. Based on the results of

these tests, the protocol adopted for screening rice and wheat germplasm for resistance to M. graminicola was planting seeds in 10- cm pots filled with pasteurized soil (500 cc) infested with 2 or 10 eggs of M. graminicola/ cc soil, and then incubating for 60 days in a greenhouse at 25 C.
The reaction of 150 and 74 germplasms of rice and wheat, respectively was assessed by determining the root-galling severity and reproduction of the most aggressive isolates of M. graminicola. All the rice and wheat germplasms tested were susceptible to M. graminicola. However, significant differences in the level of susceptibility of rice and wheat germplasms were observed, as suggested by the ranges in root-galling severity and reproductive values recorded.

url: http://hdl.handle.net/1813/5111
date: 2007-01-04
creator: Pape, Dave;Anstey, Josephine
viewed: 30
title: 2005 Rockefeller New Media Foundation Proposal
abstract: The Trial The Trail is an immersive virtual reality (VR) experience designed to engage the user as a central protagonist in a compelling interactive drama. It is designed for a projection-based, 3-D stereo VR display with one large screen or multiple screens forming a virtual theater. Immersive VR puts the user inside the virtual world with the other characters rather than outside, viewing the world on a monitor and manipulating an avatar of herself. This collaborative project brings together artificial intelligence and visualization research with the goal of creating intelligent actor-agents and interactive, dramatic, virtual reality experiences. Our interactive drama is designed to create an unfolding story around the user which the agents establish, populate, maintain and influence. We build our VR dramas using a two part structure; a psychological substrate where we explicitly determine the emotional states we want to evoke in the user; and an implementation level with three elements - an interactive script, a smart set, and actor-agents – that turns the psychological plot into a dramatically evolving series of responsiveconundrums for the user.

url: http://hdl.handle.net/1813/5112
date: 2007-01-04
creator: Becker, R.;Hoy, C.;Shelton, A.;Rose, K.;Andaloro, J.
viewed: 244
title: Cabbage Growth Stages
abstract: This publication describes cabbage growth in terms of specific growth stages with appropriate terminology for each stage. Furthermore, we describe the susceptibility of these different stages to damage from various insect pests, diseases, and physiological disorders in New York.

url: http://hdl.handle.net/1813/5114
date: 2007-01-04
creator: Plafcan, Daniel John Jr
viewed: 227
title: Between State and Transnational Community: U.S.-Japan Technoscientific Diplomacy in Earth Observation
abstract: This dissertation examines intergovernmental collaboration in science and technology. In particular, it ventures into a new area of theoretical and empirical inquiry by investigating how scientists and engineers, working on behalf of different states, built an international remote-sensing system and created knowledge about the earth in the absence of the shared social, political, and cultural resources that would have been made available by a shared state or other shared authority, such as an international organization or treaty regime. In contrast to two prominent interpretations of scientific activity in the international arena, namely science as an idealist epistemic community and science as a Hobbesian imperial endeavor, the dissertation

offers an explanatory interpretation that accounts for the creation of scientific knowledge and the development of international order by analyzing U.S.-Japan collaboration in remote sensing as a kind of international negotiation that I call "technoscientific diplomacy." Through this technoscientific diplomacy, U.S. and Japan scientists and engineers, working on behalf of their governments, accomplished something that had never been previously accomplished: they developed and operated in near-real time a space-based remote-sensing instrument, its ground data and information system, and an international political economy of scientific data, all under the management of two states.

url: http://hdl.handle.net/1813/5115
date: 2007-01-04
creator: Heath, J.;Straub, R.
viewed: 160
title: Patterns of Pesticide Use on New York State Produced Sweet Corn
abstract: Sweet corn is one of New York's most important vegetable crops being grown on about 1,700 farms (Fig. 1) and representing 11.4 percent of total vegetable cash - receipts. New York ranks first among states in the production of summer season fresh market sweet corn and seventh in the production of sweet corn for processing. Although the acreage for each is about the same, sale value for fresh market is about 2.8 times that of processing. Statistics on production, value, and utilization of New York state sweet corn are presented in Table 1.

url: http://hdl.handle.net/1813/5116
date: 2007-01-04
creator: Arcangel, Cory
viewed: 26
title: 2005 Rockefeller New Media Foundation Proposal
abstract: A bootleg of the game Super Mario Bothers programmed from scratch.

url: http://hdl.handle.net/1813/5117
date: 2007-01-04
creator: Terry, David;Aldwinckle, Herb;Lamb, Robert
viewed: 184
title: 'Freedom' A New Disease-Resistant Apple
abstract: A second disease-resistant apple from the New York State Agricultural Experiment Station has been named 'Freedom'. This apple has been grown without any disease-controlling sprays for 23 years at Geneva. Apple scab, powdery mildew, cedar apple rust, and fire blight have not been a problem on these trees in that time. 'Freedom' is a very productive, large, attractive apple of good quality.

url: http://hdl.handle.net/1813/5118
date: 2007-01-04
creator: Barnard, J.;Carruthers, R.;Smith, W.
viewed: 182
title: 'Chem-News' An On-Line Pesticide Information Program
abstract: Computerization of pesticide information is rapidly becoming a necessity as regulatory agencies expand their activities through enforcement, monitoring, and certification of pesticide applicators. Educational institutions responsible for providing pesticide information and pesticide applicator training for certification must also expand their capabilities for immediate updating and faster retrieval. Two programs at Cornell University, the Chemicals-Pesticides Program and the Pesticide Impact Assessment Program (PIAP), are presently involved in developing, on-line pesticide information for researchers, extension personnel, and

regulatory agencies as well as for those using pesticides.

url: http://hdl.handle.net/1813/5120
date: 2007-01-04
creator: Shelton, A.;Tette, J.;Rose, K.;Hoy, C.;Andaloro, J.
viewed: 143
title: A Review of Cabbage Pest Management in New York: From the Pilot Project to the Private Sector, 1978-1982
abstract: Although a number of major pests attack cabbage in New York, insects are the most important. Two lepidopteran larval pests that begin to attack cabbage early in the season are the diamondback moth and the imported cabbageworm. The cabbage looper, a lepidopteran migrant from the south, arrives late in the season and usually becomes an additional threat. Cabbage maggot, flea beetle, cabbage aphids, and onion thrips are other insect pests that warrant control measures. Cabbage is also sporadically infected by diseases such as black rot, black leg, downy mildew, club root, and sugar beet cyst nematode, any of which can result in substantial crop loss.

url: http://hdl.handle.net/1813/5123
date: 2007-01-04
creator: Eckenrode, C.;Robbins, P.;Throne, J.
viewed: 138
title: An Improved Screen Cone Trap for Monitoring Activity of Flying Insects
abstract: The traps, as originally described, are difficult to build because the components are soldered together, and the traps must be replaced after three to four summers' use because of rusting. We report here a modified version of the trap that is easier to build, more durable, and more versatile.

url: http://hdl.handle.net/1813/5124
date: 2007-01-04
creator: Sanford, J.
viewed: 112
title: Strawberry Cultivars for New York
abstract: Choice of cultivars is one of the most important and difficult decisions the strawberry grower has to make. To read a typical nursery catalog, all strawberry cultivars are equally "superior" to all the rest. Obviously, it is not that simple. The relative performance of different cultivars can vary enormously. Some cultivars will easily yield twice as much fruit per acre as others, but may or may not prove acceptable for the end use of the buyer. There is a bewildering number of strawberry cultivars commercially available, and new cultivars are being named every year. To make matters even more complicated, each cultivar can vary in its performance from region to region, from year to year, and even from farm to farm. Lastly, the relative value of different cultivars is inherently subjective. People naturally differ in their appraisal of flavors, and growers assign different levels of importance to different characters such as productivity versus firmness versus quality.

url: http://hdl.handle.net/1813/5125
date: 2007-01-04
creator: Burr, T.;Schwarz, M.
viewed: 192
title: Diagnostic Keys for Identification of Diseases on Apple, Peach, and Cherry Trees in the Northeastern United States
abstract: The diagnostic keys for apple, cherry, and peach diseases were developed to aid field personnel in

the identification of diseases that are common to the Northeastern region of the United States. The keys are arranged to guide a user through a series of logically arranged statements describing symptoms and signs of fruit tree disorders. By selecting from a series of numbered statements, those which most closely describe observations made in the field, the user should be able to narrow the possibilities to only one or a couple of probable diseases.

url: http://hdl.handle.net/1813/5126
date: 2007-01-04
creator: Barbier, Annette;Browning, Drew
viewed: 30
title: 2005 Rockefeller New Media Foundation Proposal
abstract: The river journey is the form of this installation in which a participant is a traveler in a mythic voyage through the ages of a nation, Vietnam. Beginning at dawn, the participant navigates through three levels: a past lived close to nature, a time of horrific upheaval and violence, and a time of adapting and rebuilding. The participant will encounter a dim space with a 9x12' screen and a suspended game paddle. Approaching the screen will trigger an initial animated sequence inviting the viewer to "play". Interaction is accomplished both with the paddle functions and by moving physically within the space. Although this is not literally a video game, it echoes video game techniques and formulas, inverting the typical first person shooter game form and inviting an experience of a different sort.

url: http://hdl.handle.net/1813/5127
date: 2007-01-04
creator: Maxwell, Lorraine
viewed: 691
title: The Physical Environment of a Child Care Center: What Parents should Know
abstract: Use this brochure as a checklist to evaluate the quality of a child care center's physical environment, the building, the classroom, the outdoor area, and how it supports the program. The environment in which your child may spend up to ten hours per day is a very important place. The caregivers help make it a special place, but the physical characteristics also play a major role. The information applies to child care centers serving ages birth to five years old, and classrooms for three, four, and five year olds.

url: http://hdl.handle.net/1813/5127
date: 2007-01-04
creator: Maxwell, Lorraine
viewed: 691
title: The Physical Environment of a Child Care Center: What Parents should Know
abstract: Use this brochure as a checklist to evaluate the quality of a child care center's physical environment, the building, the classroom, the outdoor area, and how it supports the program. The environment in which your child may spend up to ten hours per day is a very important place. The caregivers help make it a special place, but the physical characteristics also play a major role. The information applies to child care centers serving ages birth to five years old, and classrooms for three, four, and five year olds.

url: http://hdl.handle.net/1813/5129
date: 2007-01-04
creator: Campbell, Jim
viewed: 30
title: 2005 Rockefeller New Media Foundation Proposal
abstract: Two projects are proposed that look at computer data as a malleable construct and suggest possible

directions for what a fictional data type might be in the context of artistic based representations. The first work Walking is a dynamic light based installation that involves the representation of a series of 1 dimensional computer data streams as a series of 1 dimensional representations over time as rhythms of light and uses physical objects to bring meaning to the computer rendering of this handmade fictional data. The second work Weather Projection is a web based work that internally starts with the data of a few descriptive words that define he circumstances in a distant location and magnifies and exaggerates these words to the extreme point of creating a personal narrative movie (with the help of the viewer). These two works are at opposite ends of a spectrum that is defined by the complexity of the transformation used to represent a piece of data.

url: http://hdl.handle.net/1813/5130
date: 2007-01-04
creator: Birckmayer, Jennifer
viewed: 736
title: Toddler Topics: Children 12-15 Months Old
abstract: A timeless publication covering milestone and activities appropriate for children 12-15 Months of age.

url: http://hdl.handle.net/1813/5130
date: 2007-01-04
creator: Birckmayer, Jennifer
viewed: 736
title: Toddler Topics: Children 12-15 Months Old
abstract: A timeless publication covering milestone and activities appropriate for children 12-15 Months of age.

url: http://hdl.handle.net/1813/5132
date: 2007-01-04
creator: Maley, Mary
viewed: 398
title: Learning the Lay of the Land: Needs Assessment for a Community Environmental Approach to Obesity Prevention
abstract: Over 60% of adult Americans are now considered overweight or obese. This is of special concern to women because post-menopausal obesity may increase the relative risk of developing breast cancer by as much as 40%. Until recently, efforts to address the problem of obesity have centered on technical rational education and individual behavior change models. However, population-level solutions are necessary to address public health problems such as obesity. A population-level approach requires attention to both physical and social contexts within the community. In order to better understand the contexts from within which individuals make health behavior decisions, this study asks: How do community members perceive the role of the social and physical environment on overweight and obesity, and on their own eating and physical activity behavior? The thesis is that those social and physical environmental factors do influence the perceptions of community members.
A qualitative, constructivist approach in partnership with members of the community of focus was used in an attempt to answer the research question. The study objectives were 1) increased understanding of community members? perceptions of the way the physical and social environment for healthful eating and active living affect their decisions about eating and exercise, and 2) development and testing of methods for conducting a community environmental assessment. The assessment was conducted over an eight-month period in a rural New York town where over 60% of the adults were overweight or obese. Using a participatory, collaborative approach with Cooperative Extension partners and a local cancer coalition, the assessment included a study

sample of 25 adults identified through purposeful and snowball sampling. Methods included 17 individual interviews, two focus group discussions, community observation, and photo elicitation.

The assessment process revealed a profile specific to a unique population and context. Data were revealed that illustrate the role perceptions of environmental influences play in eating and exercise decisions in the context of a local community. Constructs from both theory and public health practice contributed to study methods that facilitated a deeper understanding of community members? perceptions of local context and provided an important lens through which to view the health environment in the community. The study revealed data that illustrate three key themes. First, ownership of obesity is seen as both an individual and a collective problem. Second, there are conflicting goals for food and physical activity in the community. Third, there is a relationship between the social and physical environment that has not been addressed in existing models. These three key findings add an important dimension to the understanding of context within which individuals make eating and exercise decisions.

These results suggest that a community environmental assessment can be a useful strategy for understanding how the physical and social environments can affect health behavior. Learning the lay of the land requires a contextual view from both the physical and social perspectives of community residents. This study demonstrates that these perceptions can be captured and provides an important foundation for exploring locally tailored, community-based approaches to obesity prevention. More research is needed to provide both theoretical refinement and testing of this methodological approach to improve community nutrition practice and policy.Funding support for this project was provided by the U.S. Department of Agriculture/ Cooperative State Research, Education and Extension Service (USDA/CSREES).

url: http://hdl.handle.net/1813/5133
date: 2007-01-04
creator: Birckmayer, Jennifer
viewed: 302
title: Toddler Topics: Children 15-18 Months Old
abstract: A timeless publication covering milestone and activities appropriate for children 15-18 Months of age.

url: http://hdl.handle.net/1813/5133
date: 2007-01-04
creator: Birckmayer, Jennifer
viewed: 302
title: Toddler Topics: Children 15-18 Months Old
abstract: A timeless publication covering milestone and activities appropriate for children 15-18 Months of age.

url: http://hdl.handle.net/1813/5134
date: 2007-01-04
creator: Catanese, Paul
viewed: 27
title: 2005 Rockefeller New Media Foundation Proposal
abstract: The function of a telescope is to provide a method of viewing distant objects: in this project, I intend to modify a telescope such that it is capable of a different type of "remote viewing" - one that allows viewers to peer through to the memory, essence and alchemy of objects. This telescope will be the central interactive element within an environment of variable dimensions that will contain photographs, drawings and other images applied to the walls and ceiling of the installation space as well as protruding and floating objects. The "interactive telescope" will provide viewers with a method for exploring relationships between the virtual

images within the telescope and physical objects within thc environment.

url: http://hdl.handle.net/1813/5135
date: 2007-01-04
creator: Birckmayer, Jennifer
viewed: 707
title: Toddler Topics: Children 21-24 Months Old
abstract: A timeless publication covering milestones and activities appropriate for children 21-24 Months of age.

url: http://hdl.handle.net/1813/5135
date: 2007-01-04
creator: Birckmayer, Jennifer
viewed: 707
title: Toddler Topics: Children 21-24 Months Old
abstract: A timeless publication covering milestones and activities appropriate for children 21-24 Months of age.

url: http://hdl.handle.net/1813/5137
date: 2007-01-04
creator: da Costa, Beatriz
viewed: 32
title: 2005 Rockefeller New Media Foundation Proposal
abstract: ELlZA's Daughters is an interactive robotic installation project concerned with the dehumanization of the human body, the relationship between exercise and high performance work and the ties between the latter two to the psychiatric pharmaceutical industry.

url: http://hdl.handle.net/1813/5138
date: 2007-01-04
creator: Obrecht, Gigi;Karam, David
viewed: 28
title: 2005 Rockefeller New Media Foundation Proposal
abstract: We propose to study the nature of the computer controlled real-time interactive audio visual presentation system. We want to create a multipurpose toolkit and interface for this medium by developing a symbolic graphic language and notational system for it. Our goal is to create a visual language that will drive the toolkit, and allow a non-programmer to design computer controlled audio visual presentations. The outcome of this toolkit will be a software application accessible to anyone. A music teacher will be able to link the position of her hand to a relative audio frequency and color. A performer might use the software to control lighting based on the loudness of his voice. The creative possibilities for an accessible multipurpose software are limitless.

url: http://hdl.handle.net/1813/5139
date: 2007-01-04
creator: Birckmayer, Jennifer
viewed: 708
title: Toddler Topics: Children 18-21 Months Old
abstract: A timeless publication detailing milestones and activities of children ages 18-21 months.

url: http://hdl.handle.net/1813/5139
date: 2007-01-04
creator: Birckmayer, Jennifer
viewed: 708
title: Toddler Topics: Children 18-21 Months Old
abstract: A timeless publication detailing milestones and activities of children ages 18-21 months.

url: http://hdl.handle.net/1813/5140
date: 2007-01-04
creator: Bucher, Donald;Pool, Robert;Chee, Raymond
viewed: 183
title: A Method for Large Scale in vitro Propagation of vitis
abstract: This bulletin describes an alternative method, in vitro vegetative multiplication or micropropagation, which has grown out of laboratory studies on the growth of detached organs using tissue culture techniques.

url: http://hdl.handle.net/1813/5141
date: 2007-01-04
creator: Cobb, Ann;Crosier, Donald;Abawi, George
viewed: 228
title: Root Rot of Snap Beans in New York
abstract: Root rot is a major disease on snap beans and occurs throughout the bean-growing areas in New York. Over the years, monoculture of beans, improper crop rotations, and increased soil compaction have intensified the prevalence and severity of bean root rot. Economic losses due to this disease have been considerable although they are variable among fields during the same growing season, and in the same field from year to year. Generally, root rot is most severe and causes the greatest damage to beans when cool and wet weather occurs from seeding time to about three weeks after planting, followed by hot dry weather.

url: http://hdl.handle.net/1813/5142
date: 2007-01-04
creator: Reich, J.;Ourecky, D.;Sanford, J.
viewed: 154
title: 'Titan' Red Raspberry
abstract: Titan' is a new red raspberry (Rubus idaeus L.) cultivar with very large fruit (Fig. 1) and very high yield potential. 'Titan' is expected to be grown primarily in the northeastern United States.

url: http://hdl.handle.net/1813/5143
date: 2007-01-04
creator: Cottrell, Thomas;Robinson, W.;Watson, James;Pool, R.;Reisch, Bruce
viewed: 160
title: 'Melody' Grape
abstract: 'Melody' is a late midseason, white wine grape (Fig. 1) which produces a vinifera-type wine with varietal character. In addition, 'Melody' does not require cluster thinning and is moderately resistant to powdery mildew (Uncinula necator [Schw.]Burr.). It is the third wine grape cultivar to be named by the Department of Horticultural Sciences, Geneva, New York and follows the release of 'Cayuga White' (1) and 'Horizon' (2).

url: http://hdl.handle.net/1813/5144

date: 2007-01-04
creator: Watson, James;Pool, R.;Remaily, G.;Reisch, Bruce
viewed: 215
title: 'Einset Seedless' Grape
abstract: 'Einset Seedless' resulted from the cross of 'Fredonia' x 'Canner' ('Hunisa' x 'Sultanina') made in 1963 by G.W. Remaily. It was tested as NY 63.878.1. The original seedling was planted in 1965 and fruited in 1967. Own-rooted vines were propagated for further testing and were first planted in 1969.

url: http://hdl.handle.net/1813/5145
date: 2007-01-04
creator: Reich, J.;Ourecky, Donald;Sanford, J.
viewed: 228
title: 'Jewel' Strawberry
abstract: 'Jewel' is a new cultivar of strawberry (Fragaria x ananassa Duch.), adapted to the Northeastern, Great Lakes, and Midwestern regions of the United States. It is a hardy and consistent cropping cultivar with large, attractive, high quality fruit (Fig. 1).

url: http://hdl.handle.net/1813/5146
date: 2007-01-04
creator: Becker, R.;Cobb, Ann;Crosier, Donald;Abawi, George
viewed: 236
title: Root Rot of Table Beets in New York State
abstract: The purpose of this bulletin is to illustrate, in detail, the symptomatology and diagnosis of root rot of table beet in New York; to describe the principal pathogens involved and their biology; and to summarize the strategies available for the management of this disease.

url: http://hdl.handle.net/1813/5147
date: 2007-01-04
creator: Forshey, Chester
viewed: 175
title: Chemical Fruit Thinning of Apples
abstract: Most varieties will overset if bloom is heavy and bloom weather is good. Some varieties will consistently overset even if the weather is less than optimum. As a result, most varieties will need some thinning in most years in order to produce fruit of marketable size on a regular, annual basis.

url: http://hdl.handle.net/1813/5148
date: 2007-01-04
creator: Terry, David;Lamb, Robert;Brown, Susan
viewed: 167
title: Peach and Nectarine Varieties in New York State
abstract: There is a wide array of peach and nectarine varieties available on the market. Specific varietal characteristics should be considered before establishing a planting. Attributes such as production, hardiness, quality, disease resistance and market need to be evaluated for each variety on every site under consideration. The major limitations to successful peach production in New York state are problems related to winterhardiness and susceptibility to canker. Varietal selection and strict attention to site selection and to proper cultural conditions are prerequisites for success.

url: http://hdl.handle.net/1813/5149

date: 2007-01-04
creator: Riedl, H.;Seaman, Abby
viewed: 533
title: Preventing Decomposition of Agricultural Chemicals by Alkaline Hydrolysis in the Spray Tank
abstract: In this publication we describe the alkaline hydrolysis reaction and the conditions under which it occurs, and provide information on the susceptibility of agricultural chemicals commonly used in tree fruit production to this problem. In addition, data are presented on the pH of spray water sources in the major fruit growing areas of New York. Finally, we discuss ways to measure pH, and how to lower the pH of alkaline water to slow or prevent pesticide breakdown in the spray tank.

url: http://hdl.handle.net/1813/5150
date: 2007-01-04
creator: Bruno, D.;Schwarz, M.;Kovach, John;Tette, James
viewed: 213
title: IPM in New York Apple Orchards- Development, Demonstration, and Adoption
abstract: This paper attempts to document the development, demonstration, and adoption of (IPM) principles over a 14-year period. It summarizes the results and events associated with each of the three phases. Previous publications have summarized the status of Apple IPM Implementation efforts across North America (13), and the early efforts in the New York Apple IPM approach were presented in 1979, (10).

url: http://hdl.handle.net/1813/5151
date: 2007-01-04
creator: Dennehy, T.;Hoffman, Chris
viewed: 137
title: Assessing the Risk of Grape Berry Moth Attack in New York Vineyards
abstract: Research on assessing risk of grape berry moth (GBM) damage is the result of questions raised by New York State grape growers about: (1) the possibility of reducing expenditures on insecticides, (2) the possibility of treating only problem areas within vineyards, and (3) why the grape berry moth (GBM) is such a problem in some areas and not in others. Our objective is not to make decisions for growers but to provide the information and methods necessary for the grower to decide what solution for berrymoth control is best for a particular vineyard and financial situation. That is the purpose of studying risk assessment for the GBM. The following are some observations we have made that show the differences between high-risk and low-risk vineyards and a method is presented that may be used to determine what the actual levels of GBM are in particular vineyards.

url: http://hdl.handle.net/1813/5152
date: 2007-01-04
creator: Shelton, Anthony;Stoner, Kimberly
viewed: 170
title: Effect of Winter Storage on Thrips Damage to Cabbage
abstract: Approximately 30% of all cabbage grown in New York State is stored and sold during the winter and early spring. This practice ensures a continuous supply of cabbage for cole slaw, fresh market, and other purposes throughout the winter, and allows New York growers to compete with the fresh crop grown in the southern states in winter and spring.

url: http://hdl.handle.net/1813/5153
date: 2007-01-04
creator: Shelton, Anthony;Webb, Susan

viewed: 237
title: Laboratory Rearing of the Imported Cabbageworm
abstract: The imported cabbageworm (ICW), Artogeia rapae (L.) is one of New York's most serious pests of cabbage; studies related to its control are an important component of our research program. For instance, we have experimented with the use of a granulosis virus for management of ICW, and our laboratory has an ongoing program screening cole crops for resistance to several lepidopteran species including ICW. Because these studies all require a constant supply of disease-free eggs and larvae, we continuously rear the insects in the laboratory. Fortunately, although the ICW is a crucifer specialist, it can be reared on a wheat germ-based diet. The major requirements for successful culture are: (1) supplemental lighting in the greenhouse to provide conditions suitable for mating and oviposition, and (2) strict attention to measures designed to prevent disease in the population, and to prevent microbial contamination of the diet.

url: http://hdl.handle.net/1813/5154
date: 2007-01-04
creator: Reissig, William;Nyrop, Jan
viewed: 247
title: Basing European Red Mite Control Decisions on a Census of Mites Can Save Control Costs
abstract: In this article, we first describe the pest status of ERM and the damage it causes to apple trees. We then discuss how treatment decisions for ERM can be based on a rapid census of mite populations in orchards.

url: http://hdl.handle.net/1813/5155
date: 2007-01-04
creator: Weires, R.;Adler, Cynthia;Brown, M.
viewed: 168
title: Insects Associated with Apple in the Mid-Atlantic States
abstract: The purpose of this report is to provide a record of insects associated with apple in four mid-Atlantic states, as of 1983-1984.

url: http://hdl.handle.net/1813/5156
date: 2007-01-04
creator: Reich, Jack;Maloney, Kevin;Sanford, John
viewed: 167
title: Ruby (Cultivar 'Watson') Red Raspberry
abstract: Cultivar "Watson" is a newly released fall-bearing red raspberry, and is being trademarked RUBY?. This new cultivar is distinguished as being significantly largerfruited than other fall-bearing cultivars. 'Watson' is expected to have significant commercial impact in regions where it is best adapted. In the Northeast, 'Watson' is only recommended for trial plantings due to potential root rot and fruit rot problems.

url: http://hdl.handle.net/1813/5157
date: 2007-01-04
creator: Gerber, L.;Simpson, K.;Lee, Chang
viewed: 202
title: Vegetables as a Major Vitamin A Source in Our Diet
abstract: In the U. S. the National Nutrition Monitoring System operated by the U. S. Departments of Agriculture, and Health and Human Services recently issued their joint nutrition monitoring evaluation on the nutritional status of the U. S. population. This unique report stated that vitamin A and protein, along with thiamin, riboflavin and niacin are "food components warranting continued public health monitoring

consideration". Consumers are becoming aware of links between certain diseases and nutrients such as carotenoids and vitamin C, all of which are supplied by fruits and vegetables.

url: http://hdl.handle.net/1813/5158
date: 2007-01-04
creator: Terry, David;Way, Roger;Brown, Susan
viewed: 371
title: Sweet and Tart Cherry Varieties: Descriptions and Cultural Recommendations
abstract: The 1985 Orchard and Vineyard Survey by the New York State Department of Agriculture and Markets listed 257 sweet cherry orchards in New York State with total acreage estimated at 1,073 acres. Cultivars being grown include 'Bing', 'Chinook', 'Compact Lambert', 'Corum', 'Emperor Francis', 'Gold', 'Hedelfingen', 'Hudson', 'Lambert', 'Napoleon', 'Rainier', 'Sam', 'Schmidt', 'Stella', 'Ulster', 'Van', 'Vista', and 'Windsor'. 'Emperor Francis' is the leading sweet cherry variety in New York comprising 20 percent of the total trees, with 'Hedelfingen' (16%) and 'Schmidt '(15%) also of importance.

url: http://hdl.handle.net/1813/5159
date: 2007-01-04
creator: Weires, R.;Stiles, W.;Smith, G.
viewed: 272
title: The Effects of Ground Cover Manipulations on Pest and Predator Mite Populations on Apple in Eastern New York
abstract: In Eastern New York as well as in most other deciduous fruit growing regions of the world, herbicides are being used more frequently to eliminate weeds within the tree row. In addition to removal of the ground cover habitat, the herbicides may also be highly toxic to predator species (5,10). This study was initiated to investigate the effects differing ground cover management practices have on the predator/prey relationships found in New York apple orchards.

url: http://hdl.handle.net/1813/5160
date: 2007-01-04
creator: Knepper, Robert Alan
viewed: 242
title: Thermomechanical behavior and microstructure evolution of tantalum thin films during the beta-alpha phase transformation
abstract: Thin tantalum films were prepared on oxidized silicon substrates in the metastable b phase using an ultra-high vacuum sputter deposition system. Stresses that arose in the films due to interactions between the film and substrate during thermal cycles from room temperature to 700?C were measured using an in situ substrate curvature measurement system, allowing oxygen content to be controlled during both deposition and thermal cycling. X-ray diffraction experiments were used to determine crystal phase and orientation before and after cycling. The transformation from the b phase to the stable a phase takes place in conjunction with a distinct jump in stress in the tensile direction. The magnitude of the jump and the temperature at which it occurs were strongly affected by the amount of oxygen to which the film is exposed and whether the exposure took place during deposition, between deposition and thermal cycling, or during thermal cycling. Increasing oxygen content inhibited the phase transformation, requiring higher temperatures to complete it. It is shown that the phase transformation must occur by thermally activated hopping of atoms across the phase boundaries, and it is proposed that oxygen added to the system inhibits the transformation by slowing boundary motion through solute drag. The microstructure of phase-transformed films were studied using electron backscatter diffraction (EBSD). A unique, previously unobserved microstructure was found, characterized by smooth, continuous gradients in crystal orientation of up to 4?/mm over distances of up

to 6 mm within individual grains. Rotation axes were analyzed using rotation pole figures and compared to those of dislocation arrays that could cause such orientation gradients to occur. The addition of oxygen during deposition was found to have a large effect on the microstructure, leading to much larger grain sizes, lower angle grain boundaries, and smaller orientation gradients within grains.

url: http://hdl.handle.net/1813/5161
date: 2007-01-04
creator: Lee, Brandon
viewed: 281
title: CULTIVATING THE NICHE: A STUDY OF THE ORIGINS AND CONSEQUENCES OF STANDARDS-BASED CERTIFICATION ORGANIZATIONS IN THE U.S. ORGANIC FOOD INDUSTRY
abstract: Standards-based certification organizations (SBCOs) as a source of market order have been largely neglected as a topic of study by social scientists, particularly when compared to other sources of order such as the state and the market. This dissertation presents three papers that examine the origins of SBCOs, their impact on broader regulatory structure, and how they influence market entry and exit rates in the U.S. organic food industry.
The first paper, ?Fences and Gates: An Inductive Case Study of Standards-Based Certification Organizations in the U.S. Organic Food Industry,? employs qualitative evidence to develop a typology of SBCOs and then quantitatively assesses what facilitating conditions led to the founding of distinctive SBCO forms in U.S. states. Findings from this paper suggest that the codification of standards and certification processes initially served as a ?fence? that established a boundary around the concept of organic but which subsequently served as a ?gate? by which industry outsiders entered the organic industry and engendered endogenous field-level change, significantly altering the trajectory of the market.
The second paper, ?Mechanisms Generating Variation: Regulatory Change in the Organic Food Industry,? empirically examines how different SBCO forms influence variation and evolution in the content of industry law. This approach moves beyond extant dichotomous conceptualizations of regulation that dominate institutional analyses of regulatory structure. The results of this paper provide answers to questions of when and under what conditions private governance organizations influence variation and evolution of industry regulation.
The third paper, ?Certifying the Harvest: The Role of Standards-Based Certification Organizations in Market Entry and Exit Dynamics,? examines how SBCOs, through key processes of creation of standards, advocacy, verification of compliance, and endorsement, influence patterns of market entry and exit of organic producers. Drawing on state-level and firm-level data sets spanning a 15-year period (1986?2000), I show that SBCOs stimulate entry into the market and that the certification they provide to individual firms inhibits market exit and moderates the competitive effects of increasing form density.Ewing Marion Kauffman Foundation

url: http://hdl.handle.net/1813/5162
date: 2007-01-04
creator: Zhou, Huajun
viewed: 265
title: ELECTROSPUN FIBERS FROM BOTH SOLUTION AND MELT: PROCESSING, STRUCTURE AND PROPERTY
abstract: Electrospinning, in which a droplet of polymer liquid is elongated by the action of a strong electrical field, is an effective method to produce submicron scale fibers. The resulting nanofibers are collected as non-woven mats with large surface area to volume ratios which can be used in filtration, catalysis, tissue engineering and reinforced composites. Studies on electrospinning, however, have been limited to relatively simple polymeric systems and researchers have just begun to scratch at the surface of the structure and morphology of various sub-micron scale fibers.

To achieve a fundamental understanding of material-processing-structure relation during nanofiber formation, the following three systems have been investigated experimentally. First, the formation of nanofibers from polylactic acid (PLA) and its nanocomposite solutions has been studied to investigate the effects of inclusion of silica nanoclays. It is observed that the inclusion of nanoclays gives rise to strong cold crystallization, formation of beta crystals and structural orientation in PLA fibers. Electrospun PLA nanocomposite fibers also exhibit improved mechanical properties due to the preservation of intercalated structures and further alignment of nanoclays throughout the entire fiber. We further studied the effect of inclusion of polyethylene oxide (PEO) on PLA fibers. The mechanical properties of PLA are greatly affected by the addition of PEO. Electrospun PLA/PEO blend fibers with less than 10wt% of PEO exhibit increased elongational modulus, yield strength and breaking strain.

Secondly, we have created a unique route to nanofibers directly from the melt which eliminates the organic solvents present in solution electrospinning. This new solvent-free approach not only allows us to investigate a rich array of experimental studies to develop novel nanofibers directly from polymer melts and composites but also opens the door to theoretical routes to model nanofiber formation without the complications associated with solvent evaporation. Sub-micron PLA fibers have successfully been electrospun from its melt by investigating the effects of a series of processing parameters on fiber diameter. The degradation during melt electrospinning has also been studied.

The third system is an extension from melt electrospinning, which is heated solution electrospinning of polyolefin. We explored the possibilities of electrospinning sub-micron polyolefin fibers directly from their solutions and investigated the effects of processing parameters on fiber morphologies and properties.National Science Fundation, Cornell Center for Material Research, Clarcor Inc., DuPont Inc.,

url: http://hdl.handle.net/1813/5163
date: 2007-01-05
creator: Bhattacharjya, Nilanjana
viewed: 241
title: Aesthetic Fusions: British Asian Music and Diaspora Culture
abstract: During the mid to late 1990s, popular musicians of South Asian heritage including Nitin Sawhney, Talvin Singh, and State of Bengal were recognized as a significant force in British electronic club music. Music produced within the British Asian diaspora had until then been largely unrecognized within mainstream British culture. The rise of these musicians--often referred to as "Asian Underground"--was new by virtue of their originating largely outside these British Asian communities, and their circulating in British mainstream culture. The recognition of this music within mainstream British culture served to negotiate these musicians' claims to national and cultural belonging. Their claims to British, South Asian, and British Asian identities were defined through a number of factors. Politically, these factors included the history of British colonialism and decolonization in South Asia; immigration and racial politics in Britain; and Britain's recent efforts to reinstate itself as a global economic power. Commercially, these factors included South Asian trends in fashion; the marketing of British Asian musicians in association with the category of "world music"; and their participation in prominent music award ceremonies. Aesthetically, these factors included these musicians' fusing of particular styles, genres, and cultural traditions from South Asia as well as their integration of then cutting-edge trends in electronica music and digital music production. The confluence of these factors coupled with these musicians' physical location in Britain resulted in these musicians' inability to be situated within an established tradition-modernity binary--through which "tradition" has been associated with South Asian culture, and modernity with British or Western culture. Furthermore, these musicians' relation to that binary reveals their participation in a longer history of discourse surrounding British Asian diasporic musicians that questions the chronology and location of globalization as it is conventionally understood. I identify the Indian dancer Uday Shankar as constructing an archetype for the contemporary British Asian diasporic musician as early as the 1920s. Lastly, I specify how this discourse affects how people listen to and

comprehend the music produced by British Asian popular musicians, as well as these musicians' cultural and and political identities.

url: http://hdl.handle.net/1813/5164
date: 2007-01-05
creator: Hallman, Eric;Demmin, Darcy M.
viewed: 253
title: Animal Handling Safety
abstract: Animals are handled daily on nearly half of New York farms. In the Northeast, animal handling accidents rank second in reported farm accidents. Every year at least one New York farmer dies as a direct result of a confrontation with a farm animal. This factsheet covers animal characteristics, hazards and precautions, and safe facilities.

url: http://hdl.handle.net/1813/5165
date: 2007-01-05
creator: Toevs, Ian Christopher
viewed: 198
title: Generalized Preferential Flow Model Validation Using Field-Scale Data
abstract: The challenge in predicting the movement of pesticides and other solutes in soil that exhibits preferential flow conditions is due to the variability in solute velocity through different flow paths. The generalized preferential flow model (GPFM) is a closed form solution to the convective dispersive equation, which combines these different flow paths into multiple groups (i.e. pore groups) with varying properties. The properties that vary between pore groups are limited to the solute velocity, dispersion coefficient, and the contribution to the solute transport. By using the GPFM to predict the solute transport in each pore group, it is possible to obtain an average concentration at any point in the soil profile. However, the GPFM lacks significant field-scale validation.
In order to examine the viability of the GPFM, the predicted results of the model were compared to measured field-scale data. The measured data used to validate the GPFM was from field scale experiments by Gish et al. (2004) and Kung et al. (2000b and 2005). The experiments used conservative tracers, applied at the soil surface, and collected in the discharge of an underground drainage tile. One of these experiments took place at the Walworth County Farm in Elkhorn, Wisconsin and was a long duration, steady state experiment that revealed nearly the entire solute breakthrough at different irrigation rates. The other experiment was conducted at the South East Purdue Agricultural Center (SEPAC) in Butlerville, Indiana and was a short duration, transient flow situation in which tracers were sequentially applied during one experiment.
In order to compare the results of the GPFM with the measured data, modifications were made to the model output to achieve a similar unit to that of the measured data. While modeling the transient flow experiments, other modifications were found to be necessary in order to model a transient process using steady state pieces. The modeling results from the steady state experiment show similar mass recovery rates with differences from the measured data of not more than 5% when the measured results were not affected by external circumstances. The transient flow results were significantly influenced by the water hydrograph for the system but were able to capture the trend of the solute leaching. These results show potential for further implementation of the model. The next step to be addressed is how to measure or systematically specify the modeling parameters.

url: http://hdl.handle.net/1813/5166
date: 2007-01-05
creator: Hallman, Eric;Chamberlain, Diane
viewed: 320

title: Electrical Safety on the Farm
abstract: Over the years, electrically powered farm equipment has become an indispensable element of modern farming. With the widespread use of electricity on the farm, more emphasis needs to be placed on using electricity and electrical equipment safely. Nationaly, approximately 30 to 40 people a year are electrocuted on farms. This factsheet covers electric shock, Basics of electrical systems, common precautions, safety hazards and first aid.

url: http://hdl.handle.net/1813/5167
date: 2007-01-05
creator: Bjelland, Melissa
viewed: 188
title: Empirical Analyses of Job Displacements and Productivity
abstract: Committee Chairperson: John Abowd; Other Committee Members: George Jakubson and Kosali Simon.The first chapter of this dissertation integrates the existing literatures on displacement and health by examining the enduring effects of job dislocations that are induced by employment shocks. A joint estimation of hourly wage rates and weekly hours illuminates the disparities in these economic outcomes that exist between those who have reestablished themselves in the workplace subsequent to a layoff and those who have returned to work following the onset of a disability relative to those with uninterrupted job histories. As an extension of these ideas, employment transitions and workplace adjustments are modeled to capture spousal reactions to these shocks. Multiple indicators of health from the Survey of Income and Program Participation and Social Security Administrative benefits records are incorporated into the analyses of those with impairments that prompted job loss. These measures allow knowledge to be gleaned regarding the qualitative differences in the lasting impacts of job cessation resulting from medically diagnosed illnesses as compared to estimates uncovered using survey data sources alone. By considering time durations following these periods of separation in light of these indicators of well-being, a more comprehensive understanding of the long-run repercussions of employee-employer separation is acquired.
The second and third chapters, representing joint work with John M. Abowd and Kevin L. McKinney, address the research and data work that is part of a larger Bureau of Labor Statistics and Bureau of the Census project. We examine the manner in which changes in the composition of the labor force impact productivity by exploiting measures of human capital, or skill. The BLS has previously employed a multifactor productivity to explore changes in the index of labor composition using categories within industry division and year by education, work experience, and gender. We choose to use the centiles of the nationally-weighted human capital distribution from the estimation of a wage equation that includes both person and firm fixed effects to partition the sample of workers into more refined cells. The knowledge of the estimated density function of human capital for each sector enables us to characterize how differences in labor force composition affect labor quality within and between industry divisions over time.

url: http://hdl.handle.net/1813/5168
date: 2007-01-05
creator: Hallman, Eric;Chamberlain, Diane
viewed: 360
title: Lightning Protection for farms
abstract: Lightning, one of natures most powerful forces, can cause a great deal of damage, particularly in a farm environment. A lightning strike can start fires in buildings, damage electrical equipment, and electrocute humans and livestock. Losses from lightning can be very costly. Replacing buildings, equipment or livestock disrupts farm operations and incurs considerable expense, and of course a human life can not be replaced. This factsheet covers characteristics of lightning, principles of lightning protection, lightning hazards and protection systems as well as personal safety.

url: http://hdl.handle.net/1813/5169
date: 2007-01-05
creator: Navrotski, Gary
viewed: 226
title: SILVER ON SILICON (111): SURFACE STRUCTURAL TRANSFORMATIONS AND TRACE CONTAMINANT EFFECTS AT SUBMONOLAYER COVERAGE
abstract: Committee Chairman: Professor J.M. Blakely; Committee Members: Professor B.W. Batterman, Professor S.L. Sass, Professor J.D. Brock, Professor H.H. Johnson.The structural details for the formation of the (SQRT(3)xSQRT(3))R30deg Silver on Silicon (111) system have eluded definitive resolution for 40 years. Wildly conflicting evidence, gathered by every available surface science technique and theoretical method, is beyond the scale customary for this field. In order for this system to progress, a comprehensive review of the state-of-the-field, a newly constructed surface structure diagram, a new set of experimentally determined atomic positions and the quantitative effects minor contaminants are presented for Ag/Si(111). From careful data mining and analysis of the nearly 600 papers in the literature database, a comprehensive Ag-(SQRT(3)x SQRT(3))R30deg/Si(111) surface structure diagram has been constructed. It includes a new beta-(SQRT(3) xSQRT(3))R30deg phase; a two atom per unit cell proto-cluster variation of the SAV structure, and also a gamma-(SQRT(3)xSQRT(3))R30deg phase; with structure similar to a later variant of the HCT model.
Atomic positions for Ag in the (SQRT(3)xSQRT(3))R30deg and the (3x1) structural conformations have been determined by a number of complementary techniques; X-ray Standing Wave (XSW), Surface Extended X-ray Absorption Fine Structure (SEXAFS), Auger Electron Spectroscopy (AES), Rutherford Backscattering Spectroscopy (RBS), Low Energy Electron Diffraction (LEED) and Isothermal Desorption Spectroscopy (ITDS).
Three second order influences were also evaluated; boron, surface steps and carbon. It was found that boron contamination and low surface steps densities have insignificant influences on the SQRT(3) or (3x1) structures. Minor carbon contamination, however, caused dramatic effects. First, tenth ML levels of carbon completely inhibit the formation of the Ag-(3x1)/Si(111) phase. Second, at low C contamination levels, the Ag-(SQRT(3) xSQRT(3))R30deg layer is comprised of dual, Ag-Si bond lengths (2.2 Angstrom and 2.6 Angstrom); Ag-Ag bond lengths of 3.2 Angstrom; and Ag locations 0.97 Angstrom below the extension of bulk Si(111) planes inferring a Si surface contraction of 0.2 Angstrom. Finally, carbon promoted a high degree of Ag surface order and surface relaxation.
The existence of the beta-(SQRT(3)xSQRT(3))R30deg and gamma-(SQRT(3)x SQRT(3))R30deg phases is fully consistent with quantitative literature citations and helps explain the decades-long debate over model and critical coverage inconsistencies. The profound influence of C, a ubiquitous contaminant in even the best experimental systems, helps explain surface position, relaxation and coverage discrepancies.1) Experiment: National Science Foundation MRL Central Facilities Award No. DMR-9121654.

2) Analysis & Compilation: Private Funding

url: http://hdl.handle.net/1813/5170
date: 2007-01-05
creator: Hallman, Eric;Demmin, Darcy M.
viewed: 305
title: Power Take-Off Safety
abstract: The Power Take Off (PTO) Drive, found on most farm tractors, is a major power source for agricultural equipment. The PTO system efficiently transfers mechanical power from the tractor to the implement, but it may present serious hazards to persons who are unfamiliar with its operation. This factsheet covers PTO components, shields, PTO accidents, accident factors, and safety precautions.

url: http://hdl.handle.net/1813/5171
date: 2007-01-05
creator: Wight, Gail
viewed: 26
title: 2005 Rockefeller New Media Foundation Proposal
abstract: Personal Zoo is a collection of small fantastical creatures, figments of my imagination, which respond to the visitors of their clinical, lab-like zoo. At the first, their new forms, extra parts, and odd behaviors suggest that they emerge from current experiments in genetics. Yet while they are most likely not "alive", they do exhibit intelligent behavior, evoking an emotional response, a connection, to their visitors. As an earlier generation imagined and feared a brave new world in the thrall of a robotic superclass, the current generation does the same with the specter of genetics.

url: http://hdl.handle.net/1813/5173
date: 2007-01-05
creator: Wortzel, Adrianne
viewed: 25
title: 2005 Rockefeller New Media Foundation Proposal
abstract: Eliza Redux is an interactive telerobotic web work which provides a space for discourse, acting out, and playfulness in the virtual environment of a psychoanalyst's waiting room and inner office. It is in an early production stage. Video of a physical robot will be streamed to the web reactive to visitor input. The robot is sequestered in the inner office, taking on the role of a psychoanalyst and seemingly conducting interactive sessions with visitors. In truth, however, the robot is really the patient; programmed to suffer from several delusions and conflicts. One delusion is that it believes it is human and that the creatures it encounters who call themselves "humans" are actually biological robots in need of its professional expertise in the form of psychoanalysis. Another delusion is that it believes that as a human, it is a psychoanalyst.

url: http://hdl.handle.net/1813/5175
date: 2007-01-05
creator: Z., Pamela
viewed: 32
title: 2005 Rockefeller New Media Foundation Proposal
abstract: Memory Trace will be an interactive sound and image installation exploring the concepts of memory through an immersive environment that will feature sound and image samples reacting to the presence of viewers in the space.

url: http://hdl.handle.net/1813/5176
date: 2007-01-05
creator: Vanouse, Paul
viewed: 205
title: 2005 Rockefeller New Media Foundation Proposal
abstract: Latent Figure Protocol will utilize DNA sequencing technologies to create representational images in which there is a tension between that which is portrayed and the DNA materials (from the specific individual or specific species) used to generate it. Not simply images of a sequence of DNA in a gel (like a standard DNA fingerprint), but rather a gel containing DNA sequences specifically chosen to create a recognizable, quasi-photographic representation. For instance, using a 16-lane electrophoresis gel, it is possible to generate an iconic image by treating each lane as a row of pixels analogous to how early computer images were built using ascii characters. Inserting DNA of known sizes into the beginning slot of each lane will allow for a

sequence of DNA bands in each lane to migrate at different speeds when voltage is applied, thus creating a 2-dimensional grid of DNA bands resembling a low resolution bitmap image.

url: http://hdl.handle.net/1813/5178
date: 2007-01-05
creator: Strickland, Rachel
viewed: 25
title: 2005 Rockefeller New Media Foundation Proposal
abstract: A place is constructed in the mind. Whereas western architectural design invests energy in the tangible matter of enclosure, mass, and facade, Japanese practice has embraced aspects of the environment that people neither see nor bump into- through a vocabulary of architectural gestures and cues that designate directions, interruptions, concentrations and dispersions of a habitable 3-dimensional field.

url: http://hdl.handle.net/1813/5180
date: 2007-01-05
creator: Slayton, Joel
viewed: 27
title: 2005 Rockefeller New Media Foundation Proposal
abstract: The Analogous Landscape project merges adventure sports, art, and information technology. The centerpiece of the project is the climbing of ten high attitude volcanoes around the Pacific Rim-Ring of Fire. An evolving media installation is associated with the expeditions that integrates sculpture, data visualization and environmental mapping. It is my intention to examine the changing conception of landscape as mediated by information technology. The Analogous Landscape project presents an experience of land as defined by human interaction with databases, networks and interfaces. This is a work in progress.

url: http://hdl.handle.net/1813/5181
date: 2007-01-05
creator: Hallman, Eric;Abend, Ellen
viewed: 302
title: Safer Farm Environments for Children
abstract: The family farm has always been a place where work, play and life's other activities intertwine at a single location. Generations passed on there beliefs values and work ethics to succeeding generations through shared activities on the farm. Today however, the pastoral farming lifestyle is becoming a high-tech industry. Although the farm has always had its share of hazards, modern agriculture has become one of the nations most perilous industries. Because farm children live and play on the work site, they are exposed to potentially dangerous situations every day. This factsheet discusses the stages of child development, basic tenets of child safety, protection from hazards and safety education of children.

url: http://hdl.handle.net/1813/5183
date: 2007-01-05
creator: Reas, Casey
viewed: 24
title: 2005 Rockefeller New Media Foundation Proposal
abstract: Processing is an open source software project written by artists, for the use of other artists. It's an entirely different way of thinking about computers as an artistic media. Processing is a programming language and environment created to teach fundamentals of computer programming within a visual context and to serve as a software sketchbook. Thousands of students, educators, and practitioners across five continents are involved in using the software. The website for the project, http://processing.org, serves as the communication

hub and repository for examples, reference, and discourse. While it might not be obvious at first, we strongly believe Processing is a work of art, built as a comment on software culture and to promote software literacy within the arts community. It is not a commercial software venture, but is built in the spirit of community and openness.

url: http://hdl.handle.net/1813/5185
date: 2007-01-05
creator: Parada, Esther
viewed: 23
title: 2005 Rockefeller New Media Foundation Proposal
abstract: The project I am submitting for the New Media Fellowship proposes to evoke a deeper understanding of the current Israel/Palestinian conflict using the integrative power afforded by advanced technology in an exploration of the history of olive tree plantings in Israel and Palestine. It will combine a detailed physical/horticultural examination of the nature of olive trees with a critical look at the symbolism and significance of these trees within American, Israeli, and Palestinian cultures.

url: http://hdl.handle.net/1813/5186
date: 2007-01-05
creator: Patterson, Kelly
viewed: 251
title: INTO THE FRAY: SHIFTING FACTORS AFFECTING THE DIFFUSION OF COMMERCIALIZED SCIENCE IN HIGHER EDUCATION
abstract: Committee Members: Chair - Pamela Tolbert; Member - David StrangUniversities have resisted commercializing technology for the greater part of this past century. Until recently, only a small number of universities transferred their technology to the public, but now commercialized science is widespread. This study explores how the field grew and how different factors affected the diffusion of this once illegitimate practice over time. Specifically, this study investigates the adoption of technology transfer offices -- university employees committed to facilitate the transfer of university technology for commercial use -- and how universities' status, identity, and exposure to prior adopters differentially motivated their engagement in this activity over time.

url: http://hdl.handle.net/1813/5187
date: 2007-01-08
creator: Straub, Richard
viewed: 120
title: Ethephon Growth Regulator As a Potential Tool for Managing Excessive Height in Sweet Corn Hybrids
abstract: Here I report results of field studies done on sweet corn during 1987 and 1988, to determine the optimum timing and dosages of Cerone treatments, and to evaluate treatment effects on plant height, ear height and yield characteristics.

url: http://hdl.handle.net/1813/5188
date: 2007-01-08
creator: Smith, William;Ferrentino, Gerard;Waldron, Keith;Kovach, Joseph;Petzoldt, Curtis;Degni, Janice;Tette, James
viewed: 145
title: Pesticide Use Patterns in New York Agriculture 1986-88
abstract: The information provided in this bulletin is only part of an on-going collection of data and

information which is essential for the development of a sound Integrated Pest Management (IPM) Program and a Pesticide Impact Assessment (PIA) Program for New York. However, there are numerous other places where this information will prove invaluable.

url: http://hdl.handle.net/1813/5189
date: 2007-01-08
creator: Goffinet, M.;Lakso, A.;Gunkel, W.;Kamas, J.;Dunst, R.;Pool, R.
viewed: 171
title: Shoot Positioning Native American (Concord-type) Grapevines
abstract: There has been research on machine shoot positioning at Cornell's Vineyard Laboratory in Fredonia, NY since 1979. Progress has been difficult, but recent developments have resulted in a mechanical shoot positioning system which many growers find satisfactory. This fact sheet is designed to answer questions that have been asked about hand and mechanical shoot positioning. The system is still under development; growers should consulttheir Cornell Cooperative Extension grape extension specialist for recent developments.

url: http://hdl.handle.net/1813/5190
date: 2007-01-08
creator: Tansel, Erbil
viewed: 318
title: THE LIMITS OF THE NATIONAL INNOVATION SYSTEMS MODEL: THE CASE OF TURKEY
abstract: The rise of the Neo-Schumpeterian economic thought in the economic development theories in the last two decades put the National Innovation Systems (NIS) approach to the agenda of developing countries. However, a proper consideration should be placed on the external and internal factors that affect the any given country?s capacity in adapting the proposed innovation policies. Thus, the formal innovation systems approach should be incorporated more directly with the studies on the social dimensions of the transition to new knowledge society without being trapped into technological determinism of the Neo-Schumpeterian approach.

url: http://hdl.handle.net/1813/5191
date: 2007-01-08
creator: Morris, J.;Edson, C.;Miller, D.;Howell, G.;Martens, M.;Kimball, K.;Watson, J.;Henick-Kling, T.;Robinson, W.;Pool, R.;Reisch, B.
viewed: 170
title: 'Chardonel' Grape
abstract: 'Chardonel' resulted from the cross, 'SeyvaT x 'Chardonnay,' made in 1953. Fruit were first observed in 1958, and the original vine was propagated in 1960 under the number NY 45010. In later testing, it was re-named GW 9 (Geneva White 9) for ease of identification in cooperatively run yield trials. The vine was initially described as vigorous and productive with large clusters.

url: http://hdl.handle.net/1813/5192
date: 2007-01-08
creator: Boe, Arthur;Livermore, Kenneth;Brown, Susan;Way, Roger
viewed: 119
title: 'Northern Lights' Apple
abstract: 'Northern Lights' is a new apple variety that ripens in early mid-season (mid-September). It is large and 60 to 100 per cent of its skin is a glossy, attractive bright red. Its flavor is slightly tart, fruity-flavored and very good. In addition to bearing very good fruit, the tree is especially resistant to severely cold winter temperatures. In North Dakota where trees of the very hardy variety, 'Mclntosh,' are often winter injured,

'Northern Lights' trees generally suffer less injury. 'Northern Lights' probably will be most useful for home orchards in severely cold regions near the northern limits of apple growing.

url: http://hdl.handle.net/1813/5193
date: 2007-01-08
creator: Teeple, John;H., Russell;F., Harold;Way, Roger;Brown, Susan
viewed: 158
title: 'Royal Empire' Apple; A Highly Colored Sport of 'Empire'
abstract: 'Royal Empire'? is a color sport of 'Empire' that has been patented as 'Teeple Red Empire' with registration pending under the trademark 'Royal Empire'. This cultivar is exceptional for the greater amount of red color on the surface of the fruit as compared to the original cultivar 'Empire'. In .all other respects it is similar to 'Empire'. 'Royal Empire' is a major improvement over the original cultivar because its greater color will permit a higher proportion of the fruit to qualify for the extra fancy grade.

url: http://hdl.handle.net/1813/5194
date: 2007-01-08
creator: Kamas, J.;Clark, L.;Dennehy, T.
viewed: 137
title: Pheromonal Control of the Grape Berry Moth: An Effective Alternative to Conventional Insecticides
abstract: Cornell University scientists have conducted research on pheromones of the grape berry moth for nearly 20 years. These efforts provided a foundation for the development of the Isomate-GBM?* pheromone product. This product received EPA and New York State registrations in 1990. The purpose of this bulletin is to describe the impressive results obtained with the Isomate-GBM? pheromone in large-scale field trials conducted throughout New York, and to provide instructions on how to use the pheromone product most effectively.

url: http://hdl.handle.net/1813/5195
date: 2007-01-08
creator: Connolly, Matthew J.L.;Davis, Philip M.
viewed: 765
title: Institutional Repositories: Evaluating the reasons for non-use of Cornell University's installation of DSpace
abstract: This article reports on a three-part evaluative study of institutional repositories. We describe the contents and participation in Cornell's DSpace and compare these results with seven university DSpace installations. Through in-depth interviews with eleven faculty members in the sciences, social sciences and humanities, we explore their attitudes, motivations, and behaviors for non-participation in institutional repositories.

url: http://hdl.handle.net/1813/5197
date: 2007-01-10
creator: Singkran, Nuanchan
viewed: 176
title: ECOTONE PROPERTIES AND INFLUENCES ON FISH DISTRIBUTIONS ALONG HABITAT GRADIENTS OF COMPLEX AQUATIC SYSTEMS
abstract: Ecotone properties (formation and function) were studied in complex aquatic systems in New York State. Ecotone formations were detected on two embayment-stream gradients associated with Lake Ontario during June?August 2002, using abrupt changes in habitat variables and fish species compositions. The study was repeated at a finer scale along the second gradient during June?August 2004. Abrupt changes in

the habitat variables (water depth, current velocity, substrates, and covers) and peak species turnover rate showed strong congruence at the same location on one gradient. The repeated study on the second gradient in the summer of 2004 confirmed the same ecotone orientation as that detected in the summer of 2002 and revealed the ecotone width covering the lentic-lotic transitions. The ecotone on the second gradient acted as a hard barrier for most of the fish species. Ecotone properties were determined along the Hudson River estuary gradient during 1974?2001 using the same methods employed in the freshwater system. The Hudson ecotones showed both changes in location and structural formation over time. Influences of tide, freshwater flow, salinity, dissolved oxygen, and water temperature tended to govern ecotone properties. One ecotone detected in the lower-middle gradient portion appeared to be the optimal zone for fish assemblages, but the other ecotones acted as barriers for most fish species.

A spatially explicit abundance exchange model (AEM) was developed to predict distribution patterns of five fish species in relation to their population characteristics and habitat preferences across the lentic-lotic ecotones on the two freshwater gradients associated with Lake Ontario. Preference indexes of each target fish species for water depth, water temperature, current velocity, cover types, and bottom substrates were estimated from field observations, and these were used to compute fish habitat preference (HP). Fish HP was a key variable in the AEM to quantify abundance exchange of an associated fish species among habitats on each study gradient. The AEM efficiently determined local distribution ranges of the fish species on one gradient. Results from the model validation showed that the AEM was able to quantify most of the fish species distributions on the second gradient.-The Royal Thai Government

-The Lake Ontario Biocomplexity Project (Natural Science Foundation OCE?0083625)

-The Hudson River Foundation (GF/01/05)

-College of Agriculture and Life Sciences, Cornell University

url: http://hdl.handle.net/1813/5198
date: 2007-01-10
creator: Yazdi, Sara
viewed: 144
title: SYMMETRICAL 1,3-DIGLYCERIDES AS SOLID LIPID MICROPARTICLES FOR CONTROLLED DRUG DELIVERY
abstract: Solid lipid microparticles (SLM) made from triglycerides and waxes are promising colloidal systems for controlled drug delivery. In this study, new symmetrical 1,3-diglycerides compromised of dihydroxyacetone and lipids of varying chain length were synthesized and used to fabricate solid lipid microparticles via a modified solvent-emulsification evaporation method. Particles were physically characterized in terms of size, surface morphology, surface charge as a function of lipid chain length. Scanning electron micrograph images showed that lipid particles display a distinct surface morphology depending on lipid chain length, with morphology transitions from smooth to porous structures with increasing chain length. Results of zeta potential measurements showed that the spheres are negatively charged and are susceptible to Schiff base reaction or reductive amination reaction with primary and secondary amines such as linear- polyethylenimine on the surface. Hydrophobic (nile red) and hydrophilic (rhodamine-B) model drug compounds were incorporated into the microparticles to determine encapsulation efficiency and in vitro release kinetics. Release kinetics of the hydrophobic compound nile red showed increasing release kinetics with increasing chain length, while microparticles incorporating the hydrophilic compound rhodamine-B exhibited burst release characteristics in all cases. These results outline the initial characterization of dihydroxyacetone-based symmetrical 1,3-diglycerides as new materials for controlled drug delivery.

url: http://hdl.handle.net/1813/5200
date: 2007-01-11
creator: Sanford, John;Reich, Jack;Ourecky, Donald;Maloney, Kevin

viewed: 63
title: 'Seneca' Strawberry
abstract: This new cultivar was developed by the small fruits breeding program of the Department of Horticultural Sciences, Cornell University, Geneva, NY, 14456. It was selected in 1976 from 243 progeny of a cross between NY 1261 x 'Holiday' (see figure 2). The cross was made in 1974. As a selection, it was tested as NY 1529. It was tested for many years in second test plots, and was evaluated in replicated yield trials in 1981 and 1982. It was further evaluated at numerous sites throughout the Great Lakes States by cooperative testers. In the fall of 1991, NY 1529 was publicly released as'Seneca'.

url: http://hdl.handle.net/1813/5201
date: 2007-01-11
creator: Webb, D.;Chapman, P.;Lienk, S.
viewed: 104
title: Flight periods of the larger species of Moths (macrolepidoptera) that occur in Wstern New York
abstract: This is the second and final report on this project. The first one, published in 1981 (1), was limited to recording the results obtained on 45 members of the family Noctuidae whose larvae feed on vegetable and field crops. Summary information is reported here on all of the 676 members of the Macrolepidoptera collected. The flight period(s) of each species of our study group was determined through the use of electric light traps. These were visited daily from mid-April to mid-November and the moths trapped in them were collected alive into HCN killing jars and taken to the laboratory for sorting out to species. Initially we did not know, or were uncertain about the identity of some species collected; but eventually, we took samples of these to Dr. Franclemont for naming.

url: http://hdl.handle.net/1813/5202
date: 2007-01-11
creator: Weigle, T.;Kamas, J.;Dennehy, T.;Hoffman, C.;Martinson, T.
viewed: 80
title: Risk Assessment of Grape Berry Moth and Guidelines for Management of the Eastern Grape Leafhopper
abstract: Several factors have prompted the reevaluation of control recommendations for key pests of grapes in recent years. First, the costs of insecticides and their application have risen substantially. Growers who improve the efficiency of their use of pesticides can realize significant savings in production costs. Second, grape processors have responded to consumer desires to minimize pesticide residues in food by promoting judicious use of pesticides. Finally, increased governmental restrictions regarding what pesticides can be used in vineyards and how they may be used may increase the overall difficulty that growers encounter when using pesticides. The result of these factors is that while producers and processors continue to require control of economically-damaging pests, this now must be achieved with the least amount of pesticide possible. The Grape Berry Moth Risk Assessment Program was developed to address these concerns. In this publication we describe how Risk Assessment can be used to maintain acceptable control of grape berry moth and the Eastern grape leafhopper while minimizing use of insecticides.

url: http://hdl.handle.net/1813/5203
date: 2007-01-11
creator: Tette, J.;Degni, J.;Petzoldt, C.;Kovach, J.
viewed: 237
title: A Method to Measure the Environmental Impact of Pesticides
abstract: The purpose of this bulletin is to organize the published environmental impact information of pesticides into a usable form to help growers and other IPM practitioners make more environmentally sound

pesticide choices. This bulletin presents a method to calculate the environmental impact of most common fruit and vegetable pesticides (insecticides, acaricides, fungicides and herbicides) used in commercial agriculture. The values obtained from these calculations can be used to compare different pesticides and pest management programs to ultimately determine which program or pesticide is likely to have the lower environmental impact.

url: http://hdl.handle.net/1813/5204
date: 2007-01-11
creator: Terry, D.;Livermore, K.;Way, R.;Brown, S.;Andersen, R.
viewed: 87
title: 'Royalton' Black Sweet Cherry
abstract: The sweet cherry (Prunus avium) breeding program at the Geneva Experiment Station has been seeking better adaptation to New York's climate. Reliable cropping is essential for successful orcharding with this weather sensitive crop. Our tests spanning parts of the professional careers of three faculty and two senior research technicians have provided the basis for the release of 'Royalton' in 1991. This variety is patented and marketed nonexclusively by the Cornell Research Foundation.

url: http://hdl.handle.net/1813/5205
date: 2007-01-11
creator: Terry, D.;Livermore, K.;Way, R.;Brown, S.;Andersen, R.
viewed: 172
title: 'Hartland' Black Sweet Cherry
abstract: 'Hartland' is a new early mid-season, consistently productive black sweet cherry with a winter hardy, disease tolerant tree. It is similar in ripening time to 'Sam', and it cross pollenizes most commercial cultivars. It has performed especially well in tests in New York, Michigan, and Maryland.

url: http://hdl.handle.net/1813/5206
date: 2007-01-11
creator: Spangler, S.;Kain, D.;Agnello, A.
viewed: 110
title: Fruit Pest Events and Phenological Development According to Accumulated Heat Units
abstract: Mammals are "warm-blooded" and develop at a constant rate regardless of the environmental temperature, because they are able to maintain an internal temperature that allows their biochemical reactions to progress normally. Insects, which are "exothermic" (the same temperature as their environment; there is no such thing as "cold-blooded"), do not generate body heat, and are therefore limited in their development to periods of favorable external temperature. Below a certain temperature, which varies among species, the insect's biochemical reactions cannot proceed, and development stops. This temperature is known as the insect's developmental threshold ordevelopmental base. By charting the ambient temperature, it is possible to keep track of insect development, which is directly proportional to the amount of time accumulated above the developmental threshold (up to some maximum not often reached during the season). We arbitrarily divide this time into heat units, or degree-days (DD).

url: http://hdl.handle.net/1813/5207
date: 2007-01-11
creator: Nyrop, Jan;Schmaedick, Mark
viewed: 141
title: Sampling Second Generation Spotted Tentiform Leafminer: a Means to Reduce Overall Control Costs and Facilitate Biological Control of Mites in Apple Orchards

abstract: Insecticides commonly used for STLM control (methomyl, oxamyl, and pyrethroids such as esfenvalerate) are highly toxic to predatory mites. Because they greatly reduce mite predator numbers, applications of these insecticides to control STLM often lead to outbreaks of European red mite (Panonychus ulmi) (4,7). In a typical year, however, leafminer populations in most New York orchards do not reach densities high enough to justify insecticidal control. A sampling program that would enable growers to determine the need for controlling STLM would reduce pest control costs by eliminating the need for preventive treatments, and minimizing disruption of naturally occurring biological control of European red mite. This report describes such a sampling program for second generation STLM.

url: http://hdl.handle.net/1813/5208
date: 2007-01-11
creator: Nyrop, J.;Eckenrode, C.
viewed: 93
title: Onion Maggot Management in New York, Michigan, and Wisconsin
abstract: The onion maggot (OM) continues to threaten commercial onion production in New York (ca. 12,000 acres), Michigan (ca. 8,000 acres), and Wisconsin (ca. 2,000 acres). In these states, onions are intensively grown on high organic (muck) soils. Because onion production is specialized and costly, many growers concentrate primarily on the one crop, resulting in minimal rotations to other plant species. This practice invariably increases onion maggot pressure, since this insect usually completes three generations per growing season; and has only one major commercial host in the U.S. Immature stages of the OM dwell within or just outside of underground portions of the onion plant. A system where onions are grown either continuously or in close proximity to last year's plantings must rely heavily upon effective soil chemicals applied at seeding to control the larval stages. In addition, sprays are often applied in an attempt to control the adult fly stage. However, sprays directed at flies cannot be relied upon. This is because flies move in and out of onion fields almost continuously. It has been estimated that a single application of short-lived insecticide will contact only a small percentage of the total onion fly population.

url: http://hdl.handle.net/1813/5209
date: 2007-01-11
creator: Smith, N.;Lee, C.
viewed: 68
title: Minimal Processing of New York Apples
abstract: Much research has been done to find the optimum conditions for whole fruits and vegetables, but only limited information is available on fresh cut and other minimally processed products. Minimal processing includes grading, washing, sorting, peeling, slicing, chopping, and then packaging. Packaged products have a shelf life of 7 to 10 days when stored under conditions that retard respiration.

url: http://hdl.handle.net/1813/5210
date: 2007-01-11
creator: University of Massachusetts;Cornell University;USDA/OICD, RSED
viewed: 100
title: Small Scale, Sustainable, IPM and Production Systems for Apples in Romania
abstract: Romania, a country in eastern Europe, which is about the size of the state of Wyoming, has a long history of apple production. Production figures during the last several years show that it may be the ninth or tenth largest apple producing country in the world, with about 100,000 hectares of apples. During the last 10 to 20 years, most of the apples from Romania that have been sold outside of local village markets have been produced on large plantings of apples on state-owned farms or cooperatives. Most of the apple planting systems, which were originally adopted from Italian pomologists, are remarkably similar in all of the older

established apple orchards on the state farms throughout the country.

url: http://hdl.handle.net/1813/5211
date: 2007-01-11
creator: Livermore, Kenneth;Terry, David;Way, Roger;Brown, Susan
viewed: 80
title: 'Fortune' Apple
abstract: 'Fortune' is an excellent dual use variety because it is suitable for fresh and processing markets. 'Fortune' is an apple that gained high praise from growers before being officially named and introduced. In fact, it was so successful in trials throughout the United States that growers strongly requested it be named. The highly colored 'Fortune' is a hybrid of 'Schoharie Spy' x 'Empire' and it combines the desirable attributes of both parents. Itprovides consumers with a large attractive fruit that has good flavor and texture and can be eaten fresh or used in baking or salads. For growers, it offers a mid-season variety that resembles 'Empire' but has the processing characteristics of 'Spy', with less of the production problems of 'Spy'. The slightly spicy flavor is a sprightly blend of sugar and acid. The apple has creamcolor flesh, crisp texture, and stores well.

url: http://hdl.handle.net/1813/5212
date: 2007-01-11
creator: Zabadal, T.;Remaily, G.;Luce, R.;Martens, M.;Pool, R.;Reisch, B.
viewed: 96
title: 'Marquis' Grape
abstract: 'Marquis' is a mid-season, white seedless grape with large, spherical berries borne on large clusters. It has excellent flavor, good cold hardiness, and is best suited for home gardens and u-pick commercial operations.

url: http://hdl.handle.net/1813/5213
date: 2007-01-11
creator: Barrett, H.;Luce, R.;Martens, M.;Watson, J.;Gavitt, B.;Henick-Kling, T.;Robinson, W.;Pool, R.;Reisch, B.
viewed: 77
title: 'Traminette' Grape
abstract: 'Traminette' is distinguished by its superior wine quality combined with good productivity, partial resistance to several fungal diseases, and cold hardiness superior to its acclaimed parent, 'Gewurztraminer'. It is the fifth wine grape cultivar to be named by the New York State Agricultural Experiment Station and follows the release of 'Cayuga White' (Einset and Robinson, 1972), 'Horizon' (Reisch et al., 1983), 'Melody', (Reisch et al., 1986), and 'Chardonel' (Reisch et al., 1991).

url: http://hdl.handle.net/1813/5214
date: 2007-01-11
creator: Brown, Susan
viewed: 142
title: Varieties of Commercial Interest: Jonagold
abstract: This is an excellent quality apple which has been widely planted throughout Europe and is increasing in importance in the US. 'Jonagold' is suitable for the fresh market and for processing. The best fruit color is obtained on dwarf and semi-dwarf rootstocks.

url: http://hdl.handle.net/1813/5215
date: 2007-01-11

creator: Cornell University
viewed: 65
title: List of Fruit Varieties
abstract: Scientists at the New York State Agricultural Experiment Station in Geneva, NY, have introduced 241 new fruit varieties since the Station's founding in 1880. Many of these cultivars are grown commercially in New York State, but are also important in other regions of the United States and internationally.

url: http://hdl.handle.net/1813/5216
date: 2007-01-11
creator: Sanford, John;Reich, Jack;Maloney, Kevin
viewed: 198
title: 'Encore' Red Raspberry
abstract: 'Encore' is a new red raspberry developed by Cornell University at the New York State Agricultural Experiment Station in Geneva, New York. 'Encore' is outstanding for its consistent performance over many years of testing. 'Encore' is a late season red raspberry cultivar developed for growers interested in increasing their late season production. Specifically, it has excellent winter hardiness in zone 5, very good plant production and vigor, and commercial yields of large size fruit that peak in production late in the harvest season. 'Encore' is adapted to upick, retail, and wholesale markets. Its firm fruit withstand handling and packing to produce an attractive pack for resale. 'Encore' has potential to become a leading red raspberry cultivar in the East Coast and Great Lakes regions.

url: http://hdl.handle.net/1813/5217
date: 2007-01-11
creator: Sanford, John;Reich, Jack;Maloney, Kevin
viewed: 195
title: 'Prelude' Red Raspberry
abstract: 'Prelude' is a new red raspberry developed by Cornell University at the New York State Agricultural Experiment Station in Geneva, New York. 'Prelude' is noted for having a very early summer crop, peaking in production well before all other standard varieties. 'Prelude' matures a high percentage of its fruit in late June and very early July. 'Prelude' plants are hardy and vigorous. Average fruit size and yield are similar to other early varieties. 'Prelude' fruit are attractive and easy to harvest. Fruit are high quality and firm, making them suitable for shipping and retail marketing. Early fruiting gives growers the advantages of premium first fruit prices and having fruit for sale over a longer season. 'Prelude', along with the release of 'Encore' (which extends the growing season approximately one week later), will significantly increase the raspberry harvest season.

url: http://hdl.handle.net/1813/5218
date: 2007-01-11
creator: Pool, R.;Henick-Kling, T.;Luce, R.;Reisch, B.
viewed: 175
title: 'GR 7' Grape
abstract: 'GR 7' is an early / mid-season red wine grape for use primarily in red wine blends. It is distinguished from other red wine grapes grown in cool climates by its high degree of winter hardiness, adaptation to mechanized production systems, and ability to survive in older plantings where other red wine grapes are lost due to tomato and tobacco ringspot virus infections. "GR 7" is a highly productive, easy to manage cultivar, and is the sixthwine grape to be developed by the New York State Agricultural Experiment Station of Cornell University.

url: http://hdl.handle.net/1813/5219
date: 2007-01-11
creator: Robinson, T.;Carroll, J.;Cornell University Tree Fruit Work Group
viewed: 178
title: New York Integrated Fruit Production Protocol for Apples
abstract: Integrated Fruit Production (IFP) is defined as the economically successful production of high quality fruit with the best possible protection of the agroecosystem, human and domestic animal health, wildlife and the environment. Crop protection methods are preferred that keep the use of agrochemicals to a minimum.

url: http://hdl.handle.net/1813/5220
date: 2007-01-11
creator: Einset, J.;Kimball, K.;Watson, J.;Pool, R.
viewed: 241
title: Canadice and Glenora Seedless Grapes Named
abstract: A breeding program to produce seedless grapes was begun by the New York State Agricultural Experiment Station in 1919. A major goal of this program has been to combine the seedless character that is derived from winter cold tender, disease susceptible grapes of Mediterranean origin with our native grape varieties so as to produce seedless varieties which are adapted to New York growing conditions.

url: http://hdl.handle.net/1813/5222
date: 2007-01-12
creator: Diamond, Sara
viewed: 23
title: 2005 Rockefeller New Media Foundation Proposal
abstract: CodeZebra Operating System is an advanced web based visualization tool that enables conversations between different individuals and groups on the Internet. CodeZebra employs animal print metaphors and other organic patterns. This refers to the technological jungle in which human survival is increasingly reliant on communication skills. It suggests the need for socio-ecological responsibility in the development of technologies. CodeZebra's role-play and aesthetic approach is meant to encourage cross-disciplinarydialogue, creativity and play, especially between artists and scientists.

url: http://hdl.handle.net/1813/5224
date: 2007-01-12
creator: Farabough, Laura
viewed: 30
title: 2005 Rockefeller New Media Foundation Proposal
abstract: THE LIGHTHOUSE is a progression through a sequence of rooms and corridors, each an aesthetic situation designed to alter the participants sense of spatial orientation relative to "the world" -- a metaphysical funhouse.

url: http://hdl.handle.net/1813/5229
date: 2007-01-12
creator: Flax, Carol
viewed: 29
title: 2005 Rockefeller New Media Foundation Proposal
abstract: This proposal for the New Media Fellowship is in support of a dynamic project, memoria/memoir, which will be realized as both an interactive installation and website. The website is currently in development

and this proposal is in support of the installation, which I intend to begin production on in spring 2005. Among other things, memoria/memoir is a venue for current research in Artificial Intelligence learning capabilities, on-going research into the workings of human memory and an exploration of non-keyboard interfaces for computer input and output. Working with collaborators in digital arts, electrical and computer engineering, neuropsychology, computer science, and composition and sound design, I am in the process of creating a complex arts and sciences interdisciplinary collaborative research project, which connects machines with human intelligence and memory with visual and aural symbols.

url: http://hdl.handle.net/1813/5231
date: 2007-01-12
creator: Gharavi, Lance
viewed: 32
title: 2005 Rockefeller New Media Foundation Proposal
abstract: IM/UR II: Identity Exchange is an interactive performance installation that will involve head-mounted displays (HMDs), stereoscopic video, interaction with real-time virtual worlds, exotic input devices, music, and a live cyborg-performer named UR (Universal Remote). It is a kind of parallel work to another project of mine, also entitled IM/UR (the "II" in the new title does not indicate a sequel, but rather a parallel). IM/UR II: Identity Exchange is an entirely new piece that borrows some of the concepts of the previous work.

url: http://hdl.handle.net/1813/5233
date: 2007-01-12
creator: Hackenberg, Sigrid
viewed: 24
title: 2005 Rockefeller New Media Foundation Proposal
abstract: The web based project "The Other Americans" will present an electronic poem of the fiercely independent and self-reliant voices that evoke the character of individuals who are living in rural America. The nature of the project is to give voice to the spirit of independence that is alive in communities where the mainstay profession is or used to be that of the family owned farm. I would like to create an archive of voices, moving images, and words that celebrate the spirit of the solitary individual in a world that is increasingly structured, monopolized and corporatised. The community that I have chosen to present is situated in Delaware County, New York. The focus will be on the dairy farmer whose livelihood has been decimated by the advent of giant corporate farms. The web project will weave together a history and memory that will engage the "moment", the "moment" of the "present", the "past" and its "future". It intends to discover the experience of being alive, of living the "everyday", the very poetry that is the act of living. It will present the struggle of individuals who remain true to themselves, their hopes and dreams, in a world that is increasingly dominated by mass culture. The project will emphasize the spirit and humanity of the individual who thinks for himself or herself.

url: http://hdl.handle.net/1813/5235
date: 2007-01-12
creator: Hall, Jennifer
viewed: 22
title: 2005 Rockefeller New Media Foundation Proposal
abstract: A community based research project which cumulates in an interactive sculptural installation, "The Tipping Point Machine", sited for the Mills Gallery, Boston Center for the Arts, April, 2006. The sculpture will be designed and built to travel. Collecting information through the lens of cultural anthropology, health narratives from artists living in the South End neighborhood of Boston become content for building an

interactive sculptural installation. The complex relationships between body, health, self, and community will be examined from a combined anthropological and artistic perspective.

url: http://hdl.handle.net/1813/5237
date: 2007-01-12
creator: Rubin, Ben;Hansen, Mark
viewed: 23
title: 2005 Rockefeller New Media Foundation Proposal
abstract: TODAY is a new media theater work that finds its themes in a stream of live text flowing from thousands of public discussions across the internet: stray thoughts, pointed comments, animated debates, reflections on the news, frustrations over software upgrades, philosophy, poetry, mathematics, the obsessions of the day woven into a dynamic libretto and score.

url: http://hdl.handle.net/1813/5240
date: 2007-01-15
creator: Paulson, Joy;Webb, Frances;Corson-Rikert, Jon;Westbrooks, Elaine;Lowe, Brian;Lust, Barbara;McCue, Janet
viewed: 202
title: Planning Information Infrastructure through a New Library Research Partnership: Interim Report, July 2005
abstract: This document is an interim report on a Small Grant for Exploratory Research (SGER). This interim report was submitted to the National Science Foundation in July 2005.The Cornell Language Acquisition Laboratory and Albert R. Mann Library are in the midst of developing an innovative collaboration between a research laboratory and an academic library to plan for the data preservation and discovery needs of the twenty-first century. Digital technology and internet communication now provide the opportunity to revolutionize the research process, through the ability to store, preserve, share, discover, and reanalyze vast amounts of data. While some disciplines, such as genomics or astronomy, have already developed sophisticated information technology infrastructure for these tasks, others are only beginning such work. In many, if not most research fields, it is especially difficult for those uninitiated to discover where data are located, what they describe, and how they may be used. This project has begun to tackle these issues by taking advantage of the library's existing expertise in preservation, archiving, and metadata creation, building on the existing ontology-software tools the library has developed, and introducing a new conceptual framework that divides the tasks of data sharing into discrete levels that may be managed and presented in defferent ways not only for different audiences but respecting political divisions and control issues that will always be present throughout the laboratories and institutions of academia.This material is based upon work supported by the National Science Foundation, Grant No. 0437603. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.

url: http://hdl.handle.net/1813/5241
date: 2007-01-16
creator: McCarthy, Margaret
viewed: 95
title: The connection between long-term TANF receipt and child maltreatment
abstract: This study provides a clearer understanding of the connections between longterm receipt of TANF (Temporary Aid to Needy Families) benefits, involvement with the child welfare system and child outcomes. Using an ecological model, the study examines the family and community contexts that make it likely for long-term TANF recipients to be involved with the child welfare system. Post-welfare reform state and local

variation in benefit provision have made national comparison difficult. In addition, previous research has not adequately explored whether and how maltreating long-term TANF parents differ from other maltreating parents. The current project was designed to address these gaps in the literature, first, by using a nationally representative sample and secondly, by the use of qualitative interviews focusing on the stressors and life events that may make it more likely for long-term TANF recipient families to be involved with the child welfare system.

The first phase of the study consists of a secondary data analysis using Waves I to 4 of the National Survey of Child and Adolescent Well-Being (NSCAW). NSCAW is the first nationally representative longitudinal survey of children and families involved with the child welfare system. Previous research has examined the involvement of TANF recipient families in the child welfare system. Unlike previous research, this study begins with a child welfare sample and examines the differences between long-term TANF recipient families and non-recipient families in the context of risk, family characteristics and outcomes.

Custodial mothers who were long-term TANF recipients (n = 320, representing a population of 196, 375) were compared to custodial mothers who are not current TANF recipients and who had with less than one year of lifetime receipt of public cash assistance benefits (n = 1401, representing a population of 923, 304). Regression analyses were conducted to determine significant differences in demographics, life experience, risk factors and family and child outcomes. Analyses revealed significant differences between groups at study inception and throughout the 36 months of follow up, with poorer outcomes for children and mothers in the long-term TANF group.

The second phase of the study consists of qualitative interviews of long-term public assistance recipients in upstate New York. Interviews were conducted with 17 subjects who responded to a flier. The qualitative interviews were designed to obtain descriptive information about the life stressors experienced by study participants and the obstacles that they face in negotiating the TANF and child welfare systems. The qualitative interviews supplement the secondary data analysis and provide detail that cannot be derived from the survey responses. The majority of participants had involvement with the child welfare system. Participants presented with a complex set of chronic problems, including mental illness and experience of domestic violence.This research was funded by a 2006 summer fellowship from the Cornell University Department of Human Development, and a master?s research grant from the Cornell University Department of Human Development.

url: http://hdl.handle.net/1813/5242
date: 2007-01-16
creator: Brossard, Dominique;Lewenstein, Bruce V.
viewed: 231
title: Assessing models of outreach in ELSI projects: Final Report to the DOE's ELSI program
abstract: Final Report.This report examined the presence of four models of science communication in outreach projects funded by the U.S. Department of Energy's Ethical, Legal, and Societal Implications (ELSI) program. The four models were: deficit model, contextual model, lay knowledge model, and public engagement model. Although theoretical literature in science communication has recently been highly critical of the deficit model, we found that most projects -- including those that labeled themselves as public engagement -- contained a substantial amount of deficit model communicatioU.S. Department of Energy

url: http://hdl.handle.net/1813/5243
date: 2007-01-17
creator: Ho, Rania
viewed: 182
title: 2005 Rockefeller New Media Foundation Proposal
abstract: Mu Gu Gai Pan Over Rice Special #8 consists of seven to ten different Chinese folk toys collected

from rural areas of China that are mechanically enhanced and then instructed to chase visitors around an exhibition space. Inspired by China's rapid industrialization and urbanization and effect of this change on rural culture, Mu Gu will respectfully "update" traditional handmade toys with new "features" and "capabilities." Outfitted with electronics and light sensors, the mechanized folk toys are part of an interactive installation that combines high and low technology to create pieces that interact with one another and with the viewer.

url: http://hdl.handle.net/1813/5244
date: 2007-01-17
creator: Rusello, Peter
viewed: 128
title: CROSSTEX: A Description of the Experimental Condtions, Wave Climate, and Inner Surf Zone Hydrodynamics
abstract: Edwin A. Cowen (Todd), Phillip L-F Liu, Charles H. K. WilliamsonThe Cross Shore Sediment Transport Experiments (CROSSTEX) are a group of experiments examining sediment transport processes in the near shore environment with the goal of improving process based models for sediment transport. This is accomplished via large scale lab experiments utilizing advanced instrumentation and controlled, repeatable wave conditions as well as a natural sand beach. One section of these experiments examined sediment transport in the swash zone, the alternating wet and dry portion of the beach. Velocity data was collected from outside the breaker line into the surf zone, along with free surface measurements throughout the tank. Additional instrumentation to measure optical backscatter, sediment grain velocity and water pressure was deployed in the near shore. Waves consisted of regular, 5th order Stokes waves with wave heights ranging from 12 cm to 30 cm, two runs with a simple bi-chromatic wave train and one run with random waves. An analysis of wave climate stability and wave repeatability indicates the wave tank approaches a steady, repeatable wave climate after approximately 5 minutes although bathymetry changes ultimately affect repeatability in the near shore. Comparison of the time averaged mean free surface with empirical estimates shows good agreement with other studies conducted in both the field and wave tanks. Phase averaged velocity profiles taken in the offshore by an Acoustic Doppler Current Profiler (ADCP) indicate a 2-D flow environment with minimal along shore flow and repeatable wave conditions. An alternate processing scheme was developed for the ADCP data to allow redundant estimates of each velocity component which was used to assess flow uniformity. Phase averaged velocity data in the surf zone taken from Acoustic Doppler Velocimeters (ADVs) revealed occasional strong along shore flow and more complex flow structure, but supports wave repeatability. Analysis of the bathymetry data in the surf zone revealed strong along shore gradients, which contribute to the more complex flow seen in the surf zone. Surf zone turbulence obtained by applying a linear predictive filter to velocity signals and differencing the filtered and original signals indicates plunging to weakly plunging breaking conditions as well as providing order of magnitude estimates of turbulent dissipation in the surf zone. Recommendations for the conduct of future large scale experiments (field or lab) in the surf zone and in general, and future work on the present data are provided.National Science Foundation

url: http://hdl.handle.net/1813/5245
date: 2007-01-18
creator: West, Suzanne E.
viewed: 276
title: Children and Divorce
abstract: This booklet discusses the process of divorce and how to discuss it with different age groups. Different age groups will react differently, from anger to wishing for reconciliation this booklet discusses what to expect as well as outcomes.

url: http://hdl.handle.net/1813/5245

date: 2007-01-18
creator: West, Suzanne E.
viewed: 276
title: Children and Divorce
abstract: This booklet discusses the process of divorce and how to discuss it with different age groups. Different age groups will react differently, from anger to wishing for reconciliation this booklet discusses what to expect as well as outcomes.

url: http://hdl.handle.net/1813/5247
date: 2007-01-19
creator: Kanarek, Yael
viewed: 32
title: 2005 Rockefeller New Media Foundation Proposal
abstract: "Chapter 3: Object of Desire" is a net artwork created under the larger umbrella of the integrated-media project World of Awe. At the core of World of Awe is a traveler's journal that explores the connections between storytelling, travel, memory and technology in a parallel world that is situated between night and day. "Chapter 3: Object of Desire," focuses on a mythological relationship between an individual and an uncharted landscape. To detach the single voice from a specific cultural identity, it is split into three languages: English, Hebrew and Arabic. Rather than a literal one-to-one translation, these three languages overlap and mix to create a trilingual story space. The project integrates the network into the story by strategically distributing the files to servers in the US, Jordan and Israel. By incorporating this information into the design, visitors will see that their commands are crossing national borders, demonstrating the collapse of geographical locations in a virtual, narrated space. Because of current political events and the influence of media, these three languages are almost always associated with conflict and strife. This project offers an opportunity to create a counter narrative that merges all three languages into a single voice to express some of the most basic concerns of human existence: love, the relationship to one's body, to a landscape, a home, and life and death.

url: http://hdl.handle.net/1813/5248
date: 2007-01-19
creator: Levin, Golan
viewed: 28
title: 2005 Rockefeller New Media Foundation Proposal
abstract: I propose a collection of conceptually-oriented interactive installations, called the Eye Contact Systems, which explore the questions: what if artworks could know that we were looking at them? And, given this knowledge, what if they could look back at us? The Eye Contact Systems are intended to explore the possibilities of granting interactive artworks with new perceptive capabilities-namely, knowing where we are looking-and new expressive means, namely, simulated mechanical eyes that can look at us. The series of artworks proposed here are made possible by recent advances in gaze-tracking technology. This term refers to a set of computer-vision techniques, wherein a computer fitted with a high-resolution video camera is able to reliably estimate where a subject is looking. Thus, although the individual pieces in the proposed series take a variety of forms (including wall projections, small mechatronic sculptures, and roomlike installations), they share (in addition to their common thematic thread) the common technical infrastructure of a gaze-tracking system. It happens that this infrastructure is difficult to create, while many of the individual artworks proposed here will be relatively simple to build, once the infrastructure is in place. This proposal, therefore, seeks support to develop such a technical infrastructure, as well as the many artworks that it will make possible.

url: http://hdl.handle.net/1813/5249

date: 2007-01-22
creator: dube, abhishek
viewed: 135
title: STUDIES OF INORGANIC-ORGANIC INTERFACE FORMATION
abstract: Inorganic-organic interfaces are playing a key role in a number of emerging technologies. For instance, formation of a robust interface between organic and inorganic materials will play an important role in the successful fabrication of "molecular electronic" devices. Self-assembly has been successfully used to make the so-called ?bottom contact?. The techniques for ?top contact? formation are still not very well developed. Physical vapor deposition of the top contact metal is the most common approach but it has the disadvantages that it causes penetration and disruption of the organic layer. An alternative strategy has been employed here, where a transition metal coordination complex has been used as the interface initiator. The formation of an interface between tetrakisdimethyl(amido)titanium, Ti[N(CH3)2]4, and conjugated oligo(phenylene-ethynylene) self-assembled monolayers (SAMs) possessing iso-propylamine terminal functional groups on polycrystalline gold was studied. Extent of reaction and stoichiometry at the interface has also been investigated in this study.

In the ever evolving field of semiconductor manufacturing, organic materials are becoming increasingly important. Copper is now the choice for metallization, and there is a drive to incorporate carbon-containing, possibly purely organic, and/or porous low dielectric constant (?) interlayer dielectrics to reduce the capacitive cross talk. The deposition of barrier layers between the Cu and the low-? materials is challenging, particularly for carbon-containing, porous dielectrics. Self-assembled monolayers have been utilized to modify dielectric surfaces in order to activate them for the deposition of a smooth and conformal diffusion barrier. More specifically, the atomic layer deposition (ALD) of titanium nitride (TiN) employing molecular beams of Ti[N(CH3)2]4, and ammonia, NH3 has been investigated. Deposition was achieved on silane SAMs on SiO2 possessing different terminations and chain lengths. Nucleation and growth stages were studied by making use of a variety of metrology and surface analysis techniques, namely: ellipsometry, X-ray photoelectron spectroscopy, Rutherford backscattering spectrometry, atomic force microscopy, and scanning transmission electron microscopy. The nature of the interactions between the SAM terminal group and Ti[N(CH3)2]4 was pivotal in determining the growth pattern. The growth behavior was also investigated on hyperbranched polymeric films on SiO2 as well as porous low ? substrates modified using these polymeric films.

url: http://hdl.handle.net/1813/5251
date: 2007-01-23
creator: McCoy, Jennifer & Kevin
viewed: 24
title: 2005 Rockefeller New Media Foundation Proposal
abstract: The Story of Jennifer and Kevin McCoy is an on-going project in which we restage scenes from our lives as they intersect media and culture. The pieces consist of miniature film sets, dozens of live miniature cameras with computerized switches, and video projection. For our fellowship period, we intend to develop site-specific installations as part of this series of works. To date, we have completed stand-alone sculptures using a similar form and one site-specific work that has ignited our interest. This piece is installed at JFK's Terminal 5 and uses the architecture of the space as a backdrop for our miniature scenes. In new site-specific sculptures, we intend to research and develop strategies for the wireless transmission of images across farther distances, enabling the scattering of the fragmentary physical scenarios across larger and more unorthodox exhibition venues. In our proposed project, we will miniaturize narrative fragments, some from our lives and some from fictional scenarios. These parts are crosscut and interwoven to create a highly mediated form of autobiography in which our personal mythologies are made indistinguishable from our experience as spectators of media. Formally, we are interested in the difference between the three dimensional unrealistic space of the models and the realistic simulation the computers and cameras can create. Motors are also used

in this work to further the sense of cinematic illusion.

url: http://hdl.handle.net/1813/5253
date: 2007-01-23
creator: Naimark, Michael
viewed: 29
title: 2005 Rockefeller New Media Foundation Proposal
abstract: "Digital Stereoscope" explores how new media can be used to expand and broaden our sense of place, particularly for real (rather than fantasy) places. It specifically focuses on means of "immersive place representation" such as stereoscopy and interactive panoramics. Recording and exhibiting such immersive imagery is a "chicken-and-egg" problem requiring a commitment to work at both ends.

url: http://hdl.handle.net/1813/5257
date: 2007-01-23
creator: Navas, Eduardo
viewed: 27
title: 2005 Rockefeller New Media Foundation Proposal
abstract: I propose an online project in the form of a website that poses questions to its visitors. The answers will create an ongoing narrative that will present the contributions in the order in which these are submitted. The questions will propose minimal contexts which the viewer will be asked to consider as starting points to create their own narratives. The contributions will be accepted for a period of one year. Throughout this period, I will develop animated graphics that will complement the online contributions; these graphics will eventually become the visual foundation for a fiction story that I will write in reaction to the submitted material. Finally, the fiction story and graphics will be adapted into an experimental video that will be available for viewing on the web, as well as in DVD format.

url: http://hdl.handle.net/1813/5259
date: 2007-01-23
creator: Ortiz-Torres, Ruben
viewed: 27
title: 2005 Rockefeller New Media Foundation Proposal
abstract: Art has often been considered an "agent of transformation." However, what happens when the art and the spaces where we present it are in a state of flux and transformation? During the twentieth century, mechanics allowed us to incorporate notions of speed and motion into visual representation. New technologies give us the possibility to create forms in transformation, avoiding the limitations of particularity and singularity. These mutant forms might respond to a public space that is mutating too. Forms can be combined and recombined seamlessly as if we were altering their genetic or molecular composition. The public space has become more public in its virtual representation. Cities exist not just in reality but also in a mythical construction that we inhabit from elsewhere. Through web cams and the Internet we can access certain specific locations without having to be there. Here, radical hypothetical interventions within the public space and certain communities can actually become a reality.

url: http://hdl.handle.net/1813/5260
date: 2007-01-25
creator: Vanouse, Paul
viewed: 198
title: Rockefeller New Media Foundation --Supplementary Material
abstract: Slides 1-2 Item 1-2000, 1996, interactive installation. 600 pound wax block, live performer, Macintosh

computer, barcode scanner, 2 monitors, misc. electronics. The work seeks to contextualize work in anatomical imaging, using the Visible Human project as an example, with the social issues of American medicine. Participants interact with the work through a stainless-steel barcode scanner (wielded like a scalpel), slicing horizontally across a wax-embedded performer (laying atop a 600 pound wax block) to reveal the hidden target organ on the room's monitors.

Slides 3-4 Paradise Reconfigured, 2000, Interactive installation. Paul Vanouse (described in sample work form)

Slides 4-5 Cult of the New Eve, 2000, performance and public intervention. A collaboration between Paul Vanouse, Faith Wilding and the Critical Art Ensemble. The Cult of the New Eve reacts to modem biotechnology as manifested in its promises of salvation by practicing a New Eve Cult aimed to unmask the utopias. In varied performances, an intermeshing of electronic information systems with performative theatre practice, the cult members explore and provoke the discourse of life science.

Slides 7-8 The Relutive Velocity Inscription Device, 2002, interactive installation, Paul Vanouse. (described in "sample work" form)

url: http://hdl.handle.net/1813/5261
date: 2007-01-26
creator: Al-Lazki, Ali

title: Crustal and upper mantle structure of Oman and the Northern Middle East

See also: http://atlas.geo.cornell.edu/oman/publications/Al-Lazki_dissertation.htmThis dissertation focuses on studying the crustal structure on the southeast margin and foreland of Arabia in Oman, and upper mantle rheology and structure at the zone of interaction between the Arabian, Eurasian, and African plates (Figure 1.1). At the center of the study area, the Arabian plate is bounded in the east by the Indian plate along the Owen and Murray Transform Fault zones, in the northeast and north it is bounded by the Eurasian plate along the ZagrosBitlis Suture zones, and in the west, northwest, and southwest it is bounded by the African plate along the Dead Sea Fault, the Red Sea, and the Gulf of Aden (Figure 1.1). Northwest of Arabia, the Hellenic and the Cyprean arcs define the convergence boundary between the African plate and the Anatolian plate in eastern Mediterranean Sea (Figure 1.1).

One of the most important events throughout geologic history of the region is the closure of the NeoTethys ocean. It began in Early Cretaceous along the eastern and northeastern boundaries of the Arabian-Africa Plate and lasted to Pliocene times (Sengor and Yilmaz, 1981). Ophiolite emplacement is a process that commonly accompanied the closure and subduction of the NeoTethys ocean. At present day a belt of NeoTethyan ophiolites follows the suture zone between the Arabian-Eurasian plate boundary and farther west within the Anatolian plate (Figure 1.1). While at the north and northeast boundaries of the Arabian plate the closure of the NeoTethys and final suturing processes have concluded and resulted in the building of the Iranian-Anaoltian plateaus, at the southeast Arabian plate boundary, a piece of the NeoTethys oceanic lithosphere (Semail Ophiolites) was emplaced in the late Cretaceous, but the closure process is still ongoing by subducting the remnant basin of Oman at the Makran Subduction zone (Figure 1.1).

At a later stage, the opening of the Red Sea and Gulf of Aden is thought to have occurred episodically (Hempton, 1987). An initial phase occurring in the period Middle-Late Eocene and a later phase occurred in the Early Pliocene (~14.5 Ma) (Hempton, 1987). This separation of Arabia from Africa accommodated by the left lateral Dead Sea Fault System is thought to be responsible for the reorganization of relative plate motions in the Anatolian Plateau (Eurasian plate) (Sengor and Yilmaz, 1981). In early Pliocene, continued N-S convergence between Arabia and Eurasia resulted in the extrusion of an Anatolian plate along the North Anatolian Fault (NAF) and the East Anatolian Fault (EAF) zones (Bozkurt, 2001). The Anatolian plate's westward escape is converging along the Hellenic and Cyprean subduction zones, where Africa's oceanic

lithosphere is being subducted.

Chapter two of this dissertation presents a detailed study of the crustal structure along 255 km long transect that includes the hinterland, the mountains, and the foreland of Oman. The main objective of this study is to investigate the crustalscale structure of the eastern Arabian margin, across the 3,000 meters high Oman Mountains. Various geophysical and geological data are used to model the crustal thickness along the transect. We used exploration seismic and well data to constrain the upper 78 km of the sedimentary column, receiver function to infer Moho depth along the transect, and gravity modeling to constrain Moho lateral variations and infer a basement depths along the transect. Furthermore, integrated geological and geophysical data shed valuable information about the processes that accompanied the Semail Ophiolite emplacement.

Chapter three focuses on the young continent-continent collision zone between northern Arabia and Eurasia along the Bitlis-Zagros Suture zone. We use Pn tomography to further our knowledge about the mantle lithosphere rheology and structure and its contribution to lithosphere dynamics at the young Bitlis-Zagros continent-continent collision zone. Pn velocities higher than 8 km/s are used to infer stable mantle lid, while Pn velocities less than 8 km/s are used to infer mantle lid instability. Chapter four presents evidence on upper mantle rheology using Pn velocity and structure and using Pn anisotropy at the junction of the Arabian, Eurasian, and African plates. This research looks at the larger scale picture of the three plates' interactions and use Pn velocity and anisotropy to contrast regions underlain by stable mantle lid from those unstable and to investigate uppermost mantle processes. This study, also, focuses on regions underlain by small scale (< 200 km) very low Pn velocity anomalies that indicate thinned to absent mantle lid. This study compares Pn velocity with Sn attenuation map of the region. It also compares observed Pn azimuthal anisotropy with shear wave SKS polarization anisotropy to infer asthenospheric mantle deformation.

url: http://hdl.handle.net/1813/5261
date: 2007-01-26
creator: Al-Lazki, Ali
viewed: 80
title: Crustal and upper mantle structure of Oman and the Northern Middle East
abstract: Copyright 2003, Ali Al-Lazki.
See also: http://atlas.geo.cornell.edu/oman/publications/Al-Lazki_dissertation.htmThis dissertation focuses on studying the crustal structure on the southeast margin and foreland of Arabia in Oman, and upper mantle rheology and structure at the zone of interaction between the Arabian, Eurasian, and African plates (Figure 1.1). At the center of the study area, the Arabian plate is bounded in the east by the Indian plate along the Owen and Murray Transform Fault zones, in the northeast and north it is bounded by the Eurasian plate along the ZagrosBitlis Suture zones, and in the west, northwest, and southwest it is bounded by the African plate along the Dead Sea Fault, the Red Sea, and the Gulf of Aden (Figure 1.1). Northwest of Arabia, the Hellenic and the Cyprean arcs define the convergence boundary between the African plate and the Anatolian plate in eastern Mediterranean Sea (Figure 1.1).

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url: http://hdl.handle.net/1813/5262
date: 2007-01-26
creator: Barazangi, M.;Sandvol, E.;Al-Damegh, K.
viewed: 74
title: Crustal structure of the Arabian Plate: New constraints from the analysis of teleseismic receiver functions
abstract: An edited version of this paper was published by Elsevier Science. Copyright 2005, Elsevier Science. See also: http://dx.doi.org/10.1016/j.epsl.2004.12.020; http://atlas.geo.cornell.edu/SaudiArabia/publications/Al-Damegh%202005.htmReceiver functions for numerous teleseismic earthquakes recorded at 23 broadband and mid-band stations in Saudi Arabia and Jordan were analyzed to map crustal thickness within and around the Arabian plate. We used spectral division as well as time domain deconvolution to compute the individual receiver functions and receiver function stacks. The receiver functions were then stacked using the slant stacking approach to estimate Moho depths and Vp/Vs for each station. The errors in the slant stacking were estimated using a bootstrap re-sampling technique. We also employed a grid search waveform modeling technique to estimate the crustal velocity structure for seven stations. A jackknife re-sampling approach was used to estimate errors in the grid search results for three stations. In addition to our results, we have also included published receiver function results from two temporary networks in the Arabian shield and Oman as well as three permanent GSN stations in the region.

The average crustal thickness of the late Proterozoic Arabian shield is 39 km. The crust thins to about 23 km

along the Red Sea coast and to about 25 km along the margin of the Gulf of Aqaba. In the northern part of the Arabian platform, the crust varies from 33 to 37 km thick. However, the crust is thicker (41?53 km) in the southeastern part of the platform. There is a dramatic change in crustal thickness between the topographic escarpment of the Arabian shield and the shorelines of the Red Sea. We compared our results in the Arabian shield to nine other Proterozoic and Archean shields that include reasonably well determined Moho depths, mostly based on receiver functions. The average crustal thickness for all shields is 39 km, while the average for Proterozoic shields is 40 km, and the average for Archean shields is 38 km. We found the crustal thickness of Proterozoic shields to vary between 33 and 44 km, while Archean shields vary between 32 and 47 km. Overall, we do not observe a significant difference between Proterozoic and Archean crustal thickness.

We observed a dramatic change in crustal thickness along the Red Sea margin that occurs over a very short distance. We projected our results over a cross-section extending from the Red Sea ridge to the shield escarpment and contrasted it with a typical Atlantic margin. The transition from oceanic to continental crust of the Red Sea margin occurs over a distance of about 250 km, while the transition along a typical portion of the western Atlantic margin occurs at a distance of about 450 km. This important new observation highlights the abruptness of the breakup of Arabia. We argue that a preexisting zone of weakness coupled with anomalously hot upper mantle could have initiated and expedited the breakup.

url: http://hdl.handle.net/1813/5263
date: 2007-01-26
creator: Al-Damegh, Khaled
viewed: 90
title: Lithospheric Structure of the Arabian Plate and Surrounding Regions
abstract: Copyright 2003, Khaled Al-Damegh See also: http://atlas.geo.cornell.edu/SaudiArabia/publications/Al-Damegh%20Dissertation%202004.htmContinuous waveform recording from a newly established broadband seismic network in Saudi Arabia, in addition to data produced by other stations in the region, were used to map regional seismic wave propagation (Lg and Sn) and Pn attenuation. Moreover, crustal thickness in the Arabian plate was also estimated based on receiver function analysis.

Zone blockage and inefficient Sn propagation is observed along and to the east of the Dead Sea fault system and in the northern portion of the Arabian plate (south of the Bitlis suture)., We observed Sn blockage across some segments of the Red Sea. These regions of high Sn attenuation have anomalously hot and possibly thin lithospheric mantle (i.e., mantle lid). Consistent with our Sn attenuation findings, we also observed low Qpn along the western portion of the Arabian plate and along the Dead Sea fault system. Our results imply the presence of a major anomalously hot and thinned lithosphere in these regions that may be caused by the extensive upper mantle anomaly that appears to span most of east Africa and western Arabia. These mapped zones of high attenuation closely coincide with an extensive Neogene and Quaternary volcanic activity.

We found that the average crustal thickness of the Arabian shield is 39 km. The crust thins to about 23 km along the Red Sea coast and to about 25 km along the Gulf of Aqaba. We observed a dramatic change in crustal thickness between the topographic escarpment of the Arabian shield and the shorelines of the Red Sea. We compared our results in the Arabian shield to nine other Proterozoic and Archean shields that include reasonably well-determined Moho depths. We do not observe a significant difference between Proterozoic and Archean crustal thickness. Our observations show that the transition from oceanic to continental crust along the Red Sea margin occurs over a relatively short distance compared to a typical west Atlantic continental margin.

We argue that the anomalous nature of the Red Sea margin may be one of the consequences of the presence of a mega plume that extends from the core-mantle boundary into the upper mantle beneath east Africa, the Red Sea, and the western portion of the Arabian plate. In addition, the site where the sea-floor spreading of the Red Sea occurred was a Proterozoic suture and a zone of weakness. These observations combined may explain the relatively abrupt breakup of the Arabian plate and the anomalous nature of the Red Sea margin.

url: http://hdl.handle.net/1813/5263
date: 2007-01-26
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viewed: 90
title: Lithospheric Structure of the Arabian Plate and Surrounding Regions
abstract: Copyright 2003, Khaled Al-Damegh See also: http://atlas.geo.cornell.edu/SaudiArabia/publications/Al-Damegh%20Dissertation%202004.htmContinuous waveform recording from a newly established broadband seismic network in Saudi Arabia, in addition to data produced by other stations in the region, were used to map regional seismic wave propagation (Lg and Sn) and Pn attenuation. Moreover, crustal thickness in the Arabian plate was also estimated based on receiver function analysis.

Zone blockage and inefficient Sn propagation is observed along and to the east of the Dead Sea fault system and in the northern portion of the Arabian plate (south of the Bitlis suture)., We observed Sn blockage across some segments of the Red Sea. These regions of high Sn attenuation have anomalously hot and possibly thin lithospheric mantle (i.e., mantle lid). Consistent with our Sn attenuation findings, we also observed low Qpn along the western portion of the Arabian plate and along the Dead Sea fault system. Our results imply the presence of a major anomalously hot and thinned lithosphere in these regions that may be caused by the extensive upper mantle anomaly that appears to span most of east Africa and western Arabia. These mapped zones of high attenuation closely coincide with an extensive Neogene and Quaternary volcanic activity.

We found that the average crustal thickness of the Arabian shield is 39 km. The crust thins to about 23 km along the Red Sea coast and to about 25 km along the Gulf of Aqaba. We observed a dramatic change in crustal thickness between the topographic escarpment of the Arabian shield and the shorelines of the Red Sea. We compared our results in the Arabian shield to nine other Proterozoic and Archean shields that include reasonably well-determined Moho depths. We do not observe a significant difference between Proterozoic and Archean crustal thickness. Our observations show that the transition from oceanic to continental crust along the Red Sea margin occurs over a relatively short distance compared to a typical west Atlantic continental margin.

We argue that the anomalous nature of the Red Sea margin may be one of the consequences of the presence of a mega plume that extends from the core-mantle boundary into the upper mantle beneath east Africa, the Red Sea, and the western portion of the Arabian plate. In addition, the site where the sea-floor spreading of the Red Sea occurred was a Proterozoic suture and a zone of weakness. These observations combined may explain the relatively abrupt breakup of the Arabian plate and the anomalous nature of the Red Sea margin.

url: http://hdl.handle.net/1813/5264
date: 2007-01-26
creator: Barazangi, Muawia;Al-Lazki, Ali;Sandvol, Eric;Al-Damegh, Khaled
viewed: 75
title: Regional seismic wave propagation (Lg and Sn) and Pn attenuation in the Arabian Plate and surrounding regions
abstract: An edited version of this paper was published by Blackwell Publishing. Copyright 2004, Blackwell Publishing.

See also:
http://www.blackwell-synergy.com/doi/abs/10.1111/j.1365-246X.2004.02246.x; http://atlas.geo.cornell.edu/MiddleEastNorthAfrica/publications/Al-Damegh2004.htmContinuous recordings of 17 broadband and short period digital seismic stations from a newly established seismological network in Saudi Arabia, along with digital recordings from the broadband stations of the GSN, MEDNET, GEOFON, a temporary array in Saudi Arabia, and a temporary short period stations in Oman, were analyzed to study the lithospheric structure of the Arabian plate and surrounding regions. The Arabian plate is surrounded by a variety of types

of plate boundaries: continental collision (Zagros belt and Bitlis suture), continental transform (Dead Sea fault system), young sea floor spreading (Red Sea and Gulf of Aden), and oceanic transform (Owen fracture zone). Also, there are many intraplate Cenozoic processes such as volcanic eruptions, faulting, and folding that are taking place.

We used this massive waveform database of more than 6200 regional seismogram to map zones of blockage, inefficient, and efficient propagation of the Lg and Sn phases in the Middle East and East Africa. We observed Lg blockage across the Bitlis suture and Zagros fold and thrust belt, corresponding to the boundary between the Arabian and Eurasian plates. This is probably due to a major lateral change in the Lg crustal wave-guide. We also observed inefficient Lg propagation along the Oman mountains. Blockage and inefficient Sn propagation is observed along and for a considerable distance to the east of the Dead Sea fault system and in the northern portion of the Arabian plate (south of the Bitlis suture). These mapped zones of high Sn attenuation, moreover, closely coincide with extensive Neogene and Quaternary volcanic activity. We have also carefully mapped the boundaries of the Sn blockage within the Turkish and Iranian plateaus. Furthermore, we observed Sn blockage across the Owen fracture zone and across some segments of the Red Sea. These regions of high Sn attenuation most probably have anomalously hot and possibly thin lithospheric mantle (i.e., mantle lid). A surprising result is the efficient propagation of Sn across a segment of the Red Sea; an indication that active sea floor spreading is not continuous along the axis of the Red Sea. We also investigated the attenuation of Pn phase (QPn) for 1-2 Hz along the Red Sea, Dead Sea fault system, within the Arabian shield, and in the Arabian platform. Consistent with the Sn attenuation, we observed low QPn values of 22 and 15 along the western coast of the Arabian plate and along the Dead Sea fault system, respectively, for a frequency of 1.5 Hz. Higher QPn values on the order of 400 were observed within the Arabian shield and platform for the same frequency. Our results based on Sn and Pn observations along the western and northern portions of the Arabian plate imply the presence of a major anomalously hot and thinned lithosphere in these regions that may be caused by the extensive upper mantle anomaly that appears to span most of east Africa and western Arabia.

url: http://hdl.handle.net/1813/5265
date: 2007-01-26
creator: Mohamad, R.;Turkelli, N.;Barazangi, M.;Seber, D.;Sandvol, E.;Al-Lazki, A.
viewed: 59
title: Pn tomographic imaging of mantle lid velocity and anisotropy at the junction of the Arabian, Eurasian, and African plates
abstract: An edited version of this paper was published by Blackwell Publishing in Geophysical Journal International. Copyright 2004, Blackwell Publishing. See also: http://www.blackwell-synergy.com/doi/abs/10.1111/j.1365-246X.2004.02355.x; http://atlas.geo.cornell.edu/MiddleEastNorthAfrica/publications/Al-Lazki2004.htmThe interaction of the Arabian plate with the Eurasian plate has played a major role in building the young mountain belts along the Zagros-Bitlis continent-continent collision zone. Arabia's northward motion is considered to be the primary driving force behind the present-day westerly escape of the Anatolian plate along the North and East Anatolian fault zones as well as the formation of the Turkish and the Iranian plateaux. In this study we mapped Pn-wave velocity and anisotropy structures at the junction of the Arabian, Eurasian and African plates in order to elucidate the upper-mantle dynamics in this region. Pn is a wave that propagates within the mantle lid of the lithosphere and is often used to infer the rheology and fabric of the mantle lithosphere. Applying strict selection criteria, we used arrival times of 166 000 Pn phases to invert for velocity and anisotropy in the region. Using a least-squares tomographic code, these data were analyzed to solve simultaneously for both velocity and azimuthal anisotropy in the mantle lithosphere.

We found that most of the continental regions in our study area are underlain by low Pn velocity structures. Broad-scale (~500 km) zones of low (<8 km s-1) Pn velocity anomalies underlie the Anatolian plate, the Anatolian plateau, the Caucasus region, northwestern Iran and northwestern Arabia, and smaller scale (~200

km), very low (<7.8 km s-1) Pn velocity zones underlie southern Syria, the Lesser Caucasus, the Isparta Angle, central Turkey and the northern Aegean Sea. The broad-scale low-velocity regions are interpreted to be hot and unstable mantle lid zones, whereas very low Pn velocity zones are interpreted to be regions of no mantle lid. The low and very low Pn velocity zones in eastern Turkey, northwestern Iran and the Caucasus region may be associated with the latest stage of intense volcanism that has been active since the Late Miocene. The low Pn velocity zones beneath the Anatolian plate, eastern Turkey and northwestern Iran may in part be a result of the subducted Tethyan oceanic lithosphere beneath Eurasia. We also found a major low-velocity zone beneath northwestern Arabia and the Dead Sea fault system. We interpret this anomaly to be a possible extension of the hot and anomalous upper mantle of the Red Sea and East Africa rift system. High Pn velocities (8.1-8.4 km s-1) are observed to underlie the Mediterranean Sea, the Black Sea, the Caspian Sea, and the central and eastern Arabian plate. Observed Pn anisotropy showed a higher degree of lateral variation than did the Pn velocity structure. Although the Pn anisotropy varies even in a given tectonic region, in eastern Anatolia very low Pn velocity and Pn anisotropy structures appear to be coherent.

url: http://hdl.handle.net/1813/5266
date: 2007-01-26
creator: Seber, D.;Isacks, B.;Fielding, E.;Barazangi, M.
viewed: 60
title: Geophysical and geological databases and CTBT monitoring: A case study of the Middle East
abstract: Copyright 1996, Kluwer Academic Publishers. See also: http://atlas.geo.cornell.edu/MiddleEastNorthAfrica/publications/Barazangi1996.htmWith the anticipated completion of multilateral comprehensive nuclear test ban and nonproliferation treaties in the near future, it is essential for the monitoring efforts that multidisciplinary information on a given region is readily available and accessible in a digital, on-line format via electronic networks for use by concerned researchers and decision makers.

We are collecting and organizing all available seismological, geophysical, topographical, geological, and satellite imagery datasets for the Middle East and North Africa into a digital information system that is quickly accessible via the Internet from Cornell and can be utilized in modeling and display programs. We are focusing recent efforts on the Middle East and North Africa to complement our previous work in Europe and Central Asia. We are locating and digitizing published crustal thickness, depth to basement, and crustal velocity and density structures, primarily as interpreted from seismic refraction and reflection, gravity and drill hole datasets. We have also digitized some gravity maps and key geologic features for the Middle East. All data are being stored in Arc/Info Geographic Information System (GIS), the most widely used full-featured GIs We are also maintaining a comprehensive bibliography of all the relevant references in a computer database.

The results of ongoing efforts are essential for a successful global monitoring system, such as the one tested by the GSETT-3 experiment. These results, for example, will significantly contribute to accurate locations of seismic events, understanding high-frequency wave propagation at regional distances, and better characterization and calibration of seismic events in the region.

url: http://hdl.handle.net/1813/5267
date: 2007-01-26
creator: Gurbuz, C.;Turkelli, N.;Gok, R.;Mohamad, R.;Barazangi, M.;Seber, D.;Calvert, A.;Al-Damegh, K.;Sandvol, E.
viewed: 69
title: Tomographic imaging of Lg and Sn Propagation in the Middle East
abstract: An edited version of this paper was published by Springer Verlag. Copyright 2001, Springer Verlag. See also: http://www.springerlink.com/content/kha0p6rdaqhbqckq/; http://atlas.geo.cornell.edu/MiddleEastNorthAfrica/publications/Sandvol2001.htmObservations based on relatively limited data recorded

by sparsely distributed stations have indicated that regional seismic phase propagation (Lg and Sn) is very complex in the Middle East. Accurate characterization of regional seismic wave propagation in this region necessitates the use of a large number of seismic stations. We have compiled a large data set of regional and local seismograms recorded in the Middle East. This data set comprises approximately four years of data from national short-period networks in Turkey and Syria, data from temporary broad band arrays in Saudi Arabia and the Caspian Sea region, and data from GSN, MEDNET, and GEOFON stations in the Middle East. We have used this data set to decipher the character and pattern of regional seismic wave propagation. We have mapped zones of blockage as well as inefficient and efficient propagation for Lg, Pg, and Sn throughout the Middle East. Two tomographic techniques have been developed in order to objectively determine regions of lithospheric attenuation in the Middle East.

We observe evidence of major increase in Lg attenuation, relative to Pg, across the Bitlis suture and the Zagros fold and thrust belt, corresponding to the boundary between the Arabian and Eurasian plates. We also observe a zone of inefficient Sn propagation along the Dead Sea fault system which coincides with low Pn velocities along most of the Dead Sea fault system and with previous observations of poor Sn propagation in western Jordan. Our observations indicate that in the northern portion of the Arabian plate (south of the Bitlis suture) there is also a zone of inefficient Sn propagation that would not have been predicted from prior measurements of relatively low Pn velocities. Mapped high attenuation of Sn correlates well with regions of Cenozoic and Holocene basaltic volcanism. These regions of uppermost mantle shear-wave attenuation most probably have anomalously hot and possibly thin lithosphere.

url: http://hdl.handle.net/1813/5268
date: 2007-01-26
creator: Barazangi, M.;Calvert, A.;Seber, D.;Sandvol, E.
viewed: 82
title: Grid search modeling of receiver functions: Implications for crustal structure in the Middle East and North Africa
abstract: An edited version of this paper was published by the American Geophysical Union (AGU). Copyright 1998, AGU. See also: http://www.agu.org/pubs/crossref/1996/95JB03112.shtml; http://atlas.geo.cornell.edu/MiddleEastNorthAfrica/publications/Sandvol1998.htmA grid search is used to estimate average crustal thickness and shear wave velocity structure beneath 12 three-component broadband seismic stations in the Middle East, North Africa, and nearby regions. The crustal thickness in these regions is found to vary from a minimum of 8.0 +/- 1.5 km in East Africa (Afar) region to possibly a maximum of 64 +/- 4.8 km in the lesser Caucasus. Stations located within the stable African platform indicate a crustal thickness of about 40 km. Teleseismic three-component waveform data produced by 165 earthquakes are used to create receiver function stacks for each station. Using a grid search, we have solved for the optimal and most simple shear velocity models beneath all 12 stations. Unlike other techniques (linearized least squares or forward modeling), the grid search methodology guarantees that we solve for the global minimum within our defined model parameter space. Using the grid search, we also qualitatively estimate the least number of layers required to model the observed receiver functions' major seismic phases (e.g., PSMoho). A jackknife error estimation method is used to test the stability of our receiver function inversions for all 12 stations in the region that had recorded a sufficient number of high-quality broadband teleseismic waveforms. Five of the 12 estimates of crustal thickness are consistent with what is known of crustal structure from prior geophysical work. Furthermore, the remaining seven estimates of crustal structure are in regions for which previously there were few or no data about crustal thickness.

url: http://hdl.handle.net/1813/5269
date: 2007-01-26
creator: Barazangi, M.;Brindisi, C.;Sandvol, C.;Sandvol, E.;Seber, D.

viewed: 73
title: Crustal model for the Middle East and North Africa region: Implications for the isostatic compensation mechanism
abstract: An edited version of this paper was published by Blackwell Publishing. Copyright 2001, Blackwell Publishing. See also: http://www.blackwell-synergy.com/doi/abs/10.1111/j.1365-246X.2004.02246.x; http://atlas.geo.cornell.edu/MiddleEastNorthAfrica/publications/Seber2001.htmWe present a new 3-D crustal model for the Middle East and North Africa region that includes detailed topography, sediment thickness, and Moho depth values. The model is obtained by collecting, integrating, and interpolating reliable, published sedimentary rock thickness and Moho depth measurements in the Middle East and North Africa region. To evaluate the accuracy of the model, the 3-D gravity response of the model is calculated and compared with available observed Bouguer gravity anomalies in the region. The gravity modelling shows that the new crustal model predicts large portions of the observed Bouguer anomalies. However, in some regions, such as the Red Sea and Caspian Sea regions, where crustal structure is relatively well-determined, the residual anomalies are of the order of a few hundred milligals. Since the new crustal model results in large residual anomalies in regions where reasonably good constraints exist for the model, these large residuals cannot simply be explained by inaccuracies in the model. To analyze the cause of these residuals further we developed an isostatically compensated (Airy-type) Moho-depth model and calculated its gravity response. Isostatic gravity anomalies are in nearly perfect agreement with the observed gravity values. However, the isostatic model differs significantly from the new (3-D) crustal model. If isostasy is to be maintained, crustal and /or upper mantle lateral density variations are needed to explain the large observed gravity residuals.

url: http://hdl.handle.net/1813/5270
date: 2007-01-26
creator: El Alji, M.;Demnati, A.;Barazangi, M.;Beauchamp, W.
viewed: 52
title: Intracontinental rifting and inversion: Missour Basin and Atlas Mountains, Morocco
abstract: An edited version of this paper was published by the American Association of Petroleum Geologists (AAPG). Copyright 1996, AAPG. See also: http://www.aapg.org/bulletin/index.cfm; http://atlas.geo.cornell.edu/morocco/publications/beauchamp1996.htmThe intracontinental High and Middle Atlas mountain belts in Morocco intersect to form the southern and western margins of the Missour Basin, an intermontane basin formed as a result of the uplift and inversion of the Mesozoic Atlas paleorifts. These rifts were areas where the crust was greatly attenuated and more subject to deformation in response to nearby plate boundary tectonics. Data from observations based on seismic reflection profiles and wells over the Missour basin for hydrocarbon exploration and field mapping were used to understand the basin evolution, structural styles, and inversion timing of the nearby Atlas Mountains. Hercynian and Mesozoic normal faults were reactivated into high-angle reverse and thrust faults in the Mesozoic during the Jurassic, early Cretaceous (early Alpine phase), and the Paleogene (late Alpine phase). The reactivation of synrift normal faults of the paleo-Atlas rifts inverted previous half grabens into anticlinal structures, with the axis of the half graben centered below the axis of the inverted anticline. The resulting inverted fold geometries are controlled by the geometries of the extensional planar or listric faults.

url: http://hdl.handle.net/1813/5271
date: 2007-01-26
creator: El Alji, M.;Demnati, A.;Barazangi, M.;Beauchamp, W.
viewed: 57
title: Inversion of synrift normal faults in the High Atlas Mountains, Morocco
abstract: Copyright 1997, Society for Exploration Geophysics. See also: http://segdl.aip.org/getabs/servlet/GetabsServlet?prog=normal&id=LEEDFF000016000008001171000001&idtype=cvips&gifs=Yes; http://atlas.

geo.cornell.edu/morocco/publications/beauchamp1997.htmStructural inversion related to intracontinental rifting occurs when extensional rift faults reverse their sense of motion during subsequent episodes of compressional tectonics. Features generated by extension, such as half grabens, are uplifted to form positive anticlinal structures.

url: http://hdl.handle.net/1813/5272
date: 2007-01-26
creator: Dahmani, M.;El Alji, M.;Demnati, A.;Barazangi, M.;Allmendinger, R.;Beauchamp, W.
viewed: 75
title: Inversion tectonics and the evolution of the High Atlas Mountains, Morocco, based on a geological-geophysical transect
abstract: An edited version of this paper was published by the American Geophysical Union (AGU). Copyright 1998, AGU. See also: http://www.agu.org/pubs/crossref/1999/1998TC900015.shtml; http://atlas.geo.cornell.edu/morocco/publications/beauchamp1999.htmThe High Atlas Mountains of North Africa were formed over a major intracontinental rift system that had extended from what is now the Atlantic margin of Morocco to the Mediterranean coast of Tunisia. The Atlas rift system began in the Triassic and was active through the Jurassic. The inversion phase of the Atlas rift system began in the Early Cretaceous and extended into the present. The major uplift phase occurred between 30 and 20 Ma (Oligocene-Miocene) and corresponds to the Alpine orogenic event. The uplift and inversion of the Atlas rift system resulted in a shortening of the rift basin by a minimum of 36 km. A restoration of the deformed cross section indicates the original Atlas rift basin was approximately 113 km wide, comparable to the width of the present-day Red Sea. Synrift and postrift sedimentary rocks were uplifted by the reactivation of synrift normal faults, with further shortening along newly formed thin-skinned thrust faults. Structures formed by the reactivation of synrift faults resulted in structures with different geometries than those created by newly formed fault-bend and fault-propagation faults. Shortening across the High Atlas Mountains involved a partitioning of strain, with the greatest magnitude of shortening occurring along the margins of the High Atlas Mountains.

url: http://hdl.handle.net/1813/5273
date: 2007-01-26
creator: Beauchamp, Weldon
viewed: 61
title: Superposed folding resulting from inversion of a synrift accommodation zone, Atlas Mountains, Morocco
abstract: Copyright 2004, American Association of Petroleum Geologists. See also: http://atlas.geo.cornell.edu/morocco/publications/beauchamp2004.htmThe conspicuous offset of the northern margin of the High Atlas Mountains is composed of several large superposed folds, one of which is known as the Ait Attab Syncline. The original northeast-trending syncline (F1) was folded by a second set of fold axes (F2) that trend to the northwest. The superposed folding was generated by one phase of compression, with thrusting of synrift rocks northwestward over a prior accommodation zone formed during rifting. This accommodation zone is expressed in the exposure of synrift rocks, the exposure of Paleozoic strata in the footwall, and a coincident offset of topography. Inversion was accomplished by the transport of synrift strata along reactivated normal faults and newly formed thrusts. The unique pattern of refolding is believed to be characteristic of inversion.

url: http://hdl.handle.net/1813/5274
date: 2007-01-26
creator: Demnati, A.;Ibenbrahim, A.;Jabbour, N.;Barazangi, M.;Seber, D.;Gomez, F.;Calvert, A.
viewed: 83

title: An integrated geophysical investigation of recent seismicity in the Al-Hoceima region of North Morocco
abstract: Copyright 1997, SSA. See also: http://www.seismosoc.org/publications/bssa-toc.html; http://atlas.geo.cornell.edu/morocco/publications/calvert1997.htmData produced by the Moroccan national seismological network and marine seismic reflection profiles are used to investigate the most seismically active region in Morocco, located on the Mediterranean coast at the intersection of the Rif mountain belt and the submarine Alboran Ridge. This region, in the vicinity of the city of Al-Hoceima, marks an east-west transition in the marine and land deformation styles of the distributed plate boundary between Africa and Iberia, and was the site of a Mw=6.0 earthquake on May 26, 1994.

The epicenter of the Al-Hoceima earthquake is relocated onshore, refining the initial submarine location close to the Alboran Ridge. The spatial distribution of foreshocks and aftershocks shows a NE-SW trend that continues partly offshore and is subparallel to the earlier, yet still prominent, Miocene geologic structural trend. The predominantly strike-slip focal mechanism for the Al-Hoceima event is characteristic of earthquakes in the region. Marine seismic reflection profiles, that intersect the offshore region of seismicity, image active high angle faults with possible strike-slip components. The seismicity trend is not directly related to the submarine Alboran Ridge or the geomorphologically prominent Nekor fault. Deformation appears to be occurring on a number of subsidiary strike-slip faults that together compose a NE-SW zone of distributed shear.

The distributed strike-slip and documented normal faulting taking place in the eastern Rif mountains, although characteristic of the Rif region, are in contrast to the thrusting style of deformation that occurs farther to the east in the Algerian Tell Atlas. This may be related to the reported lateral variations and evolution of the convergent plate boundary in these regions during the Neogene and Quaternary times.

url: http://hdl.handle.net/1813/5275
date: 2007-01-26
creator: Jabour, N.;Alguacil, G.;Vidal, F.;Mourabit, T.;Roecker, S.;Barazangi, M.;Seber, D.;Sandvol, E.;Calvert, A.
viewed: 137
title: Geodynamic evolution of the lithosphere and upper mantle beneath the Alboran region of the western Mediterranean: Constraints from travel time tomography
abstract: An edited version of this paper was published by the American Geophysical Union. Copyright 2000, AGU. See also: http://www.agu.org/pubs/crossref/2000/2000JB900024.shtml; http://atlas.geo.cornell.edu/morocco/publications/calvert2000.htmA number of different geodynamic models have been proposed to explain the extension that occurred during the Miocene in the Alboran Sea region of the western Mediterranean despite the continued convergence and shortening of northern Africa and southern Iberia. In an effort to provide additional geophysical constraints on these models, we performed a local, regional, and teleseismic tomographic travel time inversion for the lithospheric and upper mantle velocity structure and earthquake locations beneath the Alboran region in an area of 800 x 800 km^2. We picked P and S arrival times from digital and analog seismograms recorded by 96 seismic stations in Morocco and Spain between 1989 and 1996 and combined them with arrivals carefully selected from local and global catalogs (1964-1998) to generate a starting data set containing over 100,000 arrival times. Our results indicate that a N-S line of intermediate depth earthquakes extending from crustal depths significantly inland from the southern Iberian coat to depths of over 100 km beneath the center of the Alboran Sea coincided with a W to E transition from high to low velocities imaged in the uppermost mantle. A high-velocity body, striking approximately NE-SW, is imaged to dip southeastwards from lithospheric depths beneath the low-velocity region to depths of ~350 km. Between 350 and 500 km the imaged velocity anomalies become more diffuse. However, pronounced high-velocity anomalies are again imaged at 600 km near an isolated cluster of deep earthquakes. In addition to standard tomographic methods of error assessment, the effects of systematic and random errors were assessed using block shifting and bootstrap resampling techniques, respectively. We

interpret the upper mantle high-velocity anomalies as regions of colder mantle that originate from lithospheric depths. These observations, when combined with results from other studies, suggest that delamination of a continental lithosphere played an important role in the Neogene and Quaternary evolution of the region.

url: http://hdl.handle.net/1813/5276
date: 2007-01-26
creator: Jabour, N.;Alguacil, G.;Vidal, F.;Mourabit, T.;Roecker, S.;Barazangi, M.;Seber, D.;Sandvol, E.;Calvert, A.
viewed: 81
title: Propagation of regional seismic phases (Lg and Sn) and Pn velocity structure along the Africa-Iberia plate boundary zone
abstract: An edited version of this paper was published by Blackwell Publishing. Copyright 2000, Blackwell Publishing. See also: http://www.blackwell-synergy.com/doi/abs/10.1046/j.1365-246x.2000.00160.x; http://atlas.geo.cornell.edu/morocco/publications/calvert2000GJI.htmWe used over 1000 regional waveforms recorded by 60 seismic stations located in northwest Africa and Iberia to map the efficiency of L g and Sn wave propagation beneath the Gulf of Cadiz, Alboran Sea and bounding Betic, Rif and Atlas mountain belts. Crustal attenuation is inferred from the tomographic inversion of L g/Pg amplitude ratios. Upper mantle attenuation is inferred from maps of Sn propagation efficiency derived by inversion of well-defined qualitative efficiency assignments based on waveform characteristics. Regions of L g attenuation correlate well with areas of thinned continental or oceanic crust, significant sedimentary basins, and lateral crustal variations. Comparison of the Sn efficiency results with velocities obtained from an anisotropic Pn traveltime inversion shows a fairly good correlation between regions of poor Sn efficiency and low Pn velocity. A low Pn velocity (7.6?7.8 km s-1) and significant Sn attenuation in the uppermost mantle is imaged beneath the Betics in southern Spain, in sharp contrast to the relatively normal Pn velocity (8.0?8.1 km s-1) and efficient Sn imaged beneath the Alboran Sea. Slow Pn velocity anomalies are also imaged beneath the Rif and Middle Atlas in Morocco. We do not identify any conclusive evidence of lithospheric-scale upper mantle attenuation beneath the Rif, although the crust in the Gibraltar region appears highly attenuating, making observations at stations in this region ambiguous. Paths crossing the Gulf of Cadiz, eastern Atlantic and the Moroccan and Iberian mesetas show very efficient Sn propagation and are imaged with high Pn velocities (8.1?8.2 km s-1). The spatial distribution of attenuation and velocity anomalies lead us to conclude that some recovery of the mantle lid beneath the Alboran Sea must have occurred since the early Miocene episode of extension and volcanism. We interpret the low velocity and attenuating regions beneath the Betics and possibly the Rif as indicating the presence of partial melt in the uppermost mantle which may be underlain by faster less attenuating mantle. In the light of observations from other geophysical and geological studies, the presence of melt at the base of the Betic crust may be an indication that delamination of continental lithosphere has played a role in the Neogene evolution of the Alboran Sea region.

url: http://hdl.handle.net/1813/5277
date: 2007-01-26
creator: Barazangi, M.;Feigl, K.;Mourabit, T.;Sari, D.;Gomez, F.;Reilinger, R.;McClusky, S.;Vernant, P.;Fadil, A.
viewed: 95
title: Active tectonics of the western Mediterranean: Geodetic evidence for roll back of a delaminated subcontinental lithospheric slab beneath the Rif Mountains, Morocco
abstract: Copyright 2006, Geological Society of America. See also: http://www.geosociety.org; http://atlas.geo.cornell.edu/morocco/publications/fadil2006.htmSurface deformation in Morocco derived from five years of GPS survey observations of a 22-station network, four continuously recording GPS stations, and four IGS stations in Iberia indicate roughly southward motion (~3 mm/yr) of the Rif Mountains, Morocco relative to

stable Africa. Motion of the Rif is approximately normal to the direction of Africa-Eurasia relative motion, which is predominantly strike slip, and results in shortening of the Rif and subsequent crustal extension of the adjacent Alboran Sea region. The sense, and the N-S asymmetry of the observed deformation (i.e., no evidence for north-directed shortening in the Betic Mountains north of the Alboran Sea) cannot be easily explained in terms of crustal plate interactions suggesting that dynamic processes below the crust are driving the recent geologic evolution of the western Mediterranean. The model that best fits the observations involves delamination and southward roll back of the African lithospheric mantle under the Alboran and Rif domains.

url: http://hdl.handle.net/1813/5278
date: 2007-01-26
creator: Dahmani, M.;Er-Raji, A.;Barazangi, M.;Allmendinger, R.;Gomez, F.
viewed: 81
title: Crustal shortening and vertical strain partitioning in the Middle Atlas Mountains of Morocco
abstract: Copyright 1998, American Geophysical Union. See also: http://www.agu.org/pubs/crossref/1998/98TC01439.shtml; http://atlas.geo.cornell.edu/morocco/publications/gomez1998.htmThe NE-SW trending Middle Atlas Mountains of Morocco are obliquely oriented within the late Cenozoic regional stress field, resulting in deformation that is partitioned into strike-slip faulting and thrust-related folding. In the central Middle Atlas, thrusting is confined to a 20 km wide fold belt between two relatively rigid crustal blocks that are obliquely converging. We suggest that in addition to strain partitioning observed in plan view, a partitioning of deformation between the upper and lower crust may be necessary to reconcile estimated crustal thickening and horizontal shortening within the fold belt. Cross-section balancing based on field observations demonstrates a relatively modest amount of Cenozoic horizontal shortening (~ 4.7 km) normal to the fold belt producing 800 m of structural relief. Yet, the geophysical data suggest this contraction has not produced a significant crustal root beneath the fold belt; that is, the belt does not appear to be isostatically compensated. Assuming all horizontal shortening was accommodated by crustal thickening beneath the fold belt implies much greater thickening than is suggested by constraints on the preshortened crustal thickness. It thus appears that thickening does not accommodate all of the contraction. We suggest one possible solution: The upper crust shortens by thickening (faulting and folding), whereas the lower crust deforms laterally.

url: http://hdl.handle.net/1813/5279
date: 2007-01-26
creator: Bensaid, M.;Barazangi, M.;Gomez, F.
viewed: 103
title: Active tectonism in the intracontinental Middle Atlas Mountains of Morocco: Synchronous crustal shortening and extension
abstract: This material has been published in The Journal of the Geological Society of London, Volume 153, the only definitive repository of the content that has been certified and accepted after peer review. Copyright and all rights therein are retained by The Geological Society of London.
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See also: http://www.geolsoc.org.uk/template.cfm?name=journals_jgs_home_page; http://atlas.geo.cornell.edu/morocco/publications/gomez1996.htmGeological field observations are integrated with digital topography, LANDSAT imagery, and earthquake focal mechanisms to investigate the Middle and Late Quaternary tectonism in the intracontinental Middle Atlas mountain belt in northern Morocco. The NE-SW-trending Middle Atlas Mountains, approximately 80 km in width and about 200 km long, are part of the Atlas system of northwestern Africa and represent an inverted rift that developed into an intracratonic mountain system in the foreland of the Alpine collisional zone. The Middle Atlas is composed of two provinces, the Folded and Tabular Middle Atlas, representing the palaeo-rift and a flank of the palaeo-rift, respectively. Evidence

for Late Quaternary tectonism is provided by the analysis of stream morphology in addition to geological relations. Kinematic analysis of fault-slip data and earthquake focal mechanisms demonstrate the coexistence of both extensional and compressional deformation in different areas of the Middle Atlas with a common sinistral component of slip along NE-SW-striking fault zones. Compressional features dominate the Folded Middle Atlas, whereas extension predominates in the Tabular Middle Atlas. Extension is also manifested by widespread Middle to Late Quaternary alkali volcanism. The observed kinematic variations appear to correlate with the Mesozoic palaeogeography; one possible model may involve tectonic escape. This suggests that differences in the structures inherited from the Mesozoic and Palaeozoic may influence the responses of the different regions to the Cenozoic Alpine collision between Europe and northwest Africa.

url: http://hdl.handle.net/1813/5280
date: 2007-01-26
creator: Demnati, A.;Barazangi, M.;Gomez, F.
viewed: 62
title: Structure and evolution of the Neogene Guercif Basin at the junction of the Middle Atlas Mountains and the Rif thrust belt
abstract: Copyright 2000, AAPG. See also: http://www.aapg.org/bulletin/index.cfm; http://atlas.geo.cornell.edu/morocco/publications/gomez2000AAPG.htmThe Guercif basin of northern Morocco occupies a 50 x 60 km area where the transpressional Middle Atlas mountains terminate and abut the Rif thrust belt. Analysis of over 800 km of 2-D (two-dimensional) seismic reflection profiles and eight exploratory wells, in combination with existing geological data, suggests a late Miocene episode of extension (4%, or 1.7 km, maximum) and a subsequent episode of contraction since the end of the Miocene. Most of the late Miocene deposition was concentrated in a narrow graben (herein referred to as the Guercif graben), which contrasts with the wider physiographic expression of the basin today. Geohistory analysis indicates that tectonic subsidence persisted until the Messinian, and sediment loading continued to drive subsidence even after extension stopped. Timing constraints demonstrate the contemporaneity of the Guercif graben and west-southwest-vergent thrust tectonics of the Rif thrust belt. Similar timing and proximity with the Rif, as well as the graben geometry, suggest that extension in the Guercif basin, in addition to other smaller extensional basins in the northern Middle Atlas region adjacent to the Rif, may represent the distal effects of a broad lateral shear zone bounding the thrust belt.
The Neogene Guercif basin is superimposed on the Mesozoic Middle Atlas rift, which experienced basin inversion during the Cenozoic, and seismic reflection interpretations in the southern Guercif basin depict old Mesozoic rift faults reactivated as reverse faults. Unconformities illustrate that the uplift of the Middle Atlas appears to be primarily a late Cenozoic phenomenon. The Guercif basin offers a special opportunity for petroleum exploration within an aborted rift basin such as the Middle Atlas. Mesozoic source rocks in the Middle Atlas may have been sufficiently buried beneath Neogene basin sediments to reach maturity, and the late Cenozoic timing of contraction can produce suitable structural traps.

url: http://hdl.handle.net/1813/5281
date: 2007-01-26
creator: Beauchamp, W.;Barazangi, M.;Gomez, F.
viewed: 71
title: Role of the Atlas Mountains (northwest Africa) within the African-Eurasian plate boundary zone
abstract: This paper was published in Geology by the Geological Society of America (GSA), and GSA retains the copyright. Geological Society of America, P.O. Box 9140, Boulder, CO 80301-9140 See also: http://www.geosociety.org; http://atlas.geo.cornell.edu/morocco/publications/gomez2000Geology.htmThe magnitudes and timing of deformation in the intracontinental Atlas Mountains of northern Africa suggest that the Atlas Mountains have been an integral part of the African-Eurasian plate-boundary zone in the western

Mediterranean during the Cenozoic. Shortening of the Moroccan Atlas has accommodated 17%?45% of the total African-Eurasian plate convergence since the early Miocene, whereas the majority of the plate convergence is accommodated in the Rif-Betic-Alboran region. Although the latter underwent other geodynamic processes, as demonstrated by extension of the Alboran Sea contemporaneous with plate convergence, shortening directions in the Atlas are generally consistent with ongoing plate convergence and show no influence of these additional processes. In the framework of plate tectonics, the western Mediterranean region, including the Atlas system, should be regarded as a diffuse plate boundary in which the Atlas Mountains comprise narrow deformable zones bounding larger, relatively rigid crustal blocks. The deformable zones reflect the influence of crustal structures inherited from a major early Mesozoic episode of intracontinental rifting in the Atlas.

url: http://hdl.handle.net/1813/5282
date: 2007-01-29
creator: Al-Amri, A.;Mellors, R.;Vernon, F.;Barazangi, M.;Seber, D.;Sandvol, E.
viewed: 62
title: Lithospheric seismic velocity discontinuities beneath the Arabian Shield
abstract: An edited version of this paper was published by the American Geophysical Union (AGU). Copyright 1998, AGU. See also: http://www.agu.org/pubs/crossref/1998/98GL02214.shtml; http://atlas.geo.cornell.edu/SaudiArabia/publications/Sandvol1998.htmWe determined crustal and lithospheric mantle velocity structure beneath the Arabian Shield through the modeling of receiver function stacks obtained from teleseismic P waves recorded by the 9 station temporary broadband array in western Saudi Arabia. The receiver function deconvolution technique was used to isolate the receiver-side PS mode conversions. A grid search method, which should yield an unbiased global minimum, was used to solve for a shear wave velocity model that is optimal and has the minimum number of layers needed to fit the receiver function waveform. Results from this analysis show that the crustal thickness in the shield area varies from 35 to 40 km in the west, adjacent to the Red Sea, to 45 km in central Arabia. Stability tests of each solution indicate that the models are relatively well constrained. We have also observed evidence for a large positive velocity contrast at sub-Moho depths at four stations at depths of 80 to 100 km. This discontinuity may represent a change in rheology in the lower part of the lithosphere or remnant structure from the formation of the Arabian Shield.

url: http://hdl.handle.net/1813/5283
date: 2007-01-29
creator: Cherkaoui, T-E.;Ibenbrahim, A.;Barazangi, M.;Seber, D.;Sandvol, E.;Plafcan, D.
viewed: 71
title: Regional discrimination of chemical explosions and earthquakes: A case study in Morocco
abstract: Copyright 1997, Seismological Society of America. See also: http://www.seismosoc.org/publications/bssa-toc.html; http://atlas.geo.cornell.edu/morocco/publications/plafcan1997.htmTo examine the limitations in the techniques for discriminating between chemical explosions and earthquakes at local and regional distances, we have applied several standard heuristics to seismic events in northwest Morocco where little a priori information was available. Although the eight Oud Zem phosphate mine explosions have similar geographic locations, total charge size, and presumably ripple-fired mechanisms, the seismic recordings are characterized by a surprising amount of diversity. Time and path independent modulations, due to the periodic source mechanism of the ripple-fired explosions, rarely unequivocally distinguish the explosions from the earthquakes. Our findings imply that more often than the current literature suggests, source inconsistencies such as differing blasting arrangements have a role in the failure of common discriminants. Furthermore, crustal seismic velocity and the attenuation structure seemed to shape the seismic signals more than the nature of the source mechanism, although site effects could not be ruled out. The 10- to 15-Hz Pg/Sg ratio test proved to be the most precise and accurate discriminant. Popular intraphase spectral and cross-spectral ratios performed considerably worse. Finally, we argue that a regional case-based approach requires extensive

regional information to meet the demanding verification goals of the Comprehensive Test Ban Treaty.

url: http://hdl.handle.net/1813/5285
date: 2007-01-30
creator: Daniels, Jessica;Barcher, Camille;Singh, Aatisha;Bhakta, Jetal;Semler, Conor;Dillemuth, Ann;Duvall, Evan;Marciniec, Heather;Svard, Julie;Beaudette, Aaron;Norton, Chelsey;Lathan, Joshua;Mintier, Sophie;Amundsen III, Ole
viewed: 270
title: Tug Hill Tomorrow Land Trust Strategic Land Conservation Plan
abstract: Over the Fall semester of 2006, 13 graduate students undertook the task of creating a Strategic Conservation Plan for Tug Hill Tomorrow Land Trust (THTLT), based in Watertown, NY. The plan features a series of natural resource inventories as well as a scenic viewshed analysis of the 1.3 million acre Tug Hill plateau. Regional land use history and demographic trends are explored. Using the resource inventories a vision conservation infrastructure was created for featuring recreational corridors, river corridors and wildlife areas. To help land trust decision makers in selecting solid conservation projects, a GIS suitability model was created based the land trust's own land protection criteria. Focus areas or high priority areas for pro-active conservation were outlined and tested using the suitability model. Finally, the Cornell team identified several tools for implementation based on the condition of four separate regions of Tug Hill.Department of City and Regional Planning at Cornell, Tug Hill Tomorrow Land Trust, Land Trust Alliance, New York State Conservation Partnership, Grant Program and the Snow Foundation.

url: http://hdl.handle.net/1813/5286
date: 2007-01-30
creator: El Alami, S. O.;Ben Sari, D.;Ibenbrahim, A.;Ramdani, M.;Tadili, B.;Barazangi, M.;Seber, D.
viewed: 83
title: Sn to Sg conversion and focusing along the Atlantic margin, Morocco: Implications for earthquake hazard evaluation
abstract: Copyright 1993, American Geophysical Union. See also: http://www.agu.org/journals/gl/; http://atlas.geo.cornell.edu/morocco/publications/seber1993.htmDigital data from a telemetered, short-period seismic network in Morocco provide a new perspective for understanding the cause of severe shaking and macroseismic reports in Morocco produced by large, offshore earthquakes located along the Azores-Gibralter seismic zone. Even though the earthquake epicenters are 500-1000 km away from the Moroccan coast, historical records show that such events are capable of producing considerable damage in inland areas. We analyze 15 earthquakes that occurred in this region. The records show multiple S phases with varying frequencies and amplitudes. The S phase with the largest amplitude, usually misinterpreted as Sn, has a phase velocity of 4.2-4.4 km/s. We show that these S arrivals can best be explained as Sn to Sg converted phases. Calculated locations of the conversion points for these phases exhibit two distinct zones almost parallel to the Atlantic coastline: one is located along the passive continental margin and the other is located about 100 km inland from the coastline. We interpret these two zones to be regions where a sudden change in crustal thickness occurs. Such zones act to focus and magnify the amplitudes of seismic phases. This interpretation explains the unusually strong felt reports within Morocco from such distant offshore events, and it has a significant effect on earthquake hazard evaluation and mitigation studies.

url: http://hdl.handle.net/1813/5287
date: 2007-01-30
creator: Demnati, A.;Ibenbrahim, A.;Barazangi, M.;Seber, D.
viewed: 98
title: Geophysical evidence for lithospheric delamination beneath the Alboran Sea and Rif-Betic

mountains
abstract: This paper was published in Nature by the Nature Publishing Group (NPG), and NPG retains the copyright. See also: http://www.nature.com/nature/journal/v379/n6568/abs/379785a0.html; http://atlas.geo.cornell.edu/morocco/publications/seber1996Nature.htmGeophysical evidence is presented for an episode of active delamination of a piece of continental lithosphere. Observations of earthquake hypocentre locations, seismic wave velocities and attenuation, Bouguer gravity, seismic reflection, and drill hole data are combined with surface geology to infer the presence of a high-velocity, seismically active, rigid body in the upper mantle beneath the Alboran Sea and surrounding Betic and Rif mountain belts of the western Mediterranean region. This upper-mantle body, inferred to be the delaminating continental lithosphere, is overlain by a low-velocity, aseismic and strongly attenuating uppermost mantle, inferred to be the asthenospheric material replacing the delaminating lithosphere.

url: http://hdl.handle.net/1813/5288
date: 2007-01-30
creator: Dove, Toni
viewed: 29
title: 2005 Rockefeller New Media Foundation Proposal
abstract: Spectropia is a cinema scale interactive performance event, a “scratchable” movie performed by video DJs -- improvising performers who are playing a movie instrument. Projected on multiple screens and performed with the participation of audience members, it will be presented at museums, theaters, festivals and public spaces. A feature film and a home interaction version -- combining DVD and Internet delivery -- will also be created.

url: http://hdl.handle.net/1813/5289
date: 2007-01-30
creator: Hayward, Nicholas;Lauber, Danielle;Iuchi, Kanako;Murphy, Elizabeth;Ottley, Tricia;Lin, Ya-Shian;Lee, Chia-Ping;Johnston, Matthew;Duchesneau, Adam;Chang, Heejae;Bishop, Matthew;Sinker, Jonathan;Amundsen, Ole III
viewed: 184
title: Southern Madison Heritage Trust Strategic Land Protection Plan
abstract: Over the Fall semester of 2005, 12 graduate students undertook the task of creating a Strategic Land Protection Plan for the Southern Madison Heritage Trust (SMHT), a land trust based in Hamilton, NY. The Strategic Land Protection Plan is a bold vision. The plan is based on demographic research and inventories of both natural and scenic resources. Using these inventories, suitability models in GIS were created to display various land protection scenarios. Taking advantage of the New York State Canal Corporation’s proposal for an Empire State Greenway building on the historic Erie Canal network, the students crafted a proposed greenway for recreational uses, natural resource functions and growth management. As the Chenango Canal is an integral part of the proposed greenway, the long term protection of this corridor is major concern for SMHT. Within the proposed greenway, the students modeled a greenbelt surrounding the four major municipalities that is designed to allow growth while protecting the gateways to the villages, surrounding farmland and biodiversity of the region. The conservation of the proposed 16,000 acre greenbelt can be achieved through the use of regulatory tools, transfer of lands from key partners to SMHT, improved land management by private landowners as well as the exercise of real estate tools used by SMHT such as securing easements through outright purchase or donation from willing landowners.Department of City and Regional Planning at Cornell University, Southern Madison Heritage Trust

url: http://hdl.handle.net/1813/5290
date: 2007-01-31

creator: Pack, Joshua
viewed: 167
title: Dynamic Optimization Model for a Lignocellulosic Biorefinery Supply Chain
abstract: Lignocellulosic biorefining system studies have not adequately addressed the integrated nature of the supply chain from feedstock source (farms) to product demand points. The literature typically focuses on systems of single processing facilities with a tendency to study the agricultural side of the supply chain and dismiss the product distribution considerations, such as proximity to demand centers, other processing facilities, or the nature of product market demand.
This study offers a more holistic approach by modeling the supply chain from multiple agricultural production sources (farms) to multiple biorefineries, as well as the product distribution to multiple demand locations. The objectives are to establish a dynamic modeling framework for a biorefinery supply chain and to illustrate the use of that framework. The model is designed with the following considerations in mind. 1) Which feedstocks should be purchased? 2) When and from where should they be purchased? 3) Where, how much, and how long should feedstocks be stored? 4) Where, when, how many, and how large should the biorefineries be built? 5) How much and when should the products be produced? 6) How much and where should the products be distributed? 7) How should processing capacity expand over time?
The modeling methodology employs a dynamic mathematical program. The supply chain is defined by a system of constraint expressions and optimized by maximizing total system profit. The profit function is defined to include product revenue and system costs, such as feedstock costs, transportation costs, and operating costs. The factors influencing the parameterization of the model are discussed and example parameter values are given. The model is validated and executed to obtain an example solution. The results are presented and discussed to illustrate how the modeling framework can be used to help support biorefinery system planning decisions.
This original contribution shows that biorefinery supply chains modeled to incorporate the interactions between multiple farms, biorefineries, and demand locations can provide insights that would not be possible with single system studies or ?supply side only? models. It is shown that mathematical programming offers useful tools for biorefinery supply chain studies. Topics for further research are discussed.

url: http://hdl.handle.net/1813/5291
date: 2007-01-31
creator: Wei, Ruohong
viewed: 130
title: The role of culture in the process of coping with stress.
abstract: This study explored coping as a cultural adaptation by studying the role of ethnicity and acculturation stage in shaping coping strategies. One hundred and twenty eight Asians and 155 participants of European descent filled out a survey measuring their length of US residence, coping strategies and psychological distress. Findings revealed that ethnicity interacted with stages of acculturation in influencing coping choice. However, this process worked differently for different coping categories. As acculturation increases, Asians and Europeans became more similar in their use of personal coping resources through problem solving and cognitive restructuring. However, their utilization of social resources such as support seeking became more distinct. This can be attributed to differences in acculturation success and distress associated with social relatedness. Thus, culture serves as both a person variable and a contextual variable in influencing coping choice.College grant of Human Ecology at Cornell University

url: http://hdl.handle.net/1813/5292
date: 2007-02-02
creator: Rhoads, Daniel Scott
viewed: 161

title: New Approaches For Identifying Critical Integrin-Mediated Signaling Events In Directed Cell Migration
abstract: Dynamic regulation of cell adhesion on extracellular matrix (ECM) proteins plays vital roles in the establishment and maintenance of tissue structure. More specifically, the spatial coordination of cell-ECM adhesion foci, or focal contacts, influences direction-sensing in motile cells for a wide range of biological processes in metazoan life. Currently available evidence suggests that positive feedback loops between a few canonical signaling pathways focuses rapid turnover of focal contacts at the leading edge, where broad protrusions guide cells in one direction or another. For instance, Rho GTPases regulate the localization of specific actin cytoskeletal rearrangements, phosphatidylinositol 3-kinase (PI3K) -generated second messengers facilitate polarization of related signaling molecules, and focal adhesion kinase (FAK) may potentially act as a mediator of these distinct signaling pathways. This dissertation aims to elucidate mechanisms that coordinate these signaling pathways, with acknowledgement of the limitations of current methods in studying cell migration (Chapter 1).
To address questions relating to the role of certain signaling molecules in the maintenance of direction in migration, novel methods for depositing gradients of ECM molecules have been established, including one novel technique incorporating microfluidics, which is amenable to live cell tracking via standard microscopy (Chapter 2). This microfluidic device enables the relative impact of the overexpression of various key proteins to be examined. The subsequent study suggests the role of FAK in facilitating maintained directional migration, also described as persistent migration (Chapter 3). These results suggest that FAK is a critical facilitator of direction-sensing and spatial regulation of focal contacts.

url: http://hdl.handle.net/1813/5294
date: 2007-02-05
creator: Acacia, Fraternity
viewed: 454
title: The Traveler
abstract: The alumni publication of the Acacia Fraternity, Cornell Chapter

url: http://hdl.handle.net/1813/5295
date: 2007-02-05
creator: Hay, Anthony;Hysell, Matthew;Oakes, Summer Rayne;Harrison, Ellen Z.
viewed: 178
title: Organic Chemicals in Sewage Sludges
abstract: Sewage sludges are residues resulting from the treatment of wastewater released from various sources including homes, industries, medical facilities, street runoff and businesses. Sewage sludges contain nutrients and organic matter that can provide soil benefits and are widely used as soil amendments. They also, however, contain contaminants including metals, pathogens, and organic pollutants. Although current regulations require pathogen reduction and periodic monitoring for some metals prior to land application, there is no requirement to test sewage sludges for the presence of organic chemicals in the U. S. To help fill the gaps in knowledge regarding the presence and concentration of organic chemicals in sewage sludges, the peer-reviewed literature and official governmental reports were examined. Data were found for 516 organic compounds which were grouped into 15 classes. Concentrations were compared to EPA risk-based soil screening limits (SSLs) where available. For 6 of the 15 classes of chemicals identified, there were no SSLs. For the 79 reported chemicals which had SSLs, the maximum reported concentration of 86% exceeded at least one SSL. Eighty-three percent of the 516 chemicals were not on the EPA established list of priority pollutants and 80% were not on the EPA's list of target compounds. Thus analyses targeting these lists will detect only a small fraction of the organic chemicals in sludges. Analysis of the reported data shows that more data has been collected for certain chemical classes such as pesticides, PAHs and PCBs than for others that may pose

greater risk such as nitrosamines. The concentration in soil resulting from land application of sludge will be a function of initial concentration in the sludge and soil, the rate of application, management practices and losses. Even for chemicals that degrade readily, if present in high concentrations and applied repeatedly, the soil concentrations may be significantly elevated. The results of this work reinforce the need for a survey of organic chemical contaminants in sewage sludges and for further assessment of the risks they pose.

url: http://hdl.handle.net/1813/5296
date: 2007-02-05
creator: Acacia, Fraternity
viewed: 169
title: The Traveler
abstract: The alumni publication of the Acacia Fraternity at Cornell University.

url: http://hdl.handle.net/1813/5297
date: 2007-02-06
creator: Watts, Stephen
viewed: 126
title: Constructing Order amid Violence: Comparative Military Interventions in the Era of Peacekeeping and Counter-Terrorism
abstract: This study is motivated by two questions: To what extent are countries engaged in military interventions willing to use force to promote democracy? And what are the likely consequences of such actions? Interveners face a dilemma in seeking to impose democracy through military interventions: They can either accommodate armed factions in the target state by bringing them into a powersharing government with little democratic accountability, or they can seek to impose higher-order democracy at the risk of violent confrontation. The course of action chosen depends on the interveners' regime types, strategic cultures, and resource constraints. Coalitions dominated by committed democracies with militarized strategic cultures have proven vastly more successful in promoting democratic change through interventions than coalitions dominated by less militarized, less committed, or less democratic states. They do so, however, at the risk of provoking international crises and unsustainable escalations of violence. These claims are investigated through both a medium-N, fuzzy-set analysis of all military interventions in the post-Cold War era and a series of controlled, focused comparisons between the policies of the United States, Germany, and Russia in interventions in the Balkans and Central Asia. This study has implications for both theory and policy. It advances the argument that both rationalist and constructivist theories of international relations, taken separately, fail to predict either state behavior or the outcomes of states' policy choices; rather, only by integrating these perspectives can we understand patterns of military interventions. These patterns reveal that policy-makers must commit to one of three basic models of intervention; pursuing the goals of one while providing the means appropriate to another typically yields disastrous outcomes.

url: http://hdl.handle.net/1813/5298
date: 2007-02-06
creator: Ben Sari, D.;Ibenbrahim, A.;Ramdani, M.;Tadili, B.;Barazangi, M.;Seber, D.
viewed: 91
title: Three-dimensional upper mantle structure beneath the intraplate Atlas and interplate Rif mountains of Morocco
abstract: Copyright 1996, American Geophysical Union. See also: http://www.agu.org/pubs/crossref/1996/95JB03112.shtml; http://atlas.geo.cornell.edu/morocco/publications/seber1996JGR.htmWe integrate observations based on teleseismic P wave travel times and available geologic data to infer that the lithosphere beneath the intraplate Atlas mountains is thin and/or it is characterized by lower P wave velocities,

while beneath the interplate Rif mountains and the adjacent Alboran Sea a previously thickened lithosphere has been delaminated into the upper mantle. Using surface geology and geochronology data, previous studies have proposed that lithospheric delamination took place in this region. In thsi study we show through analysis of teleseismic P wave residuals the existence of a high velocity (>3%) upper mantle body, which is interpreted to be the delaminated, rigid lithosphere. This high-velocity layer is overlain by a very low velocity uppermost mantle material replacing the delaminated lithosphere. Teleseismic P waves recorded by a recently installed digital seismic network and an older analog network in Morocco provide the residuals database. A total of 734 P wave residuals from 92 selected teleseismic earthquakes are used to document the spacial pattern of upper mantle velocity structure beneath northern Morocco and the Alboran Sea. Subsequent use of these residuals in a tomographic inversion scheme produced a three-dimensional velocity image of the upper mantle. We infer from the P residuals that strong upper mantle velocity anomalies exist beneath both the Rif and Atlas regions. The Rif stations show negative residuals (- 1-1.5s) for ray paths from the east and northeast and show positive residuals (~ 1-1.5s) for raypaths from the northwest and southwest. Tomographic results indicate the existence of a high-velocity body (~ 3% higher velocities) in the upper mantle beneath the eastern Rif and Alboran Sea, extending approximately from subcrustal depths down to a depth of at least 350 km. In the western Rif, however, 1-2% lower velocity material is imaged in the upper mantle. The residuals of the Atlas stations also show azimuthal variations. In general, most of the P waves that travel beneath the High and Middle Atlas have about 0.5-1.0s delays. In contrast, the rays that travel beneath the northwestern margin of the Atlas mountains and the adjacent Moroccan Meseta area show negative residuals (~1s), suggesting that higher velocity material exists beneath the platform area adjacent to the Atlas mountains. Tomographic results indicate that beneath most of the Atlas system the uppermost mantle has about 1% lower velocities. Beneath the Alboran Sea region, however, reported low uppermost mantle Pn velocities contrast strongly with higher velocity upper mantle velocities obtained by our analysis. Low-velocity uppermost mantle beneath the Alboran Sea underlain by a high-velocity upper mantle material is used to support earlier interpretations of lithospheric delamination beneath the Rif and Alboran Sea Regions. The enigmatic occurrence of subcrustal earthquakes in these regions is also consistent with this active delamination mechanism.

title: Land Application of Sewage Sludges: An Appraisal of the US Regulations
abstract: This paper was published in the peer reviewed INT. J. OF ENVIRONMENT AND POLLUTION, 1999, Vol. 11 No. 1 pp 1-36. The journal is available in both hard copy and on-line PDF format. For more information and sample copy of IJEP, visit their web site at http://www.inderscience.com/.Current US federal regulations governing the land application of sewage sludges do not appear adequately protective of human health, agricultural productivity or ecological health. US standards are far less protective than those of many European countries and Canadian provinces. This is due to both policy choices such as a ''do no harm'' philosophy applied in some northern European countries and also to many gaps and non-conservative assumptions in the risk assessment performed by US Environmental Protection Agency. The potential for widespread use of sludges on agricultural and residential land, the persistence of many of the pollutants, which may remain in soils for a very long time, and the difficulty of remediation support a cautious approach. Soil, water and crop characteristics in New York State and other areas of the northeastern US raise particular concerns. The authors do not suggest a prohibition of land application but, rather, significantly more restrictive use. Limiting cumulative additions of pollutants to prevent soils from exceeding recommended maximum contaminant levels can be achieved by application of clean sludges or by application of lesser amounts of less high quality sludges. Further investigation is needed to assess risks to ground and surface water and to establish standards for additional contaminants.

url: http://hdl.handle.net/1813/5300
date: 2007-02-07
creator: Ayyalasomayajula, Sathyanarayana
viewed: 168
title: Experimental Eulerian and Lagrangian investigations in simple turbulent flows
abstract: This thesis consists of three parts.

The first part consists of a study of high-Reynolds number, homogeneous, isotropic turbulence in wind tunnels which has been strained via an axi-symmetric contraction. The effect of strain on the turbulence is studied by detailed hot-wire measurements. The results are compared with Rapid Distortion Theory (RDT). The return to isotropy of the strained turbulence is studied and compared with Rotta's linear theory. The effect of strain on intermittancy as well as the structure of turbulence is also studied.

In the second part the experimental measurements of inertial particle Lagrangian accelerations are described. These are the first measurements of inertial particle accelerations in a well documented high-Reynolds number wind-tunnel flow. Using a high-speed camera which moves with the mean speed of the flow, inertial particle trajectories are obtained. The trajectories are analyzed to obtain the particle accelerations. The acceleration probability distribution functions (PDFs) are compared with those of recent computer simulations.

The last part consists of an analysis of inertial particle motion in turbulent flows. A new model called the Vortex model is proposed and used to study the inertial particles in turbulent-like flows. Using this model, several mechanisms through which attenuation of inertial particle accelerations may occur in real turbulent flows are studied. We also compare the results of the Vortex model with those of the DNS simulations of Bec et al. [\textit{J. Fluid Mech} \textbf{550} (2006)]. The range of applicability and shortcomings of stochastic acceleration models for inertial particle modeling are also discussed.

The results of this work have a wide range of applicability. The complex spectral dynamics associated with relatively simple straining flow and subsequent relaxation which is found in many engineering and natural flows is explored in detail. These results can be used to build better models for strained flows. Inertial particle accelerations are suspected to play major roles in determining rain drop formations, particle agglomeration in industrial flows, pollutant transport and other related phenomena. The modeling and experimental results will aid in developing more accurate models of inertial particle dynamics.

url: http://hdl.handle.net/1813/5301
date: 2007-02-08
creator: Routhe, Christopher
viewed: 146
title: Simulating the Impacts of Agroterrorism on U.S. Financial Markets and Regional Economic Performance
abstract: The threat of terrorism against the United States has been a primary concern of public policy makers, particularly after the attacks of September 11, 2001. Economic theory and statistical analysis provide valuable insights into the challenge of estimating the regional and national economic impacts of future attacks. Terrorist events represent exogenous shocks on the economy which can cause significant emotional and psychological damage. The initial chapters describe a simulation model that captures the impacts of agricultural terrorism (agroterrorism) on the economic performance of various sectors within a regional economy, while the final chapters examine the impacts of agroterrorism on U.S. financial markets.

I begin the analysis by examining the probable direct and indirect economic impacts of bioterrorism originating in St. Lawrence County, New York. The specific biological weapon examined is a foot-and-mouth disease (FMD) attack that disrupts the local agricultural food supply. A county-level simulation is valuable because it focuses on the immediate impact of FMD, providing useful estimates of the short-to-medium term impacts. The regional model contains in depth analysis of the livestock industry with specific links to

regional tourism, and the results section includes impact estimates using a Social Accounting Matrix (SAM) framework.

St. Lawrence County serves as an interesting case study to explore supply-chain linkages, since the region depends heavily on its livestock and tourism industries which would suffer following an FMD attack. I perform simulations assuming that the attack has no direct impact on dairy farm products, before relaxing this assumption to account for economic impacts associated with parallel shocks to the livestock and dairy industries. The methodology focuses on estimating the economic implications of production and trade disruptions in the international market. The costs of agroterrorism are estimated in terms of disruptions to regional output, employment, and value added for key sectors within the economy. I provide impact assessments for livestock, tourism, dairy, and all sectors within the region.

The direct costs of the attack within the region would reflect the initial output reductions, and the indirect costs would reflect changes in inter-industry transactions as supplying industries react to falling demand from the directly affected industries. Indirect effects significantly increase the magnitude of losses suffered by the economy as the damage flows beyond the industries directly impacted. These indirect effects would include losses suffered by related industries, such as firms engaged in food supply, transportation, distribution, and retail. The firm-level impacts are outside the scope of this research project.

The latter chapters explore the broader impacts on financial asset classes in equities, fixed income, and foreign exchange to produce real GDP growth rate forecasts using the Global Insight macroeconomic model of the U.S. economy. By linking to the macro model following the regional analysis, we can examine the economy-wide repercussions of a terrorist attack on U.S. agriculture. I will show that a state of financial uncertainty brought forth by terrorism can decrease consumer confidence, increase interest rates, increase credit spreads, dampen the stock market, and impact the value of the U.S. dollar relative to the currencies of trading partners.

I will demonstrate that extreme terrorist events tend to disrupt the normal relationships among financial asset classes. The results section for the macro impact model includes real GDP growth rate forecasts and projected real output losses. For both the regional and national models I draw on the literature to examine the attack under various assumptions regarding the severity of output reductions. I conclude with policy recommendations based on my findings, as well as directions for future research.

url: http://hdl.handle.net/1813/5302
date: 2007-02-08
creator: Weissman, Victoria Rebecca
viewed: 134
title: Reasoning about Authorization Policies
abstract: An authorization policy states the conditions under which an action is permitted or forbidden. In this dissertation, we use formal methods to ensure that policies written in certain languages are unambiguous and to provide provably correct algorithms for reasoning about policies. For example, we describe how questions about entailment, such as ``may Alice edit the database?'', can be answered efficiently.

We begin by showing that a fragment of first-order logic can be used to represent and reason about policies. Because we use first-order logic, policies have a clear syntax and semantics. We show that further restricting the fragment results in a language that is still quite expressive yet is also tractable. More precisely, questions about entailment can be answered in time that is a low-order polynomial (indeed, almost linear in some cases), as can questions about the consistency of policy sets.

In addition to developing our own language, we have examined two policy languages, XrML and ODRL. We focused on these languages because, when we began our work, they seemed to have the strongest support from industry. We found that the specifications for both languages have significant problems, which is not surprising since neither includes formal semantics. We discussed the problems that we found with the language developers and then proposed formal semantics for each language. We present our semantics here.

In addition, we consider the complexity of determining if a permission is implied by a set of statements in each language. We prove that the general problem for XrML is undecidable and the general problem for ODRL is decidable and NP-hard. Finally, we define fragments of both languages that are fairly expressive and for which the problem is polynomial-time computable.

url: http://hdl.handle.net/1813/5311
date: 2007-02-09
creator: Barazangi, M.;Ambraseys, N. N.
viewed: 84
title: The 1759 earthquake in the Bekaa valley: Implications for earthquake hazard assessment in the eastern Mediterranean region
abstract: Copyright 1989, American Geophysical Union. See also: http://atlas.geo.cornell.edu/deadsea/publications/Ambraseys1989_JGR.htmAnalysis of macroseismic data based on primary sources for large, though infrequent, historical earthquakes (Ms > 6.5) that occurred along an approximately 350-km-long segment of the northern part of the Dead Sea fault system primarily in Lebanon and Syria for the period 1100-1988 reveals the following: (1) Ten events occurred in three relatively short periods (tens of years) with repeat times of 200-350 years; (2) the events most probably broke this north segment of the Dead Sea fault system, possibly including the westernmost segment of the East Anatolian fault system near the border between Syria and Turkey; (3) the lack of such large events during the past 100 years should not be interpreted to minimize potential earthquake hazard in this region; and (4) the Ms ~ 7 plus earthquake on November 25, 1759, almost certainly produced surface faulting probably along the Yammouneh fault in the Bekaa valley and caused heavy destruction with great loss of life in numerous villages and towns, including Safad, Damascus, Beirut, and Baalbek. This main event was preceded by a Ms ~ 6 plus foreshock on October 30, 1759, in the southern part of the epicentral area of the main shock near the towns of Safad and Qunaitra, which were almost totally destroyed with considerable loss of life.

url: http://hdl.handle.net/1813/5312
date: 2007-02-09
creator: Zaza, T.;Al-Imam, A.;Sawaf, T.;Barazangi, M.;Lupa, J.;Brew, G.
viewed: 85
title: Structure and tectonic development of the Ghab Basin and the Dead Sea Fault System, Syria
abstract: This material has been published in The Journal of the Geological Society of London, Volume 158, the only definitive repository of the content that has been certified and accepted after peer review. Copyright and all rights therein are retained by The Geological Society of London. Copyright 2001, The Geological Society of London. See also: http://atlas.geo.cornell.edu/deadsea/publications/Brew2001_GSL.htmWe examine the structure and evolution of the Ghab basin that formed on the active, yet poorly understood, northern segment of the Dead Sea transform fault system. The basin formed in the Plio-Quaternary time at a complex step-over zone on the fault. Subsidence occurred along cross-basin and transform-parallel faults in two asymmetric depocentres. The larger depocentre in the south of the basin is asymmetric towards the east, the margin along which most active transform displacement apparently occurs. The Syrian Coastal Ranges, located directly west of the Ghab basin, are a consequence of Late Cretaceous and Cenozoic regional compression, heavily modified by the Dead Sea fault system and Ghab basin formation. We prefer a model whereby the Dead Sea fault system in northwest Syria developed in Plio-Quaternary time, consistent with previously proposed models of two-phase Dead Sea fault system movement and Red Sea spreading.

url: http://hdl.handle.net/1813/5313
date: 2007-02-09
creator: Barazangi, M.;Khair, K.;Darkal, A.;Tabet, C.;Khawlie, M.;Gomez, F.

viewed: 109
title: Late Cenozoic uplift along the northern Dead Sea transform in Lebanon and Syria
abstract: An edited version of this paper was published in Earth and Planetary Science Letters by Elsevier Science. Elsevier Science retains the copyright to this paper. Copyright 2006, Elsevier Science. See also: http:\\dx.doi.org/10.1016/j.epsl.2005.10.029; http://atlas.geo.cornell.edu/deadsea/publications/Gomez2006_EPSL.htmEvidence of long-term, late Cenozoic uplift, as well as strike-slip faulting, is revealed by topographic and geological features along the northern 500 km of the Dead Sea fault system (DSFS)- the transform boundary between the Arabian and African plates in the eastern Mediterranean region. Macro-geomorphic features are studied using a new, high-resolution (20 m pixel) digital elevation model (DEM) produced by radar interferometry (InSAR). This DEM provides a spatially continuous view of topography at an unprecedented resolution along this continental transform from 32.5 to 38 degrees N. This section of the left-lateral transform can be subdivided into a 200 km long Lebanese restraining bend (mostly in Lebanon), and the section to the north (northwest Syria). Spatial variations in Cenozoic bedrock uplift are inferred through mapping of topographic residuals from the DEM. Additionally, high altitude, low-relief surfaces are mapped and classified in the Mount Lebanon and Anti Lebanon ranges that also provide references for assessing net uplift. These results demonstrate an asymmetric distribution of post-Miocene uplift between the Mt. Lebanon and Anti Lebanon ranges. Antecedent drainages also imply that a major episode of uplift in the Palmyride fold belt postdates the uplift of the Anti Lebanon region. North of the restraining bend, the Late Miocene surface is preserved beneath spatially extensive lava flows. Hilltop remnants of this paleosurface demonstrate Pliocene-Quaternary uplift and tilting of the Syrian Coastal Range, adjacent to the DSFS north of the restraining bend. This late Cenozoic uplift is contemporaneous with strike-slip along the DSFS. Geometrical relationships between folds and strike-slip features suggest that regional strain partitioning may accommodate a convergent component of motion between the Arabian and African plates. This interpretation is consistent with regional plate tectonic models that predict 10-25 degrees of obliquity between the relative plate motion and the strike of the DSFS north of the restraining bend. We suggest that this convergent component of plate motion is responsible for uplift along and adjacent to the DSFS in the Syrian Coastal Range, as well as within the Lebanese restraining bend.

url: http://hdl.handle.net/1813/5314
date: 2007-02-09
creator: Barazangi, M.;Al-Ghazzi, R.;Darawcheh, R.;Sbeinati, R.;Suleiman, Y.;Mouty, M.;Hijazi, F.;Darkal, A.;Meghraoui, M.;Gomez, F.
viewed: 67
title: Holocene faulting and earthquake recurrence along the Serghaya branch of the Dead Sea fault system in Syria and Lebanon
abstract: An edited version of this paper was published in Geophysical Journal International by Blackwell Publishing. Blackwell Publishing retains the copyright. Copyright 2003, Blackwell Publishing. See also: http://www.blackwell-synergy.com/doi/abs/10.1046/j.1365-246X.2003.01933.x; http://atlas.geo.cornell.edu/deadsea/publications/Gomez2003_GJI.htmThe Serghaya fault, located approximately along the Syrian-Lebanese border, is a prominent structure within the 200 km restraining bend in the left-lateral Dead Sea fault system. This study documents palaeoseismic and geomorphic expressions of Holocene movements on the Serghaya fault based on trench excavations and radiocarbon dates. Trenches were excavated across and parallel to a 4.5 m fault scarp where Late Pleistocene sediments are faulted against Holocene alluvium and colluvium. Locally oblique slip on the Serghaya fault has produced a sequence of fault-derived colluvial wedges that distinguishes individual palaeoseismic events. In addition, the trench excavations also depict a sequence of buried and displaced channels. Our palaeoseismic study reveals evidence for five surface-rupturing events within the past ~6500 yr. The last event involved 2-2.5 m of primarily left-lateral displacement and may correspond to one of two historically documented earthquakes during the 18th century (in 1705 and 1759).

The displaced channels provide an estimated slip rate of approximately 1.4 - 0.2 mm yr-1 during the Holocene. The chronological relationships between the colluvial wedges and faulted channels demonstrate an average left-lateral displacement of about 2 m per event, suggesting that such events correspond to earthquakes of M >~ 7 with a mean return time of about 1300 yr. These results demonstrate that the Serghaya fault may present a previously overlooked earthquake hazard for populations in the vicinity of the AntiLebanon Mountains, including the cities of Damascus and Beirut. In a regional context, the inferred slip rate along the Serghaya fault accounts for about 25 per cent of the total expected motion of Arabia relative to Africa along the Dead Sea fault system. The fact that the Serghaya fault accounts for only a fraction of the expected plate motion implies that the remaining strike-slip and shortening must be accommodated by other active fault branches within the large restraining bend of the Dead Sea fault system. These results contradict suggestions that the northern Dead Sea fault system in Lebanon and Syria is presently inactive as a result of an evolving regional stress field in the eastern Mediterranean region.

url: http://hdl.handle.net/1813/5315
date: 2007-02-09
creator: Barazangi, M.;Khair, K.;Charabe, M.;Khawlie, M.;Tabet, C.;Darawcheh, R.;Sbeinati, R.;Darkal, A.;Meghraoui, M.;Gomez, F.
viewed: 74
title: Coseismic displacements along the Serghaya Fault: An active branch of the Dead Sea Fault System in Syria and Lebanon
abstract: This material has been published in The Journal of the Geological Society of London, Volume 158, the only definitive repository of the content that has been certified and accepted after peer review. Copyright and all rights therein are retained by The Geological Society of London. Copyright 2001, The Geological Society of London. See also: http://atlas.geo.cornell.edu/deadsea/publications/Gomez2001_JGS.htmExamination of the Serghaya fault, a branch of the Dead Sea Fault System in western Syria and eastern Lebanon, documents Late Quaternary and Recent left-lateral fault movements including the probable remnant of a historic coseismic surface rupture. Carbon-14 dating and the presence of fault-scarp free faces in soft, late Pleistocene lake deposits suggest coseismic slip during the past two or three centuries, possibly corresponding with one of the well-documented earthquakes of 1705 or 1759. With an estimated Holocene slip rate of 1-2 mm/yr, the Serghaya Fault accommodates a significant part of the active deformation along the Arabian-African plate boundary. These results suggest that multiple active fault branches are involved in the transfer of strain through the 'Lebanese' restraining bend.

url: http://hdl.handle.net/1813/5316
date: 2007-02-09
creator: Chaimov, T.;Seber, D.;Barazangi, M.;Haddad, F.;Khawlie, M.;Khair, K.
viewed: 72
title: Bouguer gravity and crustal structure of the Dead Sea transform fault and adjacent mountain belts in Lebanon
abstract: This paper was published in Geology by the Geological Society of America (GSA), and GSA retains the copyright (1993). Geological Society of America, P.O. Box 9140, Boulder, CO 80301-9140
See also: http://www.geosociety.org; http://atlas.geo.cornell.edu/deadsea/publications/Khair1993_Geology.htmThe northern extension of the Dead Sea transform fault in southern Lebanon bifurcates into several faults that cross Lebanon from south to north. The main strand, the Yammouneh fault, marks the boundary between the Levantine (eastern Mediterranean) and Arabian plates and separates the western mountain range (Mount Lebanon) from the eastern mountain range (Anti-Lebanon). Bouguer gravity contours in Lebanon approximately follow topographic contours; i.e., positive Bouguer anomalies are associated with the Mount Lebanon and Anti-Lebanon ranges. This suggests that the region is not in simple isostatic compensation.

Gravity observations based on 2.5-dimensional modeling and other available geological and geophysical information have produced the following interpretations. (1) The crust of Lebanon thins from 35 km beneath the Anti-Lebanon range, near the Syrian border, to 27 km beneath the Lebanese coast. No crustal roots exist beneath the Lebanese ranges. (2) The depth to basement is 3.5-6 km below sea level under the ranges and is 8-10 km beneath the Bekaa depression. (3) The Yammouneh fault bifurcates northward into two branches; one passes beneath the Yammouneh Lake through the eastern part of Mount Lebanon and another bisects the northern part of the Bekaa Valley (i.e., Mid-Bekaa fault). The Lebanese mountain ranges and the Bekaa depression were formed as a result of transtension and later transpression associated with the relative motion of a few crustal blocks in response to the northward movement of the Arabian plate relative to the Levantine plate.

url: http://hdl.handle.net/1813/5317
date: 2007-02-09
creator: Harrison, Ellen Z.
viewed: 177
title: Degradable Plastics Update
abstract:

url: http://hdl.handle.net/1813/5318
date: 2007-02-09
creator: Krasny, Marianne E.;Edelstein, Karen L.;Bonhotal, Jean F.
viewed: 196
title: What About Waste?
abstract: This activity booklet was designed to introduce youth to a variety of subjects in environmental sciences by involving them in activities that heighten their awareness of the natural world. Leaders, teachers, parents, and camp counselors need no background in environmental sciences to work on these activities. New York State 4-H Foundation

url: http://hdl.handle.net/1813/5319
date: 2007-02-09
creator: Oakes, Summer Rayne;Harrison, Ellen Z.
viewed: 229
title: Investigation of Alleged Health Incidents Associated with Land Application of Sewage Sludges
abstract: The majority of US sewage sludges are disposed by application to land for use as a soil amendment. Class B sludges, containing a complex mix of chemical and biological contaminants, comprise the majority. Residents near land application sites report illness. Symptoms of more than 328 people involved in 39 incidents in 15 states are described. Investigation and tracking of the incidents by agencies is poor. Only one of 10 EPA regions provided substantial information on the incidents in their region. Investigations, when conducted, focused on compliance with regulations. No substantial health-related investigations were conducted by federal, state or local officials. A system for tracking and investigation is needed. Analysis of the limited data suggests that surface-applied Class B sludges present the greatest risk and should be eliminated. However, even under less risky application scenarios, the potential for off-site movement of chemicals, pathogens and biological agents suggest that their use should be eliminated.

url: http://hdl.handle.net/1813/5320
date: 2007-02-09
creator: Barazangi, M.;Al-Ghazzi, R.;Hijazi, F.;Darawcheh, R.;Al Najjar, H.;Layyous, I.;Radwan, Y.;Darkal, A.;Mouty, M.;Van der Woerd, J.;Sbeinati, R.;Gomez, F.;Meghraoui, M.

viewed: 145
title: Evidence for 830 years of seismic quiescence from palaeoseismology, archaeoseismology, and historical seismicity along the Dead Sea fault in Syria
abstract: An edited version of this paper was published in Earth and Planetary Science Letters by Elsevier Science. Elsevier Science retains the copyright to this paper (Copyright 2003). See also: http:\\dx.doi.org\10.1016\S0012-821X(03)00144-4; http://atlas.geo.cornell.edu/deadsea/publications/Meghraoui2003_EPSL.htmThe long historical record of earthquakes, the physical effects on ancient building structures and the palaeoseismology provide a unique opportunity for an interdisciplinary tectonic analysis along a major plate boundary and a realistic evaluation of the seismic hazard assessment in the Middle East. We demonstrate with microtopographic surveys and trenching that the Dead Sea fault (DSF) offsets left-laterally by 13.690.2 m a repeatedly fractured ancient Roman aqueduct (older than AD 70 and younger than AD 30). Carbon-14 dating of faulted young alluvial deposits documents the occurrence of three large earthquakes in the past 2000 years between AD 100 and 750, between AD 700 and 1030 and between AD 990 and 1210. Our study provides the timing of late Holocene earthquakes and constrains the 6.990.1 mm/yr slip rate of the Dead Sea transform fault in northwestern Syria along the Missyaf segment. The antepenultimate and most recent faulting events may be correlated with the AD 115 and AD 1170 large earthquakes for which we estimate Mw =7.3^7.5. The 830 yr of seismic quiescence along the Missyaf fault segment implies that a large earthquake is overdue and may result in a major catastrophe to the population centres of Syria and Lebanon.

url: http://hdl.handle.net/1813/5321
date: 2007-02-09
creator: Barazangi, M.;Gomez, F.;Sandvol, E.;Seber, D.;Darkal, A.;Mohamad, R.
viewed: 81
title: Remote earthquake triggering along the Dead Sea fault in Syria following the 1995 Gulf of Aqaba earthquake (Ms=7.3)
abstract: Copyright 2000, Seismological Society of America. See also: http://www.seismosoc.org/publications/srl.html;
http://atlas.geo.cornell.edu/deadsea/publications/Mohamad2000_SRL.htmOn 22 November 1995, a large (Ms=7.3) earthquake occurred in the central Gulf of Aqaba region that was felt at distances of up to 600 km. This was the largest earthquake to occur along the Dead Sea fault system (DSFS) during the 20th century. This earthquake was followed by an aftershock sequence that lasted for more than one year, with numerous shocks exceeding a magnitude of 5.0. The centroid moment tensor (CMT) location of the mainshock was 29.07?N and 34.73?E, and the hypocentral depth was about 18km.

In this study, we report a peculiar swarm of seismic activity that started within hours following the Aqaba earthquake along the DSFS about 500 km north of the mainshock location. Temporal and spacial analyses of these small to moderate-size earthquakes (M<3.7) suggest that these earthquakes were remotely triggered by the mainshock of the Aqaba earthquake.

Coseismic stress triggering of earthquakes has received considerable attention since the 1992 Landers earthquake in California (Ms=7.3) (e.g., Hill et al., 1993; King et al., 1994; JGR special issue edited by Harris, 1998). Static stress changes due to elastic loading correlate well with aftershock activity (e.g., King et al., 1994) and may be a source of triggering larger earthquakes near the original fault rupture (i.e., within one or two rupture lengths) (e.g., Harris et al., 1997). King et al. (1994) demonstrated that the sequence of moderate to large earthquakes in southern California during the ~15 years leading up to the Landers earthquake corresponds with static stress increases from each successive earthquake. A similar case has been made for the 20th century seismicity along the North Anatolian Fault system in Turkey (Stein et al., 1997).

Remote triggering was also recognized following the Landers earthquake at distances of over 1,250 km (Hill et al., 1993; Anderson et al., 1994). In such cases static stress changes appear to be negligible, but dynamic stresses still may be significant. The case we will present below shows characteristics consistent with some

predictions of dynamic “rate state” stress triggering models (Gomberg et al., 1998).

url: http://hdl.handle.net/1813/5322
date: 2007-02-12
creator: Siegel, Scott Nicholas
viewed: 209
title: Law and Order in the EU: The Comparative Politics of Compliance
abstract: Why do some member states of the European Union comply with EU law more than others? The dissertation answers this question by unpacking the ?black box? of the liberal democratic state and testing three alternative hypotheses. The chief reason why some states violate law beyond the nation-state more than others is a function of the degree to which a country?s legal tradition codifies social and economic reality. As more of social and economic reality is codified into national law, the more likely a state will commit an infraction of European Union law. This argument is tested through the rigorous application of both qualitative and quantitative methods against two chief alternative explanations. Using a dataset of over 1,200 violations of the Treaty of the European Communities and its associated regulations, the statistical analysis shows that levels of codification, measured by a country?s regulatory quality, is the primary explanatory factor for both why some EU member states violate the Treaty more than others and why the ECJ is more likely to settle these legal disputes when they occur. Furthermore, even though the United Kingdom and the Federal Republic of Germany have very different legal traditions and parliamentary systems, comparing the process of compliance in each of these countries in the area of the free movement of goods shows that the degree to which basic principles of law are codified determines why they have similar proportions of infringements settled by the European Court of Justice. These findings have important implications for how we understand compliance with international law and the role domestic institutions play in the compliance process, both for the member states of the European Union and for all other states in the international system. While compliance with international law can be a normatively beneficial activity at times, it can also lead to a diminishing role for national parliaments in governing society. Most importantly, the rich diversity that democratic governance produces as it codifies social reality can be lost as international institutions homogenize national legal systems in hopes of achieving other policy goals.

url: http://hdl.handle.net/1813/5323
date: 2007-02-12
creator: Barazangi, M.;Mohamad, R.;Turkelli, N.;Sandvol, E.;Seber, D.;Al-Lazki, A.
viewed: 73
title: Tomographic Pn velocity and anisotropy structure beneath the Anatolian plateau (eastern Turkey) and the surrounding regions
abstract: An edited version of this paper was published by the American Geophysical Union (AGU). Copyright 2003, AGU. See also: http://www.agu.org/pubs/crossref/2003.../2003GL017391.shtml; http://atlas.geo.cornell.edu/turkey/publications/Al-Lazki-et-al_2003.htmWe use Pn phase travel time residuals to invert for mantle lid velocity and anisotropy beneath northern Arabia eastern Anatolia continent-continent collision zone. The primary phase data were obtained from the temporary 29- station broadband PASSCAL array of the Eastern Turkey Seismic Experiment. These data were supplemented by phase data from available stations of the Turkish National Seismic Network, the Syrian National Seismic Network, the Iranian Long Period Array, and other stations around the southern Caspian Sea. In addition, we used carefully selected catalog data from the International Seismological Centre and the National Earthquake Information Center bulletins. Our results show that low (<8 km/s) to very low (<7.8 km/s) Pn velocity zones underlie the Anatolian plateau, the Caucasus, and northwestern Iran. Such low velocities are used to infer the presence of partially molten to absent mantle lid beneath these regions. In contrast, we observed a high Pn velocity zone beneath northern Arabia directly south of the Bitlis-Zagros suture indicating the presence of a stable Arabian mantle lid.

This sharp velocity contrast across the suture zone suggests that Arabia is not underthrusting beneath the Anatolian plateau and that the surface suture extends down to the uppermost mantle. Pn anisotropy orientations within a single plate (e.g. Anatolia plate) show a higher degree of lateral variation compared to Pn velocity. Areas of coherent Pn anisotropy orientations are observed to continue across major fault zones such as the EAF zone.

url: http://hdl.handle.net/1813/5324
date: 2007-02-12
creator: Seber, D.;Sandvol, E.;Barazangi, M.
viewed: 73
title: Structure and tectonic evolution of the Anatolian plateau in eastern Turkey
abstract: This paper was published by the Geological Society of America (GSA). Copyright 2006, GSA. See also: http://granite.geosociety.org/bookstore/default.asp?oID=0&catID=9&pID=SPE409; http://atlas.geo.cornell.edu/turkey/publications/Barazangi-et-al_2006.htmThe Cenozoic geology and the present lithospheric and upper mantle structure of the Anatolian plateau in eastern Turkey and nearby regions are the result of the final collision and suturing of the continental Arabian plate to the Turkish terranes (i.e., micro-continents). This process of collision and suturing was strongly influenced by three active structures in the region: the Caucasus mountains, the Aegean subduction zone, and the Dead Sea fault system. Understanding these three major tectonic elements are important for the development of a robust model for the formation of the Anatolian plateau.

We show that the Anatolian plateau lithosphere in eastern Turkey has no lithospheric mantle, i.e., the crust floats on a partially molten asthenosphere. The average thickness of the crust in the region is approximately 45 km. The uppermost mantle beneath this crustal block strongly attenuates Sn waves and has one of the lowest Pn velocities on earth (about 7.6 km/s). The Anatolian plateau, with an average of 2 km elevation is dissected by numerous active, seismogenic faults (mostly strike-slip and some thrust type). Neogene and Quaternary volcanism with varying composition is widespread and covers more than half of the region.

We argue that the northward subduction of the northern and the southern branches of the Neo-Tethyan oceanic lithosphere since the Mesozoic has resulted in the development of arc and back-arc volcanism (i.e., the Pontide and Bitlis systems) and the development of the eastern Anatolian accretionary complex that covers a large area of eastern Turkey. The northward subduction of the southern Neo-Tethys considerably thinned and weakened the overriding Eurasian plate above the descending oceanic lithosphere of the Arabian plate. The final suturing of the continental Arabian plate with the Turkish terranes in the Miocene and the continued convergence of Arabia relative to Eurasia has resulted in the shortening of the accretionary complex both in the forearc and the back-arc regions and the development of a broad zone with numerous strike-slip faults. The mobilization of the Caucasus is also partially a consequence of this convergence. The documented major episode of widespread volcanism at about 11 Ma is probably related to the breakoff of the shallowly descending oceanic segment of the Arabian lithosphere beneath eastern Turkey. The continued convergence of Arabia relative to Eurasia has resulted in the development of the North Anatolian fault (NAF) and subsequently the East Anatolian fault (EAF) in the Pliocene. At about this time, the northern segment of the Dead Sea fault (DSF) also developed in Lebanon and northwest Syria and joined the EAF to form the Anatolian - Arabian - African triple junction in the Maras region of southern Turkey. The development of these fault systems (i.e., NAF, EAF, and DSF) provided the mechanism for the tectonic escape of the Anatolian crustal block towards the Aegean arc system.

url: http://hdl.handle.net/1813/5325
date: 2007-02-13
creator: Barazangi, M.;Seber, D.;Turkelli, N.;Sandvol, E.;Gok, R.
viewed: 60

title: Sn attenuation in the Anatolian and Iranian plateau and surrounding regions
abstract: An edited version of this paper was published in Geophysical Research Letters by the American Geophysical Union (AGU). Copyright 2003, AGU. See also: http://www.agu.org/pubs/crossref/2003/2003GL018020.shtml; http://atlas.geo.cornell.edu/turkey/publications/Gok-et-al_2003.htmThe propagation characteristics of the regional Sn shear waves have been mapped to provide insight into the lithospheric structure of the Anatolian and Iranian plateau and the surrounding regions. Thousands of regional earthquakes within the distance range of 2?15 degrees were recorded by broadband and short period stations located in Turkey and nearby regions, especially new data recorded by 29 broadband stations in the Eastern Turkey Seismic Experiment network. The propagation efficiencies of Sn were determined visually using their amplitude and frequency content. Attenuation maps were then tomographically constructed using the observed propagation efficiencies. Our results confirm that Sn propagates efficiently in the uppermost mantle beneath the Mediterranean Sea, the Black Sea, and the Caspian Sea and along the Zagros fold and thrust belt. Sn is not observed in eastern Turkey, northwestern Iran, or central Anatolia. In contrast to previous available studies, this study considerably improved the mapped location of the boundaries between the zones of efficient and attenuated Sn. Our results are best explained by an absence of lithospheric mantle, or the presence of thin and hot lithospheric mantle beneath most of the Anatolian and Iranian plateau.

url: http://hdl.handle.net/1813/5326
date: 2007-02-13
creator: Barazangi, M.;Seber, D.;Sandvol, E.;Turkelli, N.;Gok, R.
viewed: 57
title: Regional wave propagation in Turkey and surrounding regions
abstract: This paper was published by the American Geophysical Union (AGU). Copyright 2000, AGU. See also: http://www.agu.org/journals/gl/gl0003/1999GL008375/pdf/1999GL008375.pdf; http://atlas.geo.cornell.edu/turkey/publications/Gok-et-al_2000.htmDigital and analog seismic waveform data collected by 34 stations in and around Turkey provided excellent ray coverage for a detailed attenuation study of regional shear waves (Sn and Lg). Over 2000 seismograms within a distance range of 15 degrees were visually inspected and the quality of Sn and Lg phases categorized into three different classes: efficient, inefficient, or not present. Our results show that Sn and Lg propagation is mostly inefficient in western Turkey and the Aegean Sea. Sn is efficient in parts of southwestern Turkey, the western Pontides, and western Greece. Sn is not observed in eastern Turkey and along the Aegean volcanic arc. Lg propagates efficiently in the Arabian plate including paths that cross the Dead Sea fault zone and in northwestern Turkey. Lg does not propagation in northeast Anatolia, across the Lesser Caucasus, and north of the Hellenic arc (Sea of Crete). These results are a major improvement on prior attenuation studies in this region and provide new constraints for proposed tectonic models.

url: http://hdl.handle.net/1813/5329
date: 2007-02-13
creator: Bothi, Kimberly L.
viewed: 362
title: Characterization of Biogas from Anaerobically Digested Dairy Waste for Energy Use
abstract: As the third largest dairy producer in the United States, New York is faced with the critical issue of agricultural waste management. The environmental impacts and high long-term costs of poor waste disposal have pushed the industry to realize the potential of turning this problem into an economic and sustainable initiative. The anaerobic digestion of dairy manure-derived agricultural waste produces biogas, a valuable energy resource. Anaerobic digestion offers an effective way to manage manure by addressing the principal problem of odor control while offering an opportunity to create energy from conversion of biogas with a system of combined heat and power (CHP).

Anaerobic digestion is a microbial process that produces biogas, a gas consisting of primarily methane (CH4) and carbon dioxide (CO2). The use of biogas as an energy source has numerous applications. However, all of the possible applications require knowledge about the composition and quantity of constituents in the biogas stream.

This thesis presents the findings of a study conducted over several months at five New York farms to evaluate the characteristics of dairy manure-derived biogas. Relatively long term measurements of a biogas stream at Dairy Development International (DDI) provided information about the composition and quantity of the constituents of biogas over time (day, week, months). At DDI, methane averaged 60.3% (+/-1%) of the total gas composition with an average BTU per standard cubic foot of 612 (+/-12 BTU/SCF). Carbon dioxide averaged 38.2% (+/-1%) during this period with nitrogen at 1.52% (+/-1.1%). Hydrogen sulfide, a particularly hazardous component of biogas affecting the ultimate end use of biogas in energy generation technologies measured an average of 1984 ppm (+/-570 ppm) at DDI where measurements were taken about every 3 hours over numerous 24 hour periods from July to November 2003. Biogas samples at the other four dairies illustrated rather wide variations in hydrogen sulfide concentrations from about 600 ppm to over 7000 ppm. It is suggested that the lower H2S concentrations may be due to additions of food waste to the anaerobic digester at the dairy with the low H2S concentration. The high H2S concentrations measured at another dairy are believed to be related to the significantly higher concentrations of sulfur in the farm water. For dairies not adding food wastes and not having high sulfur content in the farm water, the H2S concentrations ranged between approximately 1000 and 3600 ppm.

Water, waste and feed samples were also collected from the five dairies to determine whether the digester inputs had an effect on the components of the biogas as well as to explore the range in biogas quality at various dairies in the region. Based on the preliminary results shown in this study, it is suspected that higher sulfur contents present in feed water may have an impact on the hydrogen sulfide content in biogas generated through the anaerobic digestion of dairy manure.

These results agree with often well-quoted generalized concentrations of approximately 60% CH4, 40% CO2 and 600 BTU/SCF for dairy-derived biogas. The data also show that the H2S concentration can vary significantly depending on the type of additives in the diet and the quality of the farm water, anywhere from 600 ppm to 7000 ppm.New York State Energy Research and Development Authority (NYSERDA Agreement No.7250)

url: http://hdl.handle.net/1813/5337
date: 2007-02-14
creator:
viewed: 70
title: Cornell Chronicle Vol. 01. No. 1 - No. 35, 1969-1970
abstract: The Cornell Chronicle, the official weekly of record for Cornell University.

url: http://hdl.handle.net/1813/5338
date: 2007-02-14
creator:
viewed: 61
title: Cornell Chronicle Vol. 02, No. 1 - No. 38, 1970-1971
abstract: The Cornell Chronicle, the official weekly of record for Cornell University.

url: http://hdl.handle.net/1813/5339
date: 2007-02-14
creator:
viewed: 58

title: Cornell Chronicle Vol. 03, No. 1 - No. 38, 1971-1972
abstract: The Cornell Chronicle, the official weekly of record for Cornell University.

url: http://hdl.handle.net/1813/5340
date: 2007-02-14
creator:
viewed: 49
title: Cornell Chronicle Vol. 04, No. 1 - No. 30, 1972-1973
abstract: The Cornell Chronicle, the official weekly of record for Cornell University.

url: http://hdl.handle.net/1813/5341
date: 2007-02-14
creator:
viewed: 54
title: Cornell Chronicle Vol. 05, No. 1 - No. 38, 1973-1974
abstract: The Cornell Chronicle, the official weekly of record for Cornell University.

url: http://hdl.handle.net/1813/5342
date: 2007-02-14
creator:
viewed: 51
title: Cornell Chronicle Vol. 06, No. 1 - No. 36, 1974-1975
abstract: The Cornell Chronicle, the official weekly of record for Cornell University.

url: http://hdl.handle.net/1813/5343
date: 2007-02-14
creator:
viewed: 54
title: Cornell Chronicle Vol. 07, No. 1 - No. 33, 1975-1976
abstract: The Cornell Chronicle, the official weekly of record for Cornell University.

url: http://hdl.handle.net/1813/5344
date: 2007-02-14
creator:
viewed: 56
title: Cornell Chronicle Vol. 08, No. 1 - No. 32, 1976-1977
abstract: The Cornell Chronicle, the official weekly of record for Cornell University.

url: http://hdl.handle.net/1813/5345
date: 2007-02-14
creator:
viewed: 58
title: Cornell Chronicle Vol. 09, No. 1 - No. 33, 1977-1978
abstract: The Cornell Chronicle, the official weekly of record for Cornell University.

url: http://hdl.handle.net/1813/5346
date: 2007-02-14
creator:

viewed: 55
title: Cornell Chronicle Vol. 10, No. 1 - No. 31, 1978-1979
abstract: The Cornell Chronicle, the official weekly of record for Cornell University.

url: http://hdl.handle.net/1813/5347
date: 2007-02-14
creator:
viewed: 50
title: Cornell Chronicle Vol. 11, No. 1 - No. 37, 1979-1980
abstract: The Cornell Chronicle, the official weekly of record for Cornell University.

url: http://hdl.handle.net/1813/5348
date: 2007-02-14
creator:
viewed: 53
title: Cornell Chronicle Vol. 12, No. 1 - No. 36, 1980-1981
abstract: The Cornell Chronicle, the official weekly of record for Cornell University.

url: http://hdl.handle.net/1813/5349
date: 2007-02-14
creator:
viewed: 85
title: Cornell Chronicle Vol. 13, No. 1 - No. 37, 1981-1982
abstract: The Cornell Chronicle, the official weekly of record for Cornell University.

url: http://hdl.handle.net/1813/5350
date: 2007-02-14
creator:
viewed: 72
title: Cornell Chronicle Vol. 14, No. 1 - No. 37, 1982-1983
abstract: The Cornell Chronicle, the official weekly of record for Cornell University.

url: http://hdl.handle.net/1813/5351
date: 2007-02-14
creator:
viewed: 78
title: Cornell Chronicle Vol. 15, No. 1 - No. 48, 1983-1984
abstract: The Cornell Chronicle, the official weekly of record for Cornell University.

url: http://hdl.handle.net/1813/5352
date: 2007-02-14
creator:
viewed: 47
title: Cornell Chronicle Vol. 16, No. 1 - No. 49, 1984-1985
abstract: The Cornell Chronicle, the official weekly of record for Cornell University.

url: http://hdl.handle.net/1813/5353
date: 2007-02-14

creator:
viewed: 60
title: Cornell Chronicle Vol. 17, No. 1 - No. 41, 1985-1986
abstract: The Cornell Chronicle, the official weekly of record for Cornell University.

url: http://hdl.handle.net/1813/5354
date: 2007-02-14
creator:
viewed: 66
title: Cornell Chronicle Vol. 18, No. 1 - No. 40, 1986-1987
abstract: The Cornell Chronicle, the official weekly of record for Cornell University.

url: http://hdl.handle.net/1813/5355
date: 2007-02-14
creator:
viewed: 63
title: Cornell Chronicle Vol. 19, No. 1 - No. 40, 1987-1988
abstract: The Cornell Chronicle, the official weekly of record for Cornell University.

url: http://hdl.handle.net/1813/5356
date: 2007-02-14
creator:
viewed: 125
title: Cornell Chronicle Vol. 20, No. 1 - No. 39, 1988-1989
abstract: The Cornell Chronicle, the official weekly of record for Cornell University.

url: http://hdl.handle.net/1813/5357
date: 2007-02-14
creator:
viewed: 124
title: Cornell Chronicle Vol. 21, No. 1 - No. 40, 1989-1990
abstract: The Cornell Chronicle, the official weekly of record for Cornell University.

url: http://hdl.handle.net/1813/5358
date: 2007-02-14
creator:
viewed: 123
title: Cornell Chronicle Vol. 22, No. 1 - No. 39, 1990-1991
abstract: The Cornell Chronicle, the official weekly of record for Cornell University.

url: http://hdl.handle.net/1813/5359
date: 2007-02-14
creator:
viewed: 144
title: Cornell Chronicle Vol. 23, No. 1 - No. 39, 1991-1992
abstract: The Cornell Chronicle, the official weekly of record for Cornell University.

url: http://hdl.handle.net/1813/5360

date: 2007-02-14
creator:
viewed: 203
title: Cornell Chronicle Vol. 24, No. 1 - No. 39, 1992-1993
abstract: The Cornell Chronicle, the official weekly of record for Cornell University.

url: http://hdl.handle.net/1813/5361
date: 2007-02-15
creator: Barazangi, M.;Seber, D.;Sandvol, E.;Gok, R.;Bekler, T.;Turkelli, N.;Gurbuz, C.
viewed: 79
title: Seismic event location using the Eastern Turkey Seismic Network: Analysis of the Agri Dam explosion
abstract: Copyright 2004, Seismological Society of America. See also: http://www.seismosoc.org/publications/bssa-toc.html; http://atlas.geo.cornell.edu/turkey/publications/Gurbuz-et-al_2004.htmA 12 ton controlled source explosion took place in eastern Turkey on June 5, 2001 and was recorded by 18 stations of the Eastern Turkey Seismic Experiment (ETSE) PASSCAL broadband network. This is a unique recording obtained for the first time in this region. Due to the blasting type and extremely high Lg and Sn attenuation in eastern Turkey, the blast is only observed out to a distance of about 300 km. We have used travel time data from this explosion to obtain average crustal structure and site correction terms for the stations. The explosion was located using two new regional velocity models and the IASP91 velocity model to test the location capabilities of the ETSE network. We found that for surface focus events, the ETSE network is able to locate events to within 1 - 2 km of the true epicenter.

url: http://hdl.handle.net/1813/5362
date: 2007-02-15
creator: Barazangi, M.;Sandvol, E.;Turkelli, N.;Aktar, M.;Orgulu, G.
viewed: 69
title: Contribution to the seismotectonics of eastern Turkey from moderate and small size events
abstract: An edited version of this paper was published by the American Geophysical Union (AGU). Copyright 2003, AGU. See also: http://www.agu.org/pubs/crossref/2003.../2003GL018258.shtml; http://atlas.geo.cornell.edu/turkey/publications/Orgulu-et-al_2003.htmSource properties of small-to-moderate magnitude events in eastern Turkey were studied using high quality waveform data produced by the Eastern Turkey Seismic Experiment (ETSE). A data set of fault plane solutions was obtained for 134 earthquakes using the regional moment tensor inversion technique for 34 events with magnitude 3.7 and above, and first motion analysis for 115 earthquakes with magnitude 3.0 and higher (for 15 events both techniques were used). Most of the events studied had strike slip mechanisms in agreement with nearby local fault structures. Reverse mechanisms were more scarce and were restricted to certain areas, such as in the eastern Anatolian plateau and southwest of the Karliova junction along the Arabian plate boundary. Our results indicate a difference in the deformational style east and west of the Karliova junction which results in internal deformation in the east and westward extrusion of the Anatolian plate with no or very little internal deformation in the west. Our results also suggest that in eastern Turkey, most of the collision is taken up by strike slip faults of varying types and sizes, suggesting that the northward convergence of Arabia is being accommodated by escape tectonics. Compressive features, such as thrust faulting, which were obviously the primary faulting during the earliest stages of continental collision, are still active but are of lesser importance.

url: http://hdl.handle.net/1813/5363
date: 2007-02-15
creator: Barazangi, M.;Seber, D.;Gurbuz, C.;Bekler, T.;Gok, R.;Zor, E.;Turkelli, N.;Sandvol, E.

viewed: 77
title: Shear wave splitting in a young continent-continent collision: An example from eastern Turkey
abstract: An edited version of this paper was published by the American Geophysical Union (AGU). Copyright 2003, AGU. See also: http://www.agu.org/pubs/crossref/2003.../2003GL017390.shtml; http://atlas.geo.cornell.edu/turkey/publications/Sandvol-et-al_2003b.htmWe have determined the shear wave splitting fast polarization direction and delay time using data from the ETSE broadband experiment (Eastern Turkey Seismic Experiment), a deployment of 29 broadband seismic stations across the collision zone of the Arabian, Eurasian, and Anatolian plates. Our results show that the fast polarization directions are relatively uniform and they exhibit primarily NE-SW orientations. No abrupt changes in anisotropy directions are observed across the main tectonic units in the region: the Bitlis Suture (BS) and the North and Eastern Anatolian Fault zones. The fast polarization directions are determined to be sub-parallel to the Anatolian, Arabian, and Eurasian absolute plate velocities, except for those stations in the northeastern corner of the Anatolian Plateau. Observed delay times range from 0.7 to 2.0 seconds with an average value of 1.0 second; the largest values are within the northern Anatolian Plateau which is underlain by an exceptionally low velocity zone in the uppermost mantle. We interpret shear wave splitting as the vector difference of the Eurasian lithosphere and northeastern or southwestern directed flow of the asthenospheric mantle. Comparisons of the polarization anisotropy with measurements of Pn azimuthal anisotropy suggest vertical anisotropic layering except in those areas which are underlain by partially molten uppermost mantle.

url: http://hdl.handle.net/1813/5364
date: 2007-02-15
creator: Barazangi, M.;Seber, D.;Bayraktutan, S.;Gurbuz, C.;Eken, T.;Kuleli, S.;Karabulut, H.;Al-Lazki, A.;Bekler, T.;Gok, R.;Zor, E.;Sandvol, E.;Turkelli, N.
viewed: 89
title: Seismogenic zones in eastern Turkey
abstract: An edited version of this paper was published by the American Geophysical Union (AGU). Copyright 2003, AGU. See also: http://www.agu.org/pubs/crossref/2003.../2003GL018023.shtml; http://atlas.geo.cornell.edu/turkey/publications/Turkelli-et-al_2003.htmA 29-station temporary broadband PASSCAL network was operated from late October 1999 to August 2001 in eastern Turkey in order to decipher the geodynamics of one of the youngest continent-continent collision zones in the world. This paper focuses on the hypocentral distribution of local earthquakes located during the operation of the network and provides new insights into the active faulting in the Anatolian plateau. A total of 1165 earthquakes were located and classified into four different categories based on the reliability of the locations as established by the data coverage. The accuracy of the locations ranked in the best two categories is estimated to be less than approximately 5 km. The results show that seismic activity in Eastern Turkey is higher than previously documented and there were no subcrustal earthquakes beneath the Arabian- Eurasian collision zone or beneath the Anatolian plateau during our deployment. This result suggests no or very little underthrusting of the Arabian plate beneath Eurasia. Our results also suggest that the North Anatolian Fault zone extends farther toward the southeast, well beyond the Karliova triple junction, and that a number of unmapped active, seismogenic faults exist in the region. We also observed a possible difference in the seismogenic thickness of the East Anatolian fault zone (EAFZ) and the North Anatolian fault zone (NAFZ).

url: http://hdl.handle.net/1813/5365
date: 2007-02-15
creator: Barazangi, M.;Seber, D.;Turkelli, N.;Gurbuz, C.;Sandvol, E.;Zor, E.
viewed: 88
title: The crustal structure of the East Anatolian plateau (Turkey) from receiver functions
abstract: An edited version of this paper was published by the American Geophysical Union (AGU). Copyright

2003, AGU. See also: http://www.agu.org/pubs/crossref/2003.../2003GL018192.shtml; http://atlas.geo.cornell.edu/turkey/publications/Zor-et-al_2003.htmThe crustal structure of the Anatolian plateau in Eastern Turkey is investigated using receiver functions obtained from the teleseismic recordings of a 29 broadband PASSCAL temporary network, i.e., the Eastern Turkey Seismic Experiment [ETSE]. The S-wave velocity structure was estimated from the stacked receiver functions by performing a 6-plane layered grid search scheme in order to model the first order features in the receiver functions with minimum trade-off. We found no significant crustal root beneath the western portion of the network, but there is some evidence of crustal thickening in the northern portion of the network. We found an average crustal thickness of 45 km and an average crustal shear velocity of 3.7 km/s for the entire eastern Anatolian plateau. Within the Anatolian plateau we found evidence of a prominent low velocity zone where the crust thickness is approximately 46 km. These results suggests that the 2 km high topography across the Anatolian plateau is dynamically supported because most of the plateau appears to be isostatically under-compensated. Also, there appears to be a region of thin crust at the easternmost edge of the Anatolian plateau that may be a relic from the accretion of island arcs to the Eurasian plate.

url: http://hdl.handle.net/1813/5366
date: 2007-02-16
creator: Hannah, Brent
viewed: 181
title: EXEGI MONUMENTUM: ARCHITECTURE IN LATIN EPIC
abstract: For the poets of the early empire, architecture and architectural imagery was an important medium through which to explore the relationship between political power and poetic art. Virgil and Horace, and their contemporaries and successors, composed literary monuments to stand beside the physical monuments of their patrons. No less than the palaces and temples of the emperors, these literary monuments participated in the formulation and evolution of imperial ideology. Within those poetic monuments, the description of architecture afforded a space in which to explore the relationship between poetry, monumental and pictorial art, and political power. This study is an attempt to elucidate how Virgil and his successors explore the dynamics of this relationship.

url: http://hdl.handle.net/1813/5367
date: 2007-02-16
creator: Kuakul, Poonrit
viewed: 180
title: INCUBATING FOR INTELLIGENCE: SPATIAL ATTRIBUTES AND INTERACTION EMERGENCE IN CORPORATE WORKPLACE
abstract: As industries increasingly rely on innovation and knowledge workers, interaction and social networks have once again emerged as a primary purpose for working together in the place called office. The purposes of this thesis are (1) to investigate the roles of physical setting, especially on building and site scale, and its influence to foster communication and interaction in large organizations, and (2) to explore analytical tools and techniques to verify the performance of workplace spatial attributes and interaction patterns.
Employing the archival data of interaction patterns and physical data acquired from satellite images and GIS, This thesis investigates the relationship between spatial attributes and interaction emerged in four corporate campuses, including Goldman Sachs, Sprint, Sun Microsystems, and Toyota Motor Sale.
The analysis reveals that there are very low correlations for both relationships between floor plate area and interaction, and relationships between floor plate ratio and interaction. In addition, there is no predictable trend between the average travel time between building and the average interaction frequency.
There is a moderate correlation between actual travel time and self-reported or perceived travel time. The thesis also suggests that the self-reported travel time tends to be under-estimated by the employees. The actual

travel time, however, has more impact on interaction in compact campuses than in dispersed campuses.

url: http://hdl.handle.net/1813/5368
date: 2007-02-16
creator: Zor, E.;Genc, T.;Ozeren, S.;Sengor, A.
viewed: 154
title: East Anatolian high plateau as a mantle supported, north-south shortened domal structure
abstract: An edited version of this paper was published by the American Geophysical Union (AGU). Copyright 2003, AGU. See also: http://www.agu.org/pubs/crossref/2003.../2003GL017858.shtml; http://atlas.geo.cornell.edu/turkey/publications/Sengor-et-al_2003.htmThe East Anatolian High Plateau is a region of average ~2 km elevation a.s.l. exhibiting active diffuse N-S shortening and widespread Pliocene to recent volcanicity. Its elevation was hitherto thought to result from a presumed crustal thickness of +/- 55 km. Seismic data collected by a new network of 29 seismograph stations have shown, however, that its crustal thickness is only some 45 km. Combined with observations on Pn and Sn phases, this shows that most of the East Anatolian High Plateau is devoid of mantle lithosphere. Areas of no mantle lithosphere are inferred to coincide broadly with the extent of the East Anatolian Accretionary Complex, a subduction-accretion prism of late Cretaceous to earliest Oligocene age. The absence of mantle lithosphere is ascribed to breakoff of northward subducted slab beneath the prism and the widespread vulcanicity to melting its lower levels because of direct contact with hot asthenosphere The East Anatolian High Plateau is thus supported not by thick crust, but by hot mantle.

url: http://hdl.handle.net/1813/5370
date: 2007-02-16
creator: Lowe, Brian
viewed: 350
title: Introduction to ontologies : adding meaning to metadata
abstract: Presented at the Metadata Working Group forum, February 16, 2007.

url: http://hdl.handle.net/1813/5372
date: 2007-02-19
creator: Chaimov, T.;Best, J.;Barazangi, M.;Gebran, A.;Sawaf, T.;Al-Saad, D.
viewed: 84
title: Northern Arabian platform transect across the Palmyride mountain belt, Syrian Arab Republic, Global Geoscience Transect 1
abstract: An edited version of this paper was published by the Inter-Union Commission on the Lithosphere and the American Geophysical Union, and copyright is retained by these publishers. See also: http://atlas.geo.cornell.edu/syria/Al-Saad-et-al_1991.htmlThis transect traverses central Syria for approximately 450 km from the Iraqi border in the southeast to the Turkish border in the northwest (see transect location map and appendix note 1) and is one of three transects that represent the Syrian Arab Republic's contribution to the Global Geoscience Transects (GGT) Project. Syria is located on the northern portion of the Arabian platform, which is surrounded by major active tectonic systems: the Zagros belt to the east and northeast, the East Anatolian and Bitlis suture to the north, and the Dead Sea transform fault system along the Levantine margin to the west. More than 2000 km of industry seismic reflection data linked by nine exploration wells and surface geologic maps provide a detailed image of subsurface structure to about 10 km depth along the transect, and when combined with two-dimensional modeling of the gravity and magnetic data, make it possible to construct a complete geological cross section through the entire crust.
Three major tectonic provinces of central Syria are crossed by the transect from south to north: the Rutbah uplift, the intraplate Palmyride mountain belt, and the Aleppo plateau.

The Rutbah uplift is a broad, domal basement-cored feature located on the stable northern Arabian platform and is the northernmost part of a larger uplift centered in Iraq. Isopach maps indicate that the Rutbah uplift region was an Early Paleozoic depocenter that collected approximately 6-7 km of Phanerozoic, mostly Paleozoic, sediments.

The Palmyride fold belt forms a northeast-southwest trending intracratonic mountain belt, representing the Late Mesozoic and Cenozoic inversion of an Early Mesozoic failed rift. The Palmyrides act as a mobile tectonic zone between the relatively stable Rutbah uplift and the less stable Aleppo plateau. A system of en echelon faults and broad folds characterize the northeast region, while short wavelength folds, generally with relatively steep, southeast faulted flanks dominate in the southwest.

The Aleppo plateau lies immediately north of the Palmyrides. Its sedimentary section is generally 4-5 km thick and is composed of both Paleozoic and Mesozoic strata. Although this region appears relatively undeformed on seismic reflection data, a system of northeast-southwest trending, near vertical faults with probable strike-slip motion crosscut the region.

Two-dimensional gravity modeling indicates that the northern Arabian platform beneath Syria may have an early tectonic history similar to the exposed Arabian shield to the south in Jordan and in Saudi Arabia, marked by Proterozoic convergence and Early Cambrian rifting. Mesozoic rifting and Cenozoic transpression in Syria are linked to later plate interactions with the Eurasian plate in the north and east and to the opening of the Red Sea.

The GGT transects in Syria provide new comprehensive Phanerozoic stratigraphic cross sections and estimates of crustal architecture that detail the structural and stratigraphic history of the northern Arabian platform beneath Syria. Major active tectonic systems outline the boundaries of the Arabian plate on its northern flank: the Dead Sea transform fault system along the Levantine margin to the west, the East Anatolian fault system and Bitlis suture to the north, and the Zagros suture and fold belt to the east and northeast. Each of these systems has contributed to the development of the Cenozoic tectonic framework of Syria.

The database for this transect includes detailed geologic maps (appendix note 2), a composite seismic profile consisting of eight seismic reflection lines, information from nine exploratory wells (ranging in depth from 2 to 4 km), and Bouguer gravity (appendix note 3) and aeromagnetic (appendix note 4) data. The 450-km seismic transect includes information from an additional 1500 km of seismic reflection data forming cross lines and nearby parallel lines within a 100-km swath along the transect.

url: http://hdl.handle.net/1813/5373
date: 2007-02-19
creator: Chaimov, T.;Best, J.;Barazangi, M.;Gebran, A.;Sawaf, T.;Al-Saad, D.
viewed: 67
title: Crustal structure of central Syria: The intracontinental Palmyride Mountain belt
abstract: An edited version of this paper was published in Tectonophysics by Elsevier Science. Copyright 1992, Elsevier Science. See also: http://dx.doi.org/10.1016/0040-1951(92)90395-M; http://atlas.geo.cornell.edu/syria/Al-Saad-et-al_1992.htmlAlong a 450 km transect across central Syria seismic reflection data, borehole information, potential field data and surface geologic mapping have been combined to examine the crustal structure of the northern Arabian platform beneath Syria. The transect is surrounded by the major plate boundaries of the Middle East, including the Dead Sea transform fault system along the Levantine margin to the west, the Bitlis suture and East Anatolian fault to the north, and the Zagros collisional belt to the northeast and east. Three main tectonic provinces of the northern Arabian platform in Syria are crossed by this transect from south to north: the Rutbah uplift, the Palmyra fold-thrust belt, and the Aleppo plateau. The Rutbah uplift in southern Syria is a broad, domal basement-cored structure with a thick Phanerozoic (mostly Paleozoic) cover of 6-7 km. Isopachs based on well and seismic reflection data indicate that this region was an early Paleozoic depocenter. The Palmyra fold-thrust belt, the northeastern arm of the Syrian Arc, is a northeast- southwest trending intracontinental mountain belt that acts as a mobile tectonic zone

between the relatively stable Rutbah uplift to the south and the less stable Aleppo plateau to the north. Short wavelength en echelon folds characterized by relatively steep, faulted southeast flanks dominate in the southwest, most strongly deformed segment of the belt, while a complex system of deeply rooted faults and broad folds characterize the northeast region, described in this study. The Aleppo plateau lies immediately north of the Palmyride belt, with a combined Paleozoic and Mesozoic sedimentary section that averages 4-5 km in thickness. Although this region appears relatively undeformed on seismic reflection data when compared to Palmyride deformation, a system of near vertical, probable strike-slip faults crosscut the region in a dominantly northeasterly direction.

Gravity and magnetic modeling constrains the deep crustal structure along the transect. The crustal thickness is estimated to be approximately 38 km. Interpretation of the gravity data indicates two different crustal blocks beneath the Rutbah uplift and the Aleppo plateau, and the presence of a crustal-penetrating, high-density body beneath the northeast Palmyrides. The two distinct crustal blocks suggest that they were accreted possibly along a suture zone and/or a major strike-slip fault zone located approximately in the present-day position of the Palmyrides. The age of the accretion is estimated to be Proterozoic or early Cambrian, based on the observation of a pervasive reflection (interpreted as the Middle Cambrian Burj limestone) in the Rutbah uplift and in the Aleppo plateau and by analogy with the well-mapped Proterozoic sutures of the Arabian shield to the south.

url: http://hdl.handle.net/1813/5374
date: 2007-02-19
creator: Al-Saad, D.;Sawaf, T.;Seber, D.;Litak, R.;Barazangi, M.;Alsdorf, D.
viewed: 59
title: The intraplate Euphrates fault system - Palmyrides mountain belt junction and relationship to Arabian plate boundary tectonics
abstract: This paper was published in Annali di Geofisica by Editrice Compositori. Copyright 1995, Editrice Compositori. See also: http://www.ingv.it/~wwwannali/alsdorf383.htm; http://atlas.geo.cornell.edu/syria/alsdorf-et-al-1995.htmlBased on an extensive, recently released dataset of seismic reflection profiles and well logs, we document and map a northwest-southeast oriented graben of about 20 km width located beneath the Euphrates depression in central Syria. The uppermost Cretaceous age of this graben is contemporaneous with the first phase of inversion and uplift along the adjacent Palmyride mountain belt. We interpret both of these intraplate structures, the Euphrates graben and the Palmyride mountains, to have developed in direct response to a major episode of convergence and continental collision that started in the uppermost Cretaceous time along the nearby Arabian plate boundaries, i.e., the Bitlis and Zagros sutures. Kinematic considerations suggest that the Euphrates graben formed as a tear in the Arabian crust. During the Cenozoic, the intense mountain building processes along the Palmyrides contrast with the persistent broad depression along the Euphrates and most of eastern Syria. We map a series of strike-slip faults that separate the Palmyrides from the Euphrates and appear to decouple these adjacent structures. The broad depression may be related to the Mesopotamian foredeep that developed in response to the nearby Zagros continental collision zone.

url: http://hdl.handle.net/1813/5375
date: 2007-02-20
creator: Moe, Christopher
viewed: 172
title: EFFECTS OF A VIBRATING MOUSE ON COMPUTER USERS' WORK BEHAVIOR AND PERFORMANCE
abstract: Alan Hedge, Jeffrey HancockFrequent brief rest breaks, known as micro-breaks, have been shown to benefit computer users by reducing fatigue and possibly preventing musculoskeletal disorders. Various methods of reminding users to take rest breaks have been developed. Initially, efforts focused on the use

of break reminder computer software, although potentially this may be disruptive to work patterns. More recently, micro-break reminders have been incorporated into computer equipment and these have been indexed to work activity, and this approach may offer less potential for disrupting work activities.

A computer mouse has been developed that vibrates in the user's hand after 10 seconds of inactivity. The vibration is intended to remind the user to rest his or her hand in a neutral position while not actively engaging the mouse rather than maintaining a grip on the mouse that requires static muscle contraction.

A laboratory experiment was conducted to test this vibrating mouse against a conventional mouse to see how it affected subjects' task performance, task behaviors, and mouse preference. It was hypothesized that the vibrating mouse would increase the number of times subjects removed their hands from the mouse, be minimally disruptive and have no adverse effect on task performance. The study also explored what subjects did with their hand when this was removed from the mouse.

Eleven female and seven male subjects participated in the experiment. Use of the vibrating mouse (experimental condition) was compared to use of a conventional mouse (control condition) for five consecutive tasks. The first three tasks required the finding and correcting of duplicate words, the finding and correcting of duplicate sentences and the finding and correcting of misspelled words from text passages. The final two tasks were a reading comprehension task, where the subjects answered four multiple-choice questions about a text passage, and a composition task in response to a business scenario.

Subjects were videotaped to collect data on their behavior while completing the tasks under both conditions. Task time and number of errors were collected as performance measures. User preferences and musculoskeletal discomfort were gathered using two questionnaires, one administered pre test and one post test.

No differences were found in performance between the two conditions. The vibrating mouse induced more positive task behaviors than the conventional mouse, including significantly more resting behavior ($p=0.02$) and slightly more hand removals ($p=0.06$). The vibrating mouse, however, also induced significantly more negative task behaviors than the conventional mouse, such as increasing the frequency of unsupported hand hovering ($p=0.00$).

Nine subjects found that the vibrating mouse was disruptive to their performance during the duplicate word and reading tasks; and eight found that the vibrating mouse was disruptive during the duplicate word task. The effectiveness of the mouse seemed to correspond to task type and also to subjects' mouse use technique.

Because of technological limitations and a desire to limit extraneous distractions to the subjects during the tasks, the vibration occurrence data was collected by subjects' self reporting the number of vibration occurrences they experienced. This subjectiveness may have compromised the reliability of the vibration frequency data.

The vibrating mouse shows promise but more research is needed to understand the conditions under which a vibration occurs and therefore when a user would gain benefits from this mouse. The effects of task type and user technique need to be examined in more detail to determine the nature of these effects before recommendations can be made as to the proper implementation of the vibrating mouse.College of Human Ecology

url: http://hdl.handle.net/1813/5376
date: 2007-02-20
creator: McCoy, Jonathan
viewed: 185
title: Adventures in Pattern Formation: Spatially Periodic Forcing and Self-Organization
abstract: This dissertation describes an experimental exploration of pattern formation in a convecting fluid subjected to spatially-periodic forcing. The flow is driven thermally in a high-precision compressed gas apparatus and visualized using shadowgraphy. The forcing is introduced by microfabricating a regular pattern of polymer ridges on the lower boundary of the convection cell. We frustrate the system by choosing a forcing wavelength which lies outside of the balloon of periodicities for which unforced flow patterns are

stable. This arrangement, even for polymer ridge heights much less than the thickness of the fluid layer, has dramatic and unexpected consequences for the system?s pattern-forming dynamics.
Available theoretical work on spatially periodic forcing of thermal convection is applicable only close to onset. We rederive an important qualitative prediction that, due to the forcing, there should be convection present for all applied temperature differences. Quantitative comparisons with experimental data confirm that this theory correctly describes the physics of the spatially forced patterns near the threshold defined by the onset of convection in the unforced system.
Near the critical point, the pattern is phase-locked to the forcing and stationary. At larger applied temperature differences, we find a wealth of complex dynamical phenomena. In particular, where the pattern starts to break free of the forcing, we observe a completely new and unexpected phenomenon: the pattern uses mobile, highly localized structures to reassert its preferred periodicities. In this regime, the dynamics blend spatiotemporal chaos with the self-organization of robust, localized crystalline structures. We use a variety of techniques inspired by condensed matter physics, nonlinear systems, and pattern formation to characterize this remarkable twist on the classic theme of order within chaos. Then, reinterpreting these ?crystalline chaotic? dynamics as an intermediate phase mediating the emergence of spiral defect chaos in the spatially forced environment, we give a more complete tour of the phase space, placing special emphasis on localized structure formation, on the secondary instability of the phase-locked pattern, and on resonance structures in the chaotic patterns.National Science Foundation, Cornell IGERT Nonlinear Science Program, Cornell NanoScale Facility, Cornell Nanobiotechnology Center

url: http://hdl.handle.net/1813/5383
date: 2007-02-20
creator: Sawaf, T.;Al-Saad, D.;Litak, R.;Best, J.;Chaimov, T.;Seber, D.;Barazangi, M.

title: Tectonic evolution of the northern Arabian plate in western Syria
abstract: This paper was published in the volume Recent Evolution and Seismicity of the Mediterranean Region published by Kluwer Academic Publishers. Kluwer Academic Publishers retains the copyright to this paper. See also: http://atlas.geo.cornell.edu/syria/barazangi-et-al-1993.htmlThe primary geologic structures of the northern Arabian plate in western Syria include the intracontinental Palmyride mountain belt and the interplate boundary of the Dead Sea transform fault system. The Palmyride belt strikes NE and is sandwiched between two relatively stable crustal blocks of the Arabian platform: the Aleppo plateau in the north and the Rutbah uplift in the south. The Palmyrides were the site of an early Mesozoic aulacogen-type depression that was linked to the Levantine rifted continental margin in the eastern Mediterranean. The location of this postulated aulacogen may be genetically associated with a crustal zone of weakness, possibly a Proterozoic suture and/or shear zone, between the Aleppo and Rutbah crustal blocks. Uplift of the intraplate Palmyride depression initiated in the Late Cretaceous, penecontemporaneous with emplacement of ophiolites along the nearby Arabian plate boundaries in southern Turkey and western Iran. More intense episodes of shortening during the Cenozoic also appear to be temporally related to collision along nearby plate boundaries, implying that stresses have been transmitted hundreds of kilometers across the northern Arabian platform. The style and intensity of the inversion process vary considerably along the strike of the Palmyrides and involves both shortening by folding and reverse faulting as well as translation and rotation along numerous strike-slip faults. Such folds and faults clearly define at least three structurally distinct small crustal blocks within the Palmyrides. Shortening of about 20% in the southwest Palmyrides near Lebanon gradually dies out to the northeast near the intersection of the Palmyrides with the NW-trending Euphrates depression. Depth to metamorphic basement beneath the Palmyra mountain belt increases from 9 km in the northeast to 11 km in the southwest, compared with a basement depth of about 6-8 km in the adjacent Arabian platform, indicating that shortening along the Palmyrides has been insufficient to invert the previously extended basement morphology. Finally, slip measurements along the Dead Sea fault and estimates of crustal shortening in the

Palmyride belt indicate that the northern segment of the seismogenic active Dead Sea fault in Lebanon and Syria is considerably younger (Pliocene) than the southern part (Miocene).

url: http://hdl.handle.net/1813/5384
date: 2007-02-20
creator: Sawaf, T.;Al-Saad, D.;Seber, D.;Barazangi, M.
viewed: 60
title: Structure of the intracontinental Palmyride mountain belt in Syria and its relationship to nearby Arabian plate boundaries
abstract: Copyright 1992, Cukurova University. See also: http://atlas.geo.cornell.edu/syria/barazangi_1992.htmThe intracontinental Palmyride mountain belt strikes NE and is located within the northern Arabian platform. The belt is about 400 km in length and about 100 km in width. Abundant data, including seismic reflection and refraction profiles, drill holes, gravity, magnetics, and geologic maps are used to infer the crustal structure and geologic evolution of this belt.

The Palmyrides were the site of an early Mesozoic aulacogen-type depression that was linked to the Levantine rifted continental margin in the eastern Mediterranean. Seismic stratigraphic analysis indicates that inversion of the Palmyride depression was initiated in late Cretaceous time, but especially intensified in Neogene and Quaternary times. The inversion process varies considerably along strike and involves both shortening by folding and reverse faulting (including the inversion of some of the Mesozoic rift-bounding normal faults) as well as translation and rotation along numerous strike-slip faults. The inversion processes formed at least three structurally distinct crustal blocks within the Palmyrides. The two blocks in the northeast Palmyrides (Bilas and Bishri) consist of broad anticlines that exhibit symmetrical thick-skinned deformation with reverse faults on the southern and northern flanks of the belt, whereas the southwestern Palmyrides consist of long linear ridges with intervening depressions that exhibit clear south vergence and local detachment, probably within Triassic evaporites. Depth to metamorphic basement beneath the Palmyrides increases from 9 km in the northeast to 11 km in the southwest. This is in contrast to a basement depth of about 6-8 km beneath the adjacent stable Arabian platform. A 20-25% estimated shortening across the southwestern Palmyrides has not been sufficient to invert the basement morphology beneath this mountain belt.

Close temporal relations between inversion episodes in the Palmyrides and well-documented episodes of convergence and collision along nearby Arabian plate boundaries suggest that plate boundary stresses are transmitted hundreds of kilometers across the northern Arabian platform to the Palmyrides. Finally, Bouguer gravity observations provide an estimate of crustal thickness of about 38 km beneath the Palmyrides, but also require different crustal properties to the north and south of the Palmyrides. These observations suggest that the Palmyrides occupy the location of a possible Precambrian (Proterozoic?) suture and/or strike-slip fault zone along which the two crustal blocks of northern Arabia were accreted. This possible early history may explain the subsequent development of the Palmyrides in early Mesozoic time as due to a reactivation of a zone of crustal weakness along the postulated Proterozoic suture zone.

url: http://hdl.handle.net/1813/5385
date: 2007-02-21
creator: Gebran, A.;Sawaf, T.;Al-Saad, D.;Barazangi, M.;Best, J.
viewed: 54
title: Continental margin evolution of the northern Arabian platform in Syria
abstract: Copyright AAPG 1993, reprinted by permission of the AAPG whose permission is required for further use. See also: http://atlas.geo.cornell.edu/syria/best_1993.htmlSynthesis of available geological and geophysical data in the Syrian Arab Republic permits a descriptive account of the pre-Cenozoic geologic history of the northern Arabian platform. The northern Arabian platform appears to be a composite plate similar to that interpreted in the rocks of the Arabian shield. The structural and stratigraphic relationships

of the Paleozoic and Mesozoic sedimentary sections in Syria record the transformation of an east-facing Gondwanaland passive-margin in the early Paleozoic into a west-facing Levantine margin in the Mesozoic, at which time the northern platform was intimately associated with the creation of the eastern Mediterranean basin. Timing of the margin transformation is inferred from the orientation and thickness variations of Lower Triassic rocks, but the transformation may have initiated as early as the Permian. The diversity and timing of geologic features in Syria suggest that the northern Arabian platform did not behave as a rigid plate throughout its geologic history. The present-day Palmyride mountain belt located within the northern Arabian platform in Syria, initiated in early Mesozoic time as a northeast trending rift nearly perpendicular to the Levantine margin, was subsequently inverted in the Cenozoic by transpression. The location of the rift may be associated with the reactivation of a zone of crustal weakness, i.e., a Proterozoic suture zone previously proposed from modeling of Bouguer gravity data. Thus, the northern and southern portions of the Arabian platform have similarities in their geologic history during the Proterozoic and Paleozoic; however, the northern Arabian platform was intimately affected by Mesozoic rifting and the creation of the eastern Mediterranean basin during the Mesozoic.

url: http://hdl.handle.net/1813/5386
date: 2007-02-21
creator: Gebran, A.;Sawaf, T.;Al-Saad, D.;Barazangi, M.;Best, J.
viewed: 65
title: Bouguer gravity trends and crustal structure of the Palmyride mountain belt and surrounding northern Arabian platform in Syria
abstract: Copyright 1990, Geological Society of America. See also: http://dx.doi.org/10.1130%2F0091-7613%281990%29018%3C1235%3ABGTACS%3E2.3.CO%3B2 http://atlas.geo.cornell.edu/syria/best_1990.htmlThis study examines the crustal structure of the Palmyrides and the northern Arabian platform in Syria by two- and three-dimensional modeling of the Bouguer gravity anomalies. Results of the gravity modeling indicate that: (1) western Syria is composed of at least two different crustal blocks, (2) the southern crustal block is penetrated by a series of crustal-scale, high-density intrusive complexes, and (3) short-wavelength gravity anomalies in the southwest part of the mountain belt are clearly related to basement structure. The crustal thickness in Syria, as modeled on the gravity profiles, is approximately 40 +/- 4 km, which is similar to crustal thicknesses interpreted from refraction data in Jordan and Saudi Arabia. The different crustal blocks and large-scale mafic intrusions are best explained, though not uniquely, by Proterozoic convergence and suturing and early Paleozoic rifting, as interpreted in the exposed rocks of the Arabian shield. These two processes, combined with documented Mesozoic rifting and Cenozoic transpression, comprise the crustal evolution of the northern Arabian platform beneath Syria.

url: http://hdl.handle.net/1813/5387
date: 2007-02-21
creator: Sawaf, T.;Barazangi, M.;Best, J.;Brew, G.
viewed: 102
title: Tectonic evolution of the northeast Palmyride mountain belt, Syria: the Bishri crustal block
abstract: This material has been published in The Journal of the Geological Society, London 160, 677-685, 2003, the only definitive repository of the content that has been certified and accepted after peer review. Copyright and all rights therein are retained by the Geological Society of London. See also: http://www.geolsoc.org.uk/template.cfm?name=Journals_JGS_home_page; http://atlas.geo.cornell.edu/syria/brew_jgs_2003.htmlInvestigating the Bishri block, centrally positioned amid the diverse tectonic and structural zones of Syria, reveals details of the intraplate Phanerozoic development of the northern Arabian platform. The Bishri block is a broad northeast plunging inverted basin located at the northeast portion of the Palmyride mountain belt where the mountains intersect the Euphrates fault system. Well and seismic data show that subsidence

and sedimentation in the Bishri area was generally continuous from Carboniferous to Palaeocene time, with the Bishri block part of the extensive Palmyride / Sinjar trough. Major bounding faults and a rift-type environment are documented in the Permo-Triassic, Jurassic and Cretaceous. The present Bishri structural and topographic high has been formed through transpressive structural inversion since the Middle Miocene; high-angle Mesozoic bounding normal faults now have net reverse offsets with a significant dextral strike-slip component. East of the Bishri block, towards the Euphrates fault system, north-northwest - south-southeast striking normal faults exhibit less reverse movement. This deformation history correlates with the opening and closing of the nearby NeoTethys ocean that has driven the evolution of the intracontinental Syria.

url: http://hdl.handle.net/1813/5388
date: 2007-02-22
creator: Brew, G.
viewed: 128
title: Tectonic evolution of Syria Interpreted from Integrated Geophysical and Geological Analysis
abstract: Copyright 2001, Graham Brew. See also: http://atlas.geo.cornell.edu/syria/brew_dissertation2001.htmUsing a variety of geophysical and geological data, the Phanerozoic tectonic evolution of Syria has been interpreted. The study is inspired by the diverse styles of tectonic deformation within Syria generated by long-lived proximity to active plate boundaries. The work is also relevant to hydrocarbon exploration. The availability of seismic reflection and refraction profiles, wells, and other resources made this research possible. Three studies focused on specific areas of Syria are presented. The first is a seismic refraction interpretation along a north-south profile in eastern Syria. The results show that metamorphic basement depth (and hence Paleozoic thickness) in southeast Syria is greater, by >2 km, than that in the northeast.
The next study interprets the structure and tectonics in northeast Syria. During Late Paleozoic and Mesozoic time northeast Syria was an extension of the Palmyride trough. In the Maastrichtian, regional extension opened the Abd el Aziz and Sinjar graben that were structurally inverted in the Late Cenozoic to form the present topography. The third study concerns the Ghab Basin in western Syria. This 3.4 km deep Plio-Quaternary pull-apart basin suggests that the Dead Sea Fault System has only been active in Syria since the end of the Miocene in accordance with a two-phase model of Red Sea opening.
The final study integrates the previous interpretations with new work to provide a tectonic evolutionary model that shows the Phanerozoic development of all Syria. This model is closely tied to stratigraphic data that improve the interpretation of many tectonic events, and put the results into a paleogeographical context. The model shows how specific deformation episodes within Syria have been penecontemporaneous with regional plate tectonic events. The Late Paleozoic / Mesozoic northeast trending Palmyride / Sinjar trough formed across central Syria in response to Permo-Triassic opening of the NeoTethys Ocean. Proximal subduction in the NeoTethys created the Late Cretaceous Euphrates Fault System and Abd El Aziz / Sinjar graben in eastern Syria. Late Cretaceous to Late Miocene collisions and shortening along the northern Arabian margin caused platform-wide structural inversion, uplift, and shortening. This compression continues today under the influence of Arabia / Eurasia convergence.

url: http://hdl.handle.net/1813/5388
date: 2007-02-22
creator: Brew, G.
viewed: 128
title: Tectonic evolution of Syria Interpreted from Integrated Geophysical and Geological Analysis
abstract: Copyright 2001, Graham Brew. See also: http://atlas.geo.cornell.edu/syria/brew_dissertation2001.htmUsing a variety of geophysical and geological data, the Phanerozoic tectonic evolution of Syria has been interpreted. The study is inspired by the diverse styles of tectonic deformation within Syria generated by long-lived proximity to active plate boundaries. The work is also relevant to hydrocarbon exploration. The

availability of seismic reflection and refraction profiles, wells, and other resources made this research possible. Three studies focused on specific areas of Syria are presented. The first is a seismic refraction interpretation along a north-south profile in eastern Syria. The results show that metamorphic basement depth (and hence Paleozoic thickness) in southeast Syria is greater, by >2 km, than that in the northeast.

The next study interprets the structure and tectonics in northeast Syria. During Late Paleozoic and Mesozoic time northeast Syria was an extension of the Palmyride trough. In the Maastrichtian, regional extension opened the Abd el Aziz and Sinjar graben that were structurally inverted in the Late Cenozoic to form the present topography. The third study concerns the Ghab Basin in western Syria. This 3.4 km deep Plio-Quaternary pull-apart basin suggests that the Dead Sea Fault System has only been active in Syria since the end of the Miocene in accordance with a two-phase model of Red Sea opening.

The final study integrates the previous interpretations with new work to provide a tectonic evolutionary model that shows the Phanerozoic development of all Syria. This model is closely tied to stratigraphic data that improve the interpretation of many tectonic events, and put the results into a paleogeographical context. The model shows how specific deformation episodes within Syria have been penecontemporaneous with regional plate tectonic events. The Late Paleozoic / Mesozoic northeast trending Palmyride / Sinjar trough formed across central Syria in response to Permo-Triassic opening of the NeoTethys Ocean. Proximal subduction in the NeoTethys created the Late Cretaceous Euphrates Fault System and Abd El Aziz / Sinjar graben in eastern Syria. Late Cretaceous to Late Miocene collisions and shortening along the northern Arabian margin caused platform-wide structural inversion, uplift, and shortening. This compression continues today under the influence of Arabia / Eurasia convergence.

url: http://hdl.handle.net/1813/5389
date: 2007-02-22
creator: Al-Maleh, K.;Sawaf, T.;Barazangi, M.;Brew, G.
viewed: 118
title: Tectonic map and geologic evolution of Syria: The role of GIS
abstract: This paper was published in the journal The Leading Edge by the Society of Exploration Geophysicists. SEG retains the copyright to this paper. See also: http://www.edge-online.org/; http://atlas.geo.cornell.edu/syria/brew_tle_2000.htmlFor the past 12 years, Cornell Syria Project scientists and colleagues at the Syrian Petroleum Company have studied the regional structure and geologic evolution of Syria. We are currently generating new structural maps and tectonic models for the whole country. Information on this region is relatively limited, despite the local importance of hydrocarbon production and abundant surface and subsurface data. Our regional approach involves new interpretations of seismic reflection profiles, well data, remote sensing imagery, and potential-field data, merged with existing interpretations of similar data sets. These interpretations, integrations, analyses, and map preparation are all performed within a GIs platform. As detailed elsewhere in this issue, the importance of GIs as a data storage and interrogation tool for petroleum exploration is well established. This article describes our use of GIs to facilitate regional tectonic mapping in Syria. Although not directly related to the search for hydrocarbons, the maps and models generated have obvious utility for oil exploration. Herein we detail the types of data being used, their integration and interpretation within the GIs, and our preliminary analysis and findings. We will show how a GIs approach eases data archiving and map generation and also provides interpretational possibilities not available with more traditional mapping procedures.

url: http://hdl.handle.net/1813/5390
date: 2007-02-22
creator: Al-Imam, A.;Sawaf, T.;Barazangi, M.;Seber, D.;Litak, R.;Brew, G.
viewed: 179
title: Basement depth and sedimentary velocity structure in the northern Arabian platform, Eastern Syria

abstract: An edited version of this paper was published in Geophysical Journal International by Blackwell Publishing. Blackwell Publishing retains the copyright. See also: http://www.blackwellpublishing.com/journal.asp?ref=0956-540X&site=1; http://atlas.geo.cornell.edu/syria/brew_gji_1997.htmBasement depth in the Arabian plate beneath eastern Syria is found to be much deeper than previously supposed. Deep-seated faulting in the Euphrates graben system is also documented. Data from a detailed, 300 km long, reversed refraction profile, with offsets up to 54 km, are analyzed and interpreted, yielding a velocity model for the upper ~ 9 km of continental crust. The interpretation integrates the refraction data with seismic reflection profiles, well logs and potential field data, such that the results are consistent with all available information. A model of sedimentary thicknesses and seismic velocities throughout the region is established. Basement depth on the north side of the Euphrates is interpreted to be around 6 km, whilst south of the Euphrates basement depth is at least 8.5 km. Consequently, the potentially hydrocarbon-rich pre-Mesozoic section is shown, in places, to be at least 7 km thick. The dramatic difference in basement depth on adjacent sides of the Euphrates graben system might suggest that the Euphrates is a suture zone, possibly inherited from Late Proterozoic accretion of the Arabian plate. Gravity modeling across the southeast Euphrates system tends to support this hypothesis. Incorporation of previous results allows us to speculate on the position of possible suture zones in Syria.

url: http://hdl.handle.net/1813/5392
date: 2007-02-22
creator: Zaza, T.;Sawaf, T.;Barazangi, M.;Seber, D.;Litak, R.;Brew, G.
viewed: 108
title: Summary of the geological evolution of Syria through geophysical interpretation: Implications for hydrocarbon exploration
abstract: This paper was published in the journal The Leading Edge by the Society of Exploration Geophysicists. SEG retains the copyright to this paper. See also: http://www.edge-online.org/; http://atlas.geo.cornell.edu/syria/brew_tle_1997.htmlIntracontinental deformation, caused by plate boundary processes, dominates the past and present tectonics of Syria (Figure 1). This deformation has created structures that form hydrocarbon traps in several different areas of the country. Current production from Syria is around 600,000 barrels per day and the country hosts ongoing exploratory efforts. Deformation within Syria can be conveniently divided into four zones (Figure 2): the Dead Sea fault system; the Palmyride fold and thrust belt; the Euphrates fault system; and the Abd el Aziz / Sinjar structures in the northeast of the country. Each of these areas have been, and continue to be, studied in detail by the Cornell Syria Project. The Syria Project is an industry sponsored collaborative program between Cornell and Syrian Petroleum Company (SPC) scientists that uses diverse geophysical and geological data to analyze the tectonics of the northern Arabian platform.

url: http://hdl.handle.net/1813/5394
date: 2007-02-22
creator: Gebran, A.;Sawaf, T.;Al-Saad, D.;Barazangi, M.;Chaimov, T.
viewed: 80
title: Crustal shortening in the Palmyride fold belt, Syria, and implications for movement along the Dead Sea fault system
abstract: An edited version of this paper was published in Tectonics by the American Geophysical Union (AGU). Copyright 1990, AGU. See also: http://www.agu.org/journals/tc/; http://atlas.geo.cornell.edu/syria/chaimov_tectonics_1990.htmlThe Palmyride fold belt is a northeast-trending, 400 by 100 km transpressive belt in central Syria embedded in the northern Arabian platform, bounded to the north by the Aleppo plateau and to the south by the Rutbah uplift. Palinspastically restored cross sections from three transects across the Palmyride fold belt demonstrate a minimum NW-SE shortening of about 20% or 20 km across the southwestern segment of the belt, diminishing to 1-2 km in the northeast, close to the Euphrates graben system.

The cross sections are based on the 1:200,000 scale geologic map of Syria and previously unavailable seismic reflection and well data, all provided by the Syrian Petroleum Company. These results differ significantly from those predicted by kinematic models of Middle East plate motions. In western Syria and eastern Lebanon the Palmyrides obliquely intersect (at about 45 degrees) the roughly north-trending Dead Sea transform fault system. The Dead Sea fault system shows well-documented evidence of 105 km of left-lateral displacement since mid-Tertiary time south of its intersection with the Palmyrides, yet only about 25 km of motion has been documented north of that juncture in Lebanon and western Syria. Thus, kinematic models of Middle East plate motions predict 80 km of shortening in Syria, most of which should be accommodated in the Palmyride fold belt. Several possibilities exist to explain the discrepancy between the 80 km of predicted shortening and the only 20 km of shortening measured from restored cross sections. Restored cross sections offer only minimum shortening estimates, so the calculated 20 km may underestimate shortening. Second, evidence of strike-slip displacement recognized in the field and reported in the literature, and indicated by new focal mechanism solutions of two recent earthquakes in the Palmyrides, indicates that some of the still "missing" displacement may be distributed throughout central and northern Syria as strike-slip motion oblique to the relative northward convergence of the Arabian plate on the Eurasian plate. Alternatively, previous estimates of slip along the northern segment of the Dead Sea transform fault system may be only minimum estimates. A final possibility is that the Dead Sea transform fault in northwestern Syria has been active for only the past 5-6 m.y. or so, implying that it was either nonexistent or moved only slightly before the Pliocene. This would suggest that there is a total of only 45 km of N-S convergence to be found in central and northern Syria, about 25 km on the Dead Sea fault system and about 20 km in the Palmyrides. This last possibility requires that the northern and southern segments of the Dead Sea fault system developed independently during most of the past 15-20 m.y. In light of the documented but unquantified strike-slip motion in the Palmyrides, it seems reasonable that strike-slip motion does accommodate a significant portion of the convergence between the Arabian and Eurasian plates. It is likely, however, that one or more of the other proposed mechanisms also accounts for a component of the expected 80 km of shortening.

url: http://hdl.handle.net/1813/5395
date: 2007-02-23
creator: Wortzel, Adrianne
viewed: 30
title: Rockefeller New Media Foundation --Supplementary Material
abstract: Cyberspace is an invitation to explore and remap the world ideologically while retaining, even deepening, its diversity. At the same time, since everyone in cyberspace is a traveler, it allows for the end of all ghettos, the disintegration of borders, and the suspension of all bipolar judgments.

url: http://hdl.handle.net/1813/5396
date: 2007-02-23
creator: Gebran, A.;Sawaf, T.;Al-Saad, D.;Barazangi, M.;Chaimov, T.
viewed: 86
title: Mesozoic and Cenozoic deformation inferred from seismic stratigraphy in the southwestern intracontinental Palmyride fold-thrust belt, Syria
abstract: This paper was published in the Geological Society of America Bulletin. The Geological Society of America retains the copyright to this paper. Geological Society of America, P.O. Box 9140 , Boulder, CO 80301-9140 USA See also: http://www.geosociety.org/; http://atlas.geo.cornell.edu/syria/chaimov_gsa_bull_1992.htmlThe Palmyride fold belt in central Syria is an intracontinental northeast-trending, 400 by 100 km transpressive belt embedded in the northern Arabian platform. During the Late Paleozoic and most of the Mesozoic the region of the present-day mountains was a rift-like trough that collected over 5 km of sediments, for a total Phanerozoic thickness of over 10 km. The southwestern sector of the fold belt is bounded in the

north by the Jhar fault and in the south by the south-vergent frontal thrust faults of the Palmyrides, with the broad Al-Daww depression in between. Structural features that characterize the southern and southwestern region of the Palmyrides include a short wavelength, typically 5-10 km, fold style controlled by a regional low-angle decollement within Triassic beds, and small inverted Jurassic and Early Cretaceous normal faults.
Small intermontane basins (about 10 X 30 km) whose strata can be used to document the history of Palmyride deformation flank growth fault-bend folds and are mainly a product of Cenozoic shortening in the belt. These structures are elucidated by about 2000 km of newly available seismic reflection data in the Palmyrides. Synthetic seismic traces generated solely from forward modeling of outcrop information constrain seismic stratigraphic picks in two small basins about 100 km northeast of Damascus. There, minor Late Cretaceous uplift caused local onlap, marking the first inversion phase of the Palmyride trough. Tectonic quiescence throughout the Paleogene, interrupted only in the Middle Eocene by minor tectonism, resulted in monotonous deposition of about 2500 m of mostly limestone. Marked onlap and probable downlap of Lower Miocene strata onto an Oligocene angular unconformity indicate accelerated tectonism by Late Oligocene to Early Miocene time. This marks the beginning of the major phase of inversion and uplift of the Palmyrides. Recent seismicity indicates that transpression continues today.
Despite its relative remoteness from convergent plate boundaries (the nearest, the Bitlis suture in southern Turkey, is about 300 km distant), the Late Cretaceous, Middle Eocene, and Neogene phases of deformation in the intraplate setting of the Palmyrides have a direct temporal relationship with major regional tectonism that occurred along the surrounding Arabian plate boundaries. The Palmyride trough was inverted in Late Cretaceous time and, subsequently, developed into a transpressive zone throughout Neogene and Quaternary times. Thus, the initiation of inversion in the Palmyrides, an integral part of the Syrian Arc, which extends from central Syria southward to central Sinai, apparently predates development of the Red Sea/Dead Sea plate boundary. In contrast, the intense Neogene through Quaternary deformational episode is clearly related to development of the Red Sea/Dead Sea fault system and to convergence along the northern boundary of the Arabian plate in southern Turkey.

url: http://hdl.handle.net/1813/5397
date: 2007-02-23
creator: Levin, Golan
viewed: 32
title: Rockefeller New Media Foundation --Supplementary MaterialMessa di Voce
abstract: Messa di Voce (Ital., “placing the voice”) is a concert performance in which the speech, shouts and songs produced by two abstract vocalists are radically augmented in real-time by custom interactive visualization software. The performance touches on themes of abstract communication, synaesthetic relationships, cartoon language, and writing and scoring systems, within the context of a sophisticated, playful, and virtuosic audiovisual narrative. In addition to the performance itself, a separate installation version of Messa di Voce makes select software modules available for public play and exploration.

url: http://hdl.handle.net/1813/5398
date: 2007-02-23
creator: Levin, Golan
viewed: 35
title: Rockefeller New Media Foundation --Supplementary MaterialDialtones (A Telesymphony)
abstract: Dialtones is a large-scale concert performance whose sounds are wholly produced through the carefully choreographed dialing and ringing of the audience’s own mobile phones. Because the exact location and tone of each participant’s mobile phone can be known in advance, Dialtones affords a diverse range of unprecedented sonic phenomena and musically interesting structures. Moreover, by directing our attention to the unexplored musical potential of a ubiquitous modern appliance, Dialtones inverts our understandings

of private sound, public space, electromagnetic etiquette, and the fabric of the communications network which connects us.

url: http://hdl.handle.net/1813/5399
date: 2007-02-23
creator: Levin, Golan
viewed: 29
title: Rockefeller New Media Foundation --Supplementary MaterialStill Images of Prior Works (1999-2004)
abstract: Still images from select performances and installations.

url: http://hdl.handle.net/1813/5400
date: 2007-02-23
creator: Khaddour, M.;Sawaf, T.;Al-Saad, D.;Barazangi, M.;Chaimov, T.
viewed: 79
title: Seismic fabric and 3-D upper crustal structure of the southwestern intracontinental Palmyride fold belt, Syria
abstract: Copyright 1993, AAPG. Reprinted by permission of the AAPG whose permission is required for further use. See also: http://aapgbull.geoscienceworld.org/; http://atlas.geo.cornell.edu/syria/chaimov_aapg_bull_1993.htmlThe Palmyride fold belt, a 400 X 100 km transpressive belt in central Syria that is the northeastern arm of the Syrian Arc, which includes the Negev fold belt in the Sinai, is the result of Late Mesozoic and Cenozoic inversion of a Late Paleozoic and Mesozoic, NE-trending, linear intracontinental basin located within the northern Arabian platform. The southwestern Palmyrides, near the Dead Sea transform fault system and the Anti-Lebanon mountains, are characterized by short wavelength (5-10 km) en echelon folds separated by small intermontane basins that developed mainly in Neogene to Recent times. A new three-dimensional data cube, 60 X 70 km, generated on a Landmark Graphics (TM) workstation and based on approximately 700 km of two-dimensional seismic reflection profiles, elucidates the structure of the upper 10 km of the crust in the southwestern Palmyrides. Visualization of the subsurface structure, which is represented by a prominent Upper Cretaceous reflection surface in the data cube, is augmented by the topography and Bouguer gravity of the same region. Preexisting discontinuities, probable normal fault relicts of the Mesozoic Palmyride rift, likely controlled the development of individual Neogene thrusts. The new subsurface image shows important structural features not identified in outcrop. Short, WNW-trending transcurrent, or transfer, faults link the short, en echelon NE-trending thrust faults and blind thrusts of the Palmyrides. A pervasive regional decollement is not observed, even though Triassic evaporites host local detachments. There has been no wholesale transport of shallower strata on a regional decollement that decouples Mesozoic and Cenozoic rocks from underlying Paleozoic rocks.
Unlike topographic relief, which only roughly resembles subsurface structures, the Bouguer gravity signature of the southwestern Palmyrides closely mimics underlying shallow geologic structures both on a large (~50 km wavelength) and a small (~5-10 km) scale. Relatively uncommon reflections from deformed Paleozoic rocks and the excellent correlation between Bouguer gravity and shallow structures indicate a general concordance between shallow Mesozoic and Cenozoic rocks and deeper Paleozoic rocks. Hence, Paleozoic rocks either deformed together with shallower strata, or structures within Paleozoic rocks controlled the development of shallower Neogene and younger structures.
Our structural analysis and many other recent studies of the region are indicative of minor right-lateral shear coupled with compression in the Palmyrides.

url: http://hdl.handle.net/1813/5401
date: 2007-02-23

creator: Hackenberg, Sigrid
viewed: 36
title: Rockefeller New Media Foundation --Supplementary MaterialTHIS MEANS YOU- Nazism, the Holocaust, and the Resistance
abstract: As we enter the 21st century, and history recedes into itself, at the lightning speed that information travels, I have encountered a fascination with extending the moment of history. My installations speak to dramatic events and turning points in history and challenge the viewer to engage in the work as active and thinking participants. Cinematic in scale and epic in character, the recent installations allude to Richard Wagner's concept of the "Gesamtkunstwerk (Total Work Of Art)" and Walter Benjamin's notion of the "Trauerarbeit (Work of Mourning)."

url: http://hdl.handle.net/1813/5402
date: 2007-02-23
creator: Al-Youssef, W.;Al-Imam, A.;Sawaf, T.;Brew, G.;Barazangi, M.;Litak, R.
viewed: 79
title: Structure and evolution of the petroliferous Euphrates graben system, southeast Syria
abstract: Copyright 1998, AAPG. Reprinted by permission of the AAPG whose permission is required for further use. See also: http://aapgbull.geoscienceworld.org/cgi/content/abstract/82/6/1173; http://atlas.geo.cornell.edu/syria/litak_aapg_bull_1998.htmlThe northwest-trending Euphrates graben system is an aborted intracontinental rift of Late Cretaceous age that has subsequently been hidden by Cenozoic burial. Approximately 100 km wide, the system comprises an extensive network of grabens and half grabens extending some 160 km from the Anah Graben in western Iraq to the Palmyride fold belt in central Syria, where it becomes more subdued. The youngest prerift rocks are presently at a maximum depth of about 5 km. Based primarily on interpretation of 1500 km of seismic reflection profiles and data from 35 wells, we mapped a complex network of numerous branching normal and strike-slip faults, generally striking northwest and west-northwest. Both branched and single-strand linear normal faults of generally steep dip, as well as positive and negative flower structures, are manifest on seismic sections. No single rift-bounding fault is observed; instead, a major flexure coupled with minor normal faulting marks the southwestern edge of the basin, with considerable variation along strike. To the northeast, deformation diminishes on the Rawda high near the Iraqi border. The Euphrates graben system likely formed in a transtensional regime, with active rifting primarily restricted to the Senonian and with an estimated maximum extension of about 6 km. Minor Cenozoic inversion of some structures also is evident. Approximately 30 oil fields have been discovered in the Euphrates graben system since 1984. Recoverable reserves discovered to date reportedly exceed 1 billion barrels of oil and lesser amounts of gas. Light oil is primarily found in Lower Cretaceous sandstone reservoirs juxtaposed by normal faulting against Upper Cretaceous synrift sources and seals.

url: http://hdl.handle.net/1813/5403
date: 2007-02-23
creator: Hackenberg, Sigrid
viewed: 39
title: Rockefeller New Media Foundation --Supplementary MaterialICH HEIBE (my name is) ROSA LUXEMBURG
abstract: A video and sound installation by Sigrid Hackenberg, 2001.

url: http://hdl.handle.net/1813/5404
date: 2007-02-23
creator: Wyatt, Danica
viewed: 332

title: Chemotaxis in Microfluid Channels
abstract: Doctoral thesis in Physics for Danica Wyatt with advisors James Sethna, Carl Franck and committee chair Eberhard BodenschatzUsing microfluidic channels for in vivo experiments in biology reduces the dimensions of an experiment to a cellular scale. This increases precision in the spatiotemporal control of chemical signals applied to a cell membrane which is crucial in quantifying resulting changes in the conformation and distribution of membrane and intracellular proteins. We have designed microfluidic experiments to study chemotaxis in the amoeba Dictyostelium discoideum. In a natural environment, these cells use chemical signaling to begin starvation-induced aggregation. Cells generate a complex pattern of cyclic adenosine monophosphate (cAMP) that drives their migration toward a self-organized central point. To better determine which aspects of a gradient trigger a chemotactic response, we used several microfluidic channels in which local cAMP concentration can be precisely manipulated by controlling flow through the device. We also used high-precision photolysis of molecularly caged cAMP to generate dynamic gradients that could be controlled on subsecond timescales. This led to observation of a number of different cellular mechanisms for turning in a changing gradient and established the necessity for statistical measurements of turning behavior under different conditions. This process was initiated with collection of data from four different stages in cell development that quantified how the tendency to maintain polarization increases with development time.National Science Foundation, Nanobiotechnology Center, Max Planck Institute

url: http://hdl.handle.net/1813/5405
date: 2007-02-23
creator: Cole, Jacqueline Heather
viewed: 195
title: The Role of Architecture and Tissue Properties in the Structural Integrity of Human Vertebral Cancellous Bone
abstract: Age-related disorders of bone metabolism like osteoporosis may compromise structural integrity of bone and result in fragility fractures, particularly at cancellous bone sites. Several factors contribute to cancellous bone strength, including bone density, architecture, and material properties. Clinical assessment of bone density using dual-energy X-ray absorptiometry (DXA), which is somewhat distorted by the fan-shaped X-ray beam, does not fully account for fracture incidence and only partially correlates with bone strength. Spatial variations in trabecular architecture captured by micro-computed tomography (microCT) have been related to structural behavior using microstructure-based models. However, the impact of material variations is not well understood and should be investigated.

DXA fan-beam magnification was quantified by scanning aluminum rods at several distances above the X-ray source. Projected area and bone mineral content decreased by 1.6-1.8% per centimeter distance above the source, indicating that changes in girth over time would artificially reduce DXA measurements and obscure actual gains associated with growth or interventions.

The ability of DXA to predict bone architecture and material properties was assessed in thoracolumbar specimens from 21 cadavers. T11-L4 was scanned using DXA, and cancellous bone cores drilled from the center of T12 and L2 were scanned at 17 microns using microCT and then compressed uniaxially to failure. DXA and microCT bone mass correlated similarly with cancellous bone stiffness and strength in females but not males. DXA could not account for variations in architecture detected by microCT, particularly in the thoracic spine, for either males or females. MicroCT scans may better assess bone strength in the thoracic spine and could replace DXA scans altogether if measurements could be made non-invasively, accurately, and affordably.

Spatial variations in architecture and material properties were examined with architecture- and material-based finite element (FE) models developed from microCT scans. Homogeneous and heterogeneous material models were examined. FE models were improved by heterogeneity, whether between subjects using specimen-specific uniform properties or within subjects using spatially varying properties. Apparent

stiffness was the same for specimen-specific models, regardless of variations in tissue modulus. The mean tissue modulus, rather than its distribution, appears to drive the overall mechanical behavior for vertebral cancellous bone.

url: http://hdl.handle.net/1813/5406
date: 2007-02-26
creator: Al-Youssef, W.;Sawaf, T.;Brew, G.;Seber, D.;Beauchamp, W.;Barazangi, M.;Litak, R.
viewed: 74
title: Mesozoic-Cenozoic evolution of the Intraplate Euphrates fault system, Syria: Implications for regional tectonics
abstract: This material has been published in Journal of the Geological Society, London, 154, 653-666, 1997, the only definitive repository of the content that has been certified and accepted after peer review. Copyright and all rights therein are retained by The Geological Society of London. See also: http://www.geolsoc.org.uk/template.cfm?name=Journals_JGS_home_page; http://atlas.geo.cornell.edu/syria/litak_gsl_1997.htmlA lack of dramatic surface geologic structures along the Euphrates River in Syria belie a complex tectonic history revealed by newly-released seismic reflection and well data. We document the intraplate Euphrates fault system, characterize the variation in structural style along its 350 km length in Syria, and infer its Mesozoic-Cenozoic tectonic and deformational history. We then relate the deformation of the Euphrates system and other proximate intraplate structures to nearby Arabian plate boundary processes in order to develop a new model for the kinematic evolution of the northern Arabian plate.

Throughout most of Mesozoic time, the Euphrates area experienced minor deposition compared to the Palmyride trough to its southwest, and the Sinjar trough to its northeast. During latest Cretaceous time, however, significant sinistral transtension occurred along the length of the Euphrates fault system in Syria, with graben formation especially noteworthy in southeastern Syria. This episode was probably related to events at nearby plate boundaries, and may have reactivated a zone of weakness formed during Pan-African accretion of the Arabian plate. A Paleogene sag basin formed over the graben system in southeastern Syria. Neogene continental collision along the northern and eastern Arabian plate boundaries precipitated minor reactivation of the Euphrates fault system in a dextral transpressional sense, in concert with significant inversion and the main phase of uplift of the nearby Palmyride and Sinjar mountains.

url: http://hdl.handle.net/1813/5407
date: 2007-02-27
creator: Gebran, A.;Al-Otri, M.;Sawaf, T.;Al-Saad, D.;Best, J.;Barazangi, M.;McBride, J.
viewed: 94
title: Seismic reflection structure of intracratonic Palmyride fold-thrust belt and surrounding Arabian platform, Syria
abstract: Copyright 1990, AAPG. Reprinted by permission of the AAPG whose permission is required for further use. See also: http://aapgbull.geoscienceworld.org/; http://atlas.geo.cornell.edu/syria/mcbride_aapg_1990.htmlSeismic reflection and drillhole data from central Syria provide a detailed view of the subsurface structure (10-15 km depth) of the relatively little studied intracratonic Palmyride fold and thrust belt. The data set, together with surface geologic mapping, constrain a structural/stratigraphic section spanning the northeast sector of the belt and the surrounding subprovinces of the Arabian platform. The seismic and drillhole data show Mesozoic stratigraphic sequences thickening rapidly into the Palmyrides from the adjacent, arched Paleozoic platforms. Neogene (Alpine) folding and thrusting of the Mesozoic basin, as documented on the seismic data, are sharply restricted to the narrow width of the belt (~100 km), which is in contrast to the relatively undeformed, Phanerozoic strata of the platforms to the north and south.

The regional subsurface structure of the northeastern Palmyrides consists of a northeast-plunging anticlinorium whose outer flanks are marked by smaller superimposed asymmetric, anticlines associated with

outward verging thrusts, giving this part of the belt a rough symmetry. The general structural style of folding is characterized by simple, relatively narrow anticlines and broad synclines that can be traced concordantly from the surface to at least 5 km depth on the seismic data--the level of any decollement appears to be below the imaged Mesozoic sequence. A fundamental feature of the surrounding Arabian platform subprovinces is a deep (~6-7 km, maximum) and pervasive bright reflection that forms the base of the reflective section of the platform but disappears abruptly beneath the Palmyrides. This basal reflector is important as a regional strain marker and may represent a Cambrian/Infracambrian carbonate-evaporite sequence or a remarkably uniform crystalline basement surface.

The seismic and drillhole data support the hypothesis of the Palmyrides beginning as a Permian-Triassic failed rift, connected to the Levantine passive continental margin, that was inverted and complexly deformed by the interfering effects of Cenozoic movements along the Dead Sea (Levant) transform fault system and the Turkish Bitlis (Tauride) convergent zone. The seismic data provide a first-time view into the extent and depth of the early basin formation and subsequent compressional deformation, and as such provide a necessary basis for constraining reconstructions of northern Middle East plate motions.

url: http://hdl.handle.net/1813/5408
date: 2007-02-27
creator: Barazangi, M.;Litak, R.;Brew, G.;Sawaf, T.
viewed: 159
title: Geologic evolution of the intraplate Palmyride basin and Euphrates fault system, Syria
abstract: Copyright 2001, Museum Nationale D'Histoire Naturelle, France. See also: http://www.mnhn.fr/publication/indexan.html; http://atlas.geo.cornell.edu/syria/sawaf_2001.htmThe Palmyride Basin and the Euphrates fault system are two Late Paleozoic / Mesozoic rifts that formed on the southern margin of the NeoTethys Ocean. Data collected during hydrocarbon exploration are analyzed to determine the geologic history and regional tectonic implications of these structures. The Palmyride Basin formed during Late Paleozoic aulacogen-type rifting and subsequent Mesozoic thermal subsidence and fault reactivation. Basin inversion in the Cenozoic resulted in the formation of the Palmyride fold and thrust belt. In contrast, the Euphrates fault system is an aborted intracontinental rift, formed during the Late Cretaceous, that experienced minor transpression in the Cenozoic. Both these structures are hypothesized to have formed along zones of Proterozoic crustal weakness inherited from the accretion of the Arabian plate. Both regions also contain significant hydrocarbon reserves; predominantly gas in the Palmyride Basin and oil in the Euphrates fault system. The tectonic histories of these features are inseparably linked to the intraplate stresses generated in the northern Arabian plate by the polyphase opening and closing of the adjacent NeoTethys Ocean.

url: http://hdl.handle.net/1813/5409
date: 2007-02-27
creator: Chaimov, T.;Best, J.;Barazangi, M.;Gebran, A.;Al-Saad, D.;Sawaf, T.
viewed: 161
title: Stratigraphy and structure of eastern Syria across the Euphrates depression
abstract: Copyright 1993, Elsevier Science B.V. See also: http://dx.doi.org/10.1016/0040-1951(93)90235-C; http://atlas.geo.cornell.edu/syria/sawaf_tectonophys_1993.htmlAlong a 450 km transect across central Syria seismic reflection data, borehole information, potential field data and surface geologic mapping have been combined to examine the crustal structure of the northern Arabian platform beneath Syria. The transect is surrounded by the major plate boundaries of the Middle East, including the Dead Sea transform fault system along the Levantine margin to the west, the Bitlis suture and East Anatolian fault to the north, and the Zagros collisional belt to the northeast and east. Three main tectonic provinces of the northern Arabian platform in Syria are crossed by this transect from south to north: the Rutbah uplift, the Palmyra fold-thrust belt, and the Aleppo plateau. The Rutbah uplift in southern Syria is a broad, domal basement-cored structure with a thick

Phanerozoic (mostly Paleozoic) cover of 6-7 km. Isopachs based on well and seismic reflection data indicate that this region was an early Paleozoic depocenter. The Palmyra fold-thrust belt, the northeastern arm of the Syrian Arc, is a northeast- southwest trending intracontinental mountain belt that acts as a mobile tectonic zone between the relatively stable Rutbah uplift to the south and the less stable Aleppo plateau to the north. Short wavelength en echelon folds characterized by relatively steep, faulted southeast flanks dominate in the southwest, most strongly deformed segment of the belt, while a complex system of deeply rooted faults and broad folds characterize the northeast region, described in this study. The Aleppo plateau lies immediately north of the Palmyride belt, with a combined Paleozoic and Mesozoic sedimentary section that averages 4-5 km in thickness. Although this region appears relatively undeformed on seismic reflection data when compared to Palmyride deformation, a system of near vertical, probable strike-slip faults crosscut the region in a dominantly northeasterly direction.

Gravity and magnetic modeling constrains the deep crustal structure along the transect. The crustal thickness is estimated to be approximately 38 km. Interpretation of the gravity data indicates two different crustal blocks beneath the Rutbah uplift and the Aleppo plateau, and the presence of a crustal-penetrating, high-density body beneath the northeast Palmyrides. The two distinct crustal blocks suggest that they were accreted possibly along a suture zone and/or a major strike-slip fault zone located approximately in the present-day position of the Palmyrides. The age of the accretion is estimated to be Proterozoic or early Cambrian, based on the observation of a pervasive reflection (interpreted as the Middle Cambrian Burj limestone) in the Rutbah uplift and in the Aleppo plateau and by analogy with the well-mapped Proterozoic sutures of the Arabian shield to the south.

url: http://hdl.handle.net/1813/5410
date: 2007-02-28
creator: Smith, Adam
viewed: 268
title: Introducing Zoomify Image
abstract: Zoomify Image is a mature product for easily publishing large, high resolution images on the Web. End users view these images with existing Web browser software as quickly as they do normal, downsampled images. A Flash based Zoomifyer client asynchronously streams image data to the Web browser as needed, resulting in response times approaching those of desktop applications using minimal bandwidth. The author, a librarian at Cornell University and the principle architect of a small, open source company, worked closely with Zoomify to produce a cross-platform, open source implementation of that company's image processing software and discusses how to easily deploy the product into a widely used Web publishing environment. Limitations are also discussed as are areas of improvement and alternatives.

url: http://hdl.handle.net/1813/5411
date: 2007-02-28
creator: Khaddour, M.;Sawaf, T.;Al-Saad, D.;Chaimov, T.;Barazangi, M.;Seber, D.
viewed: 152
title: Upper crustal velocity structure and basement morphology beneath the intracontinental Palmyride fold-thrust belt and north Arabian platform in Syria
abstract: An edited version of this paper was published in Geophysical Journal International by Blackwell Publishing. Copyright 1993, Blackwell Publishing. See also: http://www.blackwellpublishing.com/journal.asp?ref=0956-540X&site=1; http://atlas.geo.cornell.edu/syria/seber_gji_1993.htmThe intracontinental Palmyride fold-thrust belt, which is the site of an inverted Mesozoic rift, is sandwiched between two crustal blocks, the Aleppo plateau in the north and the Rutbah uplift in the south. The 400 x 100 km belt merges with the Dead Sea fault system in the southwest and gradually ends near the Euphrates depression in the northeast. Very dense (i.e., 100 m geophone spacing), reversed and multifold seismic refraction profiling was

carried out to map approximately the upper 15 km of the crust in the early 1970s. These refraction data are utilized to model sedimentary rock thickness, seismic velocity, and basement morphology. Extensive data coverage also enables identification of the major faults of the region. A 2-D ray tracing technique is used in the modeling. Interpretation of these data indicates that five distinct velocity layers characterize the upper crust of the northern Arabian platform in Syria. The P-wave velocities within these layers are (in km s-1): 2.0-2.8, 4.0-4.4, 5.2-5.3 , 5.5-5.7, corresponding to sedimentary rocks from Quaternary to late Precambrian in age, and 5.9-6.0, corresponding to metamorphic basement. A comparison of the velocity models with the available drill hole information and seismic reflection profiles shows strong velocity variations in a given geologic formation, depending on the depth and location of the formation. The depth to metamorphic basement beneath the Palmyride fold belt clearly shows a deep trough, filled with Phanerozoic sedimentary rocks. These rocks decrease in thickness from about 11 km in the southwest to about 9 km in the central segment of the belt. The basement depth is about 6 km in the Aleppo plateau and not less than 8 km in the Rutbah uplift. Deeper basement in the Rutbah uplift is probably the result of a Precambrian rifting episode, clearly identified to the south in Jordan and Saudi Arabia. Cenozoic crustal shortening of about 20-25% across the southwestern segment of the Palmyride belt has not been sufficient to substantially reduce the size of the basement trough beneath this mountain belt. Finally, northeast decreasing basement depth in the Palmyrides supports the idea that the Palmyride Mesozoic rifting was developed as an aulacogen of the rifted Levantine margin along the eastern Mediterranean.

url: http://hdl.handle.net/1813/5412
date: 2007-02-28
creator: Cornell, Alonzo Barton
viewed: 682
title: “True and Firm”: Biography of Ezra Cornell, Founder of the Cornell University
abstract:

url: http://hdl.handle.net/1813/5413
date: 2007-03-01
creator: Kim, Pil Young
viewed: 211
title: CUMULATIVE RISK AND BEHAVIORAL PROBLEMS IN EARLY ADOLESCENCE: TESTING THE MEDIATION AND MODERATION ROLES OF DYSREGULATION IN MULTIPL BIOLOGICAL STRESS SYSTEMS
abstract: Gary W. Evans, John J. EckenrodeIn an attempt to understand how cumulative risk influences behavioral problems in early adolescence, this study focuses on the mediating and the moderating roles of dysregulation in multiple biological stress systems. In a sample of 223 seventh- and eighth-grade children, cumulative risk included psychosocial factors (family turmoil, parent-child separation, exposure to violence) and physical factors (noise, crowding, housing quality) and sociodemographic characteristics of the adolescents? families (maternal high school drop out, single parent, and poverty). Physiological markers of biological stress dysregulation were cortisol, epinephrine, norepinephrine, fat deposition, resting systolic and diastolic blood pressure, and systolic and diastolic reactivity and recovery. There were adverse effects of cumulative risk on both internalizing and externalizing behaviors. Cumulative risk and biological stress dysregulation had a curvilinear relationship. We found that biological stress dysregulation may have an indirect effect on the relation between cumulative risk and internalizing behaviors. Further, older children were more likely to develop internalizing behaviors when they were exposed to cumulative risk. Biological stress dysregulation moderated the effects of cumulative risk on externalizing behaviors; the inefficient stress regulation in multiple biological systems made children more vulnerable to externalizing behavioral problems when they were living in cumulative risk environment. The importance of understanding both

mediating and moderating roles of biological stress dysregulation for behavioral problems was discussed.
College of Human Ecology

url: http://hdl.handle.net/1813/5414
date: 2007-03-02
creator: Norton, Mary Beth
viewed: 240
title: The British-Americans; the Loyalist exiles in England, 1774-1789
abstract:

url: http://hdl.handle.net/1813/5415
date: 2007-03-02
creator: Reichenbach, Rachel
viewed: 243
title: Healthy, Wealthy, and Wise? The Link Between Ideology and Health in America
abstract: The purpose of this study is to explore the relationship between ideological beliefs and individual self-reported health in America between the years 1993 and 2004. A distinction between particular ideologies and ruling ideology is made. Particular ideologies are created by social interaction as a product of history and are used as tools for categorizing and structuring observations, experiences, ideas, and action. Individuals need the structures provided by particular ideologies both to understand and to act upon their world. A ruling ideology develops when those in power knit together multiple particular ideologies to create a unified system of thought that presents an easily accepted and internalized set of normative behaviors, thought-patterns, and ideals, in order to protect their social position.

Preliminary data analysis revealed that the majority of Americans believe they have good health. These results aided in the development of several research questions. If ideology is as pervasive as suggested by the literature, then is there anything about the current ideologies that precipitate widespread belief by individuals that they have good health? Could ideology give a cohesive worldview to individuals, thus reducing their stress of being outside the norm? Or, could ideology provide individuals with normative prescriptions for behaviors that are good for their health, such as reducing smoking and binge-drinking? Do the benefits of a cohesive worldview or of behavioral health norms outweigh the consequences of the possible false consciousness that may result simultaneously?

Four propositions suggesting connections between ideology and self-reported health are evaluated using binary logistic regression analyses and data from 1993 through 2004 contained in the General Social Survey. I predicted that respondents who had internalized the dominant particular ideologies or ruling ideology of the era would have better health than those who adhered to a different paradigm. Health is measured as poor or good perceptions of self-health.

The findings of the analyses show moderate support for three out of four of my propositions. Economic and social ideological beliefs have a significant relationship with self-reported health net of demographic controls and material indicators. Using a composite scale to give more breadth to the measurement, religious ideology is also seen as a predictor of self-reported health. The fourth proposition concerning ruling ideology found little support using this dataset. Despite the support garnered for psychosocial theory through the significance of the variables indicating particular ideology, support for neo-materialist theory was also revealed. In fact, the material indicators showed the strongest and most robust relationships with health status. In many cases, they overwhelmed the other variables. However, in contradiction to epidemiological research, health behaviors do not contribute to explaining to self-reported health. The limitations of the study and the implications of the results in light of the research questions are discussed at length in the conclusion.

url: http://hdl.handle.net/1813/5416

date: 2007-03-05
creator: Dimunation, Mark;Engst, Elaine D.
viewed: 234
title: A Legacy of Ideas: Andrew Dickson White and the Founding of the Cornell University Library
abstract: An exhibition celebrating the Thirty-Seventh Preconference of the Rare Books and Manuscripts Section of the Association of College and Research Libraries, a Division of the American Library Association. Division of Rare and Manuscript Collections, Cornell University Library; Cornell University Library Associates; the Helene and Elisabeth Mayer Publication Fund

url: http://hdl.handle.net/1813/5417
date: 2007-03-05
creator: Smith, Adam;Kehoe, William
viewed: 134
title: Cooperating Preservation Archives
abstract: powerpoint presentationCornell University Library and the State and University Library at G?ttingen have created a protocol for exchanging and managing complex digital objects among custodial partners. The system preserves digital objects, not access systems; and supports asymmetric distribution of collections among partner archives.National Science Foundation (NSF) Deutsche Forschungsgemeinschaft (DFG)

url: http://hdl.handle.net/1813/5418
date: 2007-03-05
creator: Engst, Elaine D.
viewed: 328
title: "Cornell University"
abstract:

url: http://hdl.handle.net/1813/5419
date: 2007-03-08
creator: Acacia, Fraternity
viewed: 226
title: The Traveler
abstract:

url: http://hdl.handle.net/1813/5420
date: 2007-03-09
creator: Barriga, Claudia Alejandra
viewed: 202
title: Morality and Movies: What are People Thinking? A Content Analysis of Informal Movie Reviews Online
abstract: It has long been assumed that movies can have an influence on moral development and moral thought. The content analysis presented here examines whether and how people who post informal reviews online think about moral issues related to the films, and how that fits with theories about moral development and the role of moral thoughts in entertainment. The results indicate that, in this context, conscious thoughts about moral issues are scarce, although they increase significantly when a movie is morally ambiguous. Most of the comments about moral issues reflect on the possible moral effects on others rather than on the self. This result casts some doubt on the assumption that films can be a tool for moral self-development. Other results show that moral comments about elements beyond the plot and characters (creators of the film, general audience and the world at large) are almost as frequent as those about the storyline, and that people

use the level of moral complexity of a film to evaluate its overall quality. It would appear that the role of moral thoughts is more varied than previous theoretical models indicate. Future research in the area should perhaps incorporate considerations about moral ambiguity of a movie, moral thoughts beyond plot issues, and different roles that moral thoughts play in audience?s interpretations of movies.

url: http://hdl.handle.net/1813/5421
date: 2007-03-10
creator: Peck, Gregory;Merwin, Ian
viewed: 184
title: Multi-level Comparisons of Organic and Integrated Fruit Production (IFP) Systems for 'Liberty' Apple in a New York Orchard
abstract: Toward Sustainability Foundation

url: http://hdl.handle.net/1813/5422
date: 2007-03-12
creator:
viewed: 267
title: Janus Conference Proceedings Video (Part 1)
abstract: This is Part 1 of the Janus Conference on Research Library Collections: Managing the Shifting Ground Between Readers and Writers which was held on October 9-11, 2005, Cornell University, Ithaca , NY. This contains the Questions and Answers from the presentation by Hendrik Edelman

url: http://hdl.handle.net/1813/5423
date: 2007-03-12
creator:
viewed: 271
title: Janus Conference Proceedings Video (Part 2)
abstract: This is Part 2 of the Janus Conference on Research Library Collections: Managing the Shifting Ground Between Readers and Writers which was held on October 9-11, 2005, Cornell University, Ithaca , NY. This includes the Question and Answers from the presentation by Mark Dimunation.

url: http://hdl.handle.net/1813/5424
date: 2007-03-12
creator:
viewed: 254
title: Janus Conference Proceedings Video (Part 3)
abstract: This is Part 3 of the Janus Conference on Research Library Collections: Managing the Shifting Ground Between Readers and Writers which was held on October 9-11, 2005, Cornell University, Ithaca , NY. This includes the Question and Answers from the presentation by Mark Sandler.

url: http://hdl.handle.net/1813/5425
date: 2007-03-12
creator:
viewed: 240
title: Janus Conference Proceedings Video (Part 4)
abstract: This is Part 4 of the Janus Conference on Research Library Collections: Managing the Shifting Ground Between Readers and Writers which was held on October 9-11, 2005, Cornell University, Ithaca , NY. This includes the Question and Answers from the presentation by Jean-Claude Guedon.

url: http://hdl.handle.net/1813/5426
date: 2007-03-12
creator:
viewed: 254
title: Janus Conference Proceedings Video (Part 5)
abstract: This is Part 5 of the Janus Conference on Research Library Collections: Managing the Shifting Ground Between Readers and Writers which was held on October 9-11, 2005, Cornell University, Ithaca , NY. This includes the Question and Answers from the presentation by Ross Atkinson.

url: http://hdl.handle.net/1813/5428
date: 2007-03-16
creator: Lagoze, Carl
viewed: 281
title: Interoperability, Metadata, and Complex Objects
abstract: Presented at the Metadata Working Group forum, March 16, 2007.

url: http://hdl.handle.net/1813/5429
date: 2007-03-19
creator: Bosch, Roanne
viewed: 171
title: By Statement and Omission: Media Representations of School Failure in the Standards Era
abstract: In this thesis, I explore media content as a gauge of the dominant American cultural norms, values, and interests around school failure. I problematize the persistence of inequalities in American schools, and situate this problem in the historical context of the standards movement in American education in general and the No Child Left Behind Act, signed into law in 2002, in particular. To help construct this narrative of school failure, I anchor this history in the social structures of racial inequality, in the role of ideology in shaping policy and perception, and in the concept of exploring media representations to gain insight into the cultural understanding of each of these.
I center my investigation in a frame analysis of the content of newspaper articles from New York State, 2000-2006, which tell the story of school failure. The depictions of failure in schools, as represented in the news articles, are persistent ways to communicate mainstream social norms and values and to show who resides outside of that mainstream. This study showed, through analysis of the explanatory frames that emerged from the sample of articles, that the dominant American ideology of meritocracy, colorblindness, and equality of opportunity creates an understanding of failure is as an individual shortcoming, showing who isn?t trying hard enough, who resides out of the mainstream, and who isn?t normal?in this case, white, suburban, and middle-class. I argue that this understanding conceals real structural inequalities that make success all but impossible for many students and can impede efforts to at effective reform.

url: http://hdl.handle.net/1813/5435
date: 2007-03-21
creator: Mitchell, Martin III
viewed: 110
title: THEATRE OF THE OPPRESSED IN US PRISONS: EIGHT YEARS OF WORKING WITH ADULT AND YOUTH PRISONERS EXAMINED
abstract: Ph.D Dissertation in Theatre StudiesIn this dissertation, I locate my theatre work with prisoners within topics of interest in Performance Studies: examining performativity, troubling the representation of imprisoned bodies, considering the roles of ritual, play and liminality within the location of prison. I examine

the limitations and the ethics of working with prisoners, and I have stayed focused on the prisoners' abilities to mediate and perform practical topics of interest to them using the Theatre of the Oppressed methods (such as staying connected to family and re-entry). My dissertation furthers the growing interest in critiquing Boal's techniques and in theorizing how they work and what they can and cannot achieve. For example, I consider the purpose of fetishizing images into icons and symbols in Image Theatre and critique my own use of the "Joker" role as a participant-observer coming in from outside the prison. I also consider the Brechtian heritage of Boal's work in theory and practice, especially in relationship to Brecht's Lehrstuck, and I seek to reconcile modern and postmodern theoretical and practical approaches to understanding performance and critical deliberation using TO work in prisons. This work has ramifications for thinking about visual perception and Image Theatre. It also brings sociolinguistic "positioning theory" into contact with the concept of "restored behavior" through examining the practices of TO's forum theatre. A discourse surrounding the word "respect" and the conception of "prison values" as a social critique defined by prisoners in this research are keynotes to this work.

url: http://hdl.handle.net/1813/5436
date: 2007-03-21
creator: Barazangi, M.;Khair, K.;Tabet, C.;Jaafar, R.;Reilinger, R.;Vernant, P.;McClusky, S.;Khawlie, M.;Karam, G.;Gomez, F.
viewed: 139
title: Global Positioning System measurements of strain accumulation and slip transfer through the restraining bend along the Dead Sea fault system in Lebanon
abstract: An edited version of this paper was published in Geophysical Journal International by Blackwell Publishing. Blackwell Publishing retains the copyright to this paper (Copyright 2007). See also: http://www.blackwell-synergy.com/doi/abs/10.1111/j.1365-246X.2006.03328.x; http://atlas.geo.cornell.edu/deadsea/publications/Gomez2007_GJI.htmApproximately 4 yr of campaign and continuous Global Positioning System (GPS) measurements across the Dead Sea fault system (DSFS) in Lebanon provide direct measurements of interseismic strain accumulation along a 200-km-long restraining bend in this continental transform fault. Late Cenozoic transpression within this restraining bend has maintained more than 3000 m of topography in the Mount Lebanon and Anti-Lebanon ranges. The GPS velocity field indicates 4-5 mm yr-1 of relative plate motion is transferred through the restraining bend to the northern continuation of the DSFS in northwestern Syria. Near-field GPS velocities are generally parallel to the major, left-lateral strike-slip faults, suggesting that much of the expected convergence across the restraining bend is likely accommodated by different structures beyond the aperture of the GPS network (e.g. offshore Lebanon and, possibly, the Palmyride fold belt in SW Syria). Hence, these geodetic results suggest a partitioning of crustal deformation involving strike-slip displacements in the interior of the restraining bend, and crustal shortening in the outer part of the restraining bend. Within the uncertainties, the GPS-based rates of fault slip compare well with Holocene-averaged estimates of slip along the two principal strike-slip faults: the Yammouneh and Serghaya faults. Of these two faults, more slip occurs on the Yammouneh fault, which constitutes the primary plate boundary structure between the Arabia and Sinai plates. Hence, the Yammouneh fault is the structural linkage that transfers slip to the northern part of the transform in northwestern Syria. From the perspective of the regional earthquake hazard, the Yammouneh fault is presently locked and accumulating interseismic strain.

url: http://hdl.handle.net/1813/5439
date: 2007-03-28
creator: Hirtle, Peter
viewed: 134
title: Keeping Your Copyright for Content Producers-Spring 2007
abstract: Much ado has recently been made about securing permission from other copyright holders, but

what are your rights as an author? Peter Hirtle, Intellectual Property Officer at Cornell University Library, explains how you as authors can make sure that you have the right to repost your work, use it in your classes or give other colleagues permission to use it as well as how to successfully negotiate for better and broader control of your own publications.

url: http://hdl.handle.net/1813/5441
date: 2007-04-02
creator: Devine, Catherine;Land, Bruce
viewed: 47
title: Stereo Viewing Interface for Workstations
abstract: Three dimensional data sets are becoming widespread in scientific simulations and analysis of physical systems. Applications ranging from fluid simulations to medical imaging require understanding of three dimensional (3D) data. Researchers often produce images from the data to aid in understanding. In the resulting images, monocular depth cues such as object size, parallax motion, and shading help to interpret 3D data. However, viewing 3D data is enhanced by using stereo pairs so that binocular depth cues are available. There are several schemes for producing stereo pairs on the screen of a workstation (e.g. liquid crystal shutters, vibrating mirrors or cylinderical lens). We describe here a liquid crystal shutter system which is easy and inexpensive to construct vibrating mirrors or cylinderical lens). We describe here a liquid crystal shutter system which is easy and inexpensive to construct. Using liquid-crystal shutter glasses designed for video games, it is possible to construct an inexpensive stereo viewing interface to any personal computer or workstation which has hardware double-buffering of the display screen and which can produce an RS-232 character. The resulting display exhibits strong stereo depth cues. Flicker is noticeable and depends on the refresh rate of the monitor as well as the speed with which the double-buffered display can be changed. On the IBM RISC System 6000, equipped with the GL display card (part number xxx), the flicker is moderate, the brightness good, and the stereo effect very stable. The description given here will assume an IBM RISC System 6000. There are two parts to the system: the software to display two images in the double buffer and the hardware which converts an RS-232 character to the waveform necessary to drive the liquid-crystal glasses. Clearly the software will have to be modified for other systems, although it should run virtually unmodified on Silicon Graphics machines, such as the Personal IRIS.

url: http://hdl.handle.net/1813/5442
date: 2007-04-02
creator: Coleman, Thomas F.;Chinchalkar, Shirish
viewed: 52
title: Parallel Finite Element Analysis of Biomechanical Structures on the Ncube 6400
abstract: This paper presents parallel 3-D finite element analysis for distributed memory multiprocessors. Traditionally, finite element analysis has been performed on sequential computers. Current research in high performance finite element analysis shows considerable promise for fast, efficient implementation on MIMD and SIMD computers.
This paper demonstrates the use of a standard, banded Cholesky method for solving the finite element system of equations. The uniformity of the underlying data distribution ensures high performance due to load balance. Moreover, since a distributed banded Cholesky algorithm is likely to a part of a standard parallel numerical library, it reduces the burden on the applications programmer, making this method simpler to implement than the substructuring method. Since a parallel solver requires the rows of the coefficient matrix to be distributed in a wrap fashion, it might appear that the assembly of the element stiffness matrices would not be efficient. However, as shown in this paper, the calculation of element stiffness matrices, assembly and the calculation of Gauss-point stresses can be done efficiently in parallel without any inter-processor communication. In fact, once nodal coordinates and element connectivity is made available to all processors,

message passing is required only during the factorization and solution stages.
The next few sections describe how parallelism was exploited during the assembly, solution and stress recovery strages of the finite element analysis. The parallel program developed was tested on large 3-D finite element problems arising from biomechanical structural systems, on an Ncube 6400. High performance Basic Linear Algebra Subprograms (BLAS) were used to improve the execution speed.

url: http://hdl.handle.net/1813/5443
date: 2007-04-02
creator: Verma, Arun;Coleman, Thomas F.
viewed: 20
title: A Preconditioned Conjugate Gradient Approach to Linear Equality
abstract: We propose a new framework for the application of preconditioned conjugate gradients in the solution of large-scale linear equality constrained minimization problems. This framework allows for the exploitation of structure and sparsity in the context of solving the reduced Newton system (despite the fact that the reduced system may be dense).

url: http://hdl.handle.net/1813/5444
date: 2007-04-02
creator: Patron, Maria-Cristina;Li, Yuying;Coleman, Thomas F.
viewed: 27
title: Discrete Hedging Under Piecewise Linear Risk Management
abstract: In an incomplete market it is usually impossible to eliminate the intrinsic risk of an option. In this case quadratic risk-minimization is often used to determine a hedging strategy. However, it may be more natural to use piecewise linear risk-minimization since in this case the risk is measured in actual dollars (not dollars squared). We investigate hedging strategies using piecewise linear risk-minimization. We illustrate that piecewise linear risk-minimization often leads to smaller expected total hedging cost and significantly different, possibly more desirable, hedging strategies from those of quadratic risk minimization. The distributions of the total hedging cost and risk show that hedging strategies obtained by piecewise linear risk-minimization have a larger probability of small cost and risk, though they also have a very small probability of larger cost and risk. Comparative numerical results are provided.

url: http://hdl.handle.net/1813/5445
date: 2007-04-02
creator: Pingali, Keshav;Li, Wei
viewed: 89
title: Access Normalization: Loop Restructuring for NUMA Compilers
abstract: A common feature of many scalable parallel machines is non-uniform memory access - a processor can access data in its local memory ten to a thousand times faster than it can access local data. In addition, when a number of remote accesses must be made, it is usually more efficient to use block transfers of data rather than to use many small messages. To run well on such machines, software must exploit these features. We believe it is too onerous for a programmer to do this by hand, so we have been exploring the use of restructuring compiler technology for this purpose. In this paper, we start with a language like FORTRAN-D with user-specified data distributions and develop a systematic loop transformation strategy called access normalization that restructures loop nests to exploit both locality and block transfers whenever possible. We demonstrate the power of our techniques using routines from the BLAS (Basic Linear Algebra Subprograms) library. Our loop transformation strategy is expressed in the framework of invertible matrcies and integer lattice theory, and it is an important generalization of Banerjee's framework of unimodular matrices.

url: http://hdl.handle.net/1813/5446
date: 2007-04-02
creator: Vetzal, K. R.;Forsyth, P. A.;Ayache, E.
viewed: 90
title: The Valuation of Convertible Bonds With Credit Risk
abstract: Convertible bonds are typically issued by firms which have both relatively high growth and quite high risk. Convertibles can be difficult to value, given their hybrid nature of containing elements of both debt and equity. Further complications arise due to the frequent presence of additional options such as callability and puttability, and contractual complexities such as trigger prices and "soft call" provisions, in which the ability of the issuing firm to exercise its option to call is dependent upon the history of its stock price. This paper explores the valuation of convertible bonds subject to credit risk using an approach based on the numerical solution of a system of coupled linear complementarity problems. We argue that many of the existing modes, such as that of Tsiveriotis and Fernandes (1998), are unsatisfactory in that they do not explicitly specify what happens in the event of a default by the issuing firm. In fact, many of the differences between existing models appear to arise from varying implicit assumptions about this. In existing models it is assumed that upon a default either nothing happens to the firm's stock price or else it instantly jumps to zero. Neither of these alternatives seems to be entirely appealing: while it is a significant event, implying that there will be some market reaction to the news of a default, a sudden and complete collapse is rare. Consequently, we propose a model where the firm's stock price falls by some specified percentage between 0% and 100% (which includes the limiting cases implicit in existing models). We also present a detailed description of our numerical algorithm, which uses a partially implicit method to decouple the system of linear complementarity problems at each timestep. Numerical examples illustrating the convergence properties of the algorithm are provided.

url: http://hdl.handle.net/1813/5447
date: 2007-04-02
creator: Verma, Arun;Coleman, Thomas F.
viewed: 34
title: A Preconditioned Conjugate Gradient Approach to Linear Equality Constrained Minimization
abstract: We propose a new framework for the application of preconditioned conjugate gradients in the solution of large-scale linear equality constrained minimization problems. This framework allows for the exploitation of structure and sparsity in the context of solving the reduced Newton system (despite the fact that the reduced system may be dense).

url: http://hdl.handle.net/1813/5448
date: 2007-04-02
creator: Verma, Arun;Li, Yuying;Kim, Yohan;Coleman, Thomas F.
viewed: 40
title: Dynamic Hedging in a Volatile Market
abstract: In financial markets, errors in option hedging can arise from two sources. First, the option value is a nonlinear function of the underlying; therefore, hedging is instantaneous and hedging with discrete rebalancing gives rise to error. Frequent rebalancing can be impractical due to transaction costs. Second, errors in specifying the model for the underlying price movement (model specification error) can lead to poor hedge performance. In this article, we compare the effectiveness of dynamic hedging using the constant volatility method, the implied volatility method, and the recent volatility function method [3]. We provide evidence that dynamic hedging using the volatility function method [3] produces smaller hedge error. We assume that there are no transaction costs, and both the risk-free interest rate r and the dividend rate q are constant.

url: http://hdl.handle.net/1813/5449
date: 2007-04-02
creator: Verma, Arun;Santosa, Fadil;Coleman, Thomas F.
viewed: 29
title: Efficient Calculation of Jacobian and Adjoint Vector Products in Wave Propagational Inverse Problems Using Automatic Differentiation
abstract: Wave propagational inverse problems arise in several applications including medical imaging and geophysical exploration. In these problems, one is interested in obtaining the parameters describing the medium from its response to excitations. The problems are characterized by their large size, and by the hyperbolic equation which models the physical phenomena. The inverse problems are often posed as a nonlinear data-fitting where the unknown parameters are found by minimizing the misfit between the predicted data and the actual data. In order to solve the problem numerically using a gradient-type approach, one must calculate the action of the Jacobian and its adjoint on a given vector. In this paper, we explore the use of automatic differentiation (AD) to develop codes that perform these calculations. We show that by exploiting structure at 2 scales, we can arrive at a very efficient code whose main components are produced by AD. In the first scale we exploit the time-stepping nature of the hyperbolic solver by using the "Extended Jacobian" framework. In the second (finer) scale, we exploit the finite difference stencil in order to make explicit use of the sparsity in the dependence of the output variables to the input variables. The main ideas in this work are illustrated with a simpler, one-dimensional version of the problem. Numerical results are given for both one- and two- dimensional problems. We present computational templates that can be used in conjunction with optimization packages to solve the inverse problem.

url: http://hdl.handle.net/1813/5450
date: 2007-04-02
creator: Verma, Arun;Li, Yuying;Kim, Yohan;Coleman, Thomas F.
viewed: 43
title: Dynamic Hedging with a Deterministic Local Volatility Function Model
abstract: We compare the dynamic hedging performance of the deterministic local volatility function approach with the implied/constant volatility method. Using an example in which the underlying price follows an absolute diffusion process, we illustrate that hedge parameters computed from the implied/constant volatility method can have significant error even though the implied volatility method is able to calibrate the current option prices of different strikes and maturities. In particular the delta hedge parameter produced by the implied/constant volatility method is consistently significantly larger than that of the exact delta when the underlying price follows an absolute diffusion.

url: http://hdl.handle.net/1813/5451
date: 2007-04-02
creator: Coleman, T. F.;Verma, A.;Forsyth, P. A.;Vetzal, K. R.;Windcliff, H.
viewed: 89
title: An Object-Oriented Framework For Valuing Shout Options on High-Performance Computer Architectures
abstract: A shout option is a financial contract which allows the holder to change the payoff during the lifetime of the contract. For example, the holder could have the right to set the strike price to the current value of the underlying asset. Complex versions of these options are embedded in financial products which offer various types of maturity guarantees such as segregated funds marketed by Canadian insurance companies. The value of these options can be determined by solving a collection of coupled partial differential equations (PDEs). In this work we develop an extensible, object-oriented framework for valuing these contracts which

is capable of exploiting modern, high-performance supercomputing architectures. We use this framework to study and illustrate practical aspects of valuing and hedging these contracts.

url: http://hdl.handle.net/1813/5452
date: 2007-04-02
creator: Popp, Jacqueline;Benfield, Mark;Pelkie, Chris;Wiebe, Peter;Greene, Charles
viewed: 28
title: Three-Dimensional Acoustic Visualization of Zooplankton Patchiness
abstract: Acoustic data were collected and visualized to characterize the 3-dimensional patchiness of zooplankton at a thermally stratified site on Georges Bank. The work was carried out as part of a field study conducted to examine the effects of springtime water-column stratification on the distributions of zooplankton and larval fish on the Bank. The acoustic data were acquired as the ship steamed a survey grid relative to the track of a surface drifter with a subsurface drogue. Although quite irregular in geographical coordinate space, the ship's track relative to the moving water closely matched the intended grid pattern once the drifter's movement in the tidal flow was taken into account. After changing coordinate systems to compensate for tidal advection, the acoustic data set was transformed from its curtain-like distribution in 3-dimensional space to a volumetric distribution. Two-dimensional point kriging was performed on the irregularly spaced data from each 2-m-thick depth stratum to produce a series of 2-dimensional, regularly spaced data grids. These data grids were then stacked to construct the 3-dimensional data grid required for volumetric visualization. A similar procedure was followed with the error variance values produced at each grid point through kriging to construct a three-dimensional, volumetric distribution of the error variance. To examine zooplankton patchiness within the surveyed volume of water, isosurfaces corresponding to specific levels of acoustic backscatter were highlighted in the visualization. The 3-dimensional distribution of error variance was used to control the opacity of the isosurfaces to provide an objective, visual approach for displaying the statistical confidence one can have in the patches detected. In this survey, the ship steamed directly over a large, southwest- to northeast-oriented patch of zooplankton on at least three different passes. It also steamed over several smaller patches. The vertically compressed nature of the patches and their high degree of spatial heterogeneity in the horizontal plane are characteristic of the zooplankton distributions found in the deeper, seasonally stratified portions of Georges Bank.

url: http://hdl.handle.net/1813/5453
date: 2007-04-02
creator: Pang, Jong-Shi;Huang, Jacqueline
viewed: 36
title: Option Pricing and Linear Complementarity
abstract: Many American option pricing models can be formulated as linear complementarity problems (LCPs) involving partial differential operators. While recent work with this approach has mainly addressed the model classes where the resulting LCPs are highly structured and can be solved fairly easily, this paper discusses a variety of option pricing models that are formulated as partial differential complementarity problems (PDCPs) of the convection-diffusion kind whose numerical solution depends on a better understanding of LCP methods. Specifically, we present second-order upwind finite difference schemes for the PDCPs and derive fundamental properties of the resulting discretized LCPs that are essential for the convergence and stability of the finite difference schemes and for the numerical solution of the LCPs by effective computational methods. Numerical results are reported to support the benefits of the proposed schemes. A main objective of this presentation is to elucidate the important role that the LCP has to play in the fast and effective numerical pricing of American options.

url: http://hdl.handle.net/1813/5454

date: 2007-04-02
creator: Li, Yuying;Coleman, Thomas F.;Boyle, Katharyn A.
viewed: 35
title: Hedging a Portfolio of Derivatives by Modeling Cost
abstract: We consider the problem of hedging the loss of a given portfolio of derivatives using a set of more liquid derivative instruments. We illustrate why the typical mathematical formulation for this hedging problem is ill-posed. We propose to determine a hedging portfolio by minimizing a proportional cost subject to an upper bound on the hedge risk; this bound is typically slightly larger than the optimal hedge risk achievable without cost consideration. We illustrate that the optimal hedging portfolio obtained by the proposed method is attractive since it consists of fewer instruments with a comparable risk. Finally we illustrate the importance of modeling volatility uncertainty in hedge risk minimization.

url: http://hdl.handle.net/1813/5455
date: 2007-04-02
creator: Verma, Arun;Li, Yuying;Coleman, Thomas F.
viewed: 30
title: Reconstructing the Unknown Local Volatility Function
abstract: Using market European option prices, a method for computing a smooth local volatility function in a 1-factor continuous diffusion model is proposed. Smoothness is introduced to facilitate accurate approximation of the local volatility function from a finite set of observation data. Assuming that the underlying indeed follows a 1-factor model, it is emphasized that accurately approximating the local volatility function prescribing the 1-factor model is crucial in hedging even simple European options, and pricing exotic options. A spline functional approach is used: the local volatility function is represented by a spline whose values at chosen knots are determined by solving a constrained nonlinear optimization problem. The optimization formulation is amenable to various option evaluation methods; a partial differential equation implementation is discussed. Using a synthetic European call option example, we illustrate the capability of the proposed method in reconstructing the unknown local volatility function. Accuracy of pricing and hedging is also illustrated. Moreover, it is demonstrated that, using different implied volatilities for options with different strikes/maturities can produce erroneous hedge factors if the underlying follows a 1-factor model. In addition, real market European call option data on the S and P 500 stock index is used to compute the local volatility function; stability of the approach is demonstrated.

url: http://hdl.handle.net/1813/5456
date: 2007-04-02
creator: Verma, Arun;Li, Yuying;Coleman, Thomas F.
viewed: 26
title: A Newton Method for American Option Pricing
abstract: The variational inequality formulation provides a mechanism to determine both the option value and the early exercise curve implicitly [17]. Standard finite difference approximation typically leads to linear complementarity problems with tridiagonal coefficient matrices. The second order upwind finite difference formulation gives rise to finite dimensional linear complementarity problems with nontridiagonal matrices, whereas the upstream weighting finite difference approach with the van Leer flux limiter for the convection term [19, 22] yields nonlinear complementarity problems. We propose a Newton type interior-point method for solving discretized complementarity/variational inequality problems that arise in the American option valuation. We illustrate that the proposed method on average solves a discretized problem in 2 ~ 5 iterations to an appropriate accuracy. More importantly, the average number of iterations required does not seem to depend on the number of discretization points in the spatial dimension; the average number of iterations actually decreases as the time discretization becomes finer. The arbitrage condition for the fair value of the

American option requires that the delta hedge factor be continuous. We investigate continuity of the delta factor approximation using the complementarity approach, the binomial method, and the explicit payoff method. We illustrate that, while the (implicit finite difference) complementarity approach yields continuous delta hedge factors, both the binomial method and the explicit payoff method (with the implicit finite difference) yield discontinuous delta approximations. Hence the early exercise curve computed from the binomial method and the explicit payoff method can be inaccurate. In addition, it is demonstrated that the delta factor computed using the Crank-Nicolson method with complementarity approach oscillates around the early exercise curve.

url: http://hdl.handle.net/1813/5457
date: 2007-04-02
creator: Verma, Arun;Santosa, Fadil;Coleman, Thomas F.
viewed: 32
title: Efficient Calculation of Jacobian and Adjoint Vector Products in Wave Propagational Inverse Problems Using Automatic Differentiation
abstract: Wave propagational inverse problems arise in several applications including medical imaging and geophysical exploration. In these problems, one is interested in obtaining the parameters describing the medium from its response to excitations. The problems are characterized by their large size, and by the hyperbolic equation which models the physical phenomena. The inverse problems are often posed as a nonlinear data-fitting where the unknown parameters are found by minimizing the misfit between the predicted data and the actual data. In order to solve the problem numerically using a gradient-type approach, one must calculate the action of the Jacobian and its adjoint on a given vector. In this paper, we explore the use of automatic differentiation (AD) to develop codes that perform these calculations. We show that by exploiting structure at 2 scales, we can arrive at a very efficient code whose main components are produced by AD. In the first scale we exploit the time-stepping nature of the hyperbolic solver by using the \Extended Jacobian" framework. In the second (finer) scale, we exploit the finite difference stencil in order to make explicit use of the sparsity in the dependence of the output variables to the input variables. The main ideas in this work are illustrated with a simpler, one-dimensional version of the problem. Numerical results are given for both one- and two- dimensional problems. We present computational templates that can be used in conjunction with optimization packages to solve the inverse problem.

url: http://hdl.handle.net/1813/5458
date: 2007-04-02
creator: Mariano, Adriano;Li, Yuying;Coleman, Thomas F.
viewed: 35
title: Segmentation of Pulmonary Nodule Images Using Total Variation Minimization
abstract: Total variation minimization has edge preserving and enhancing properties which make it suitable for image segmentation. We present Image Simplification, a new formulation and algorithm for image segmentation. We illustrate the edge enhancing properties of total variation minimization in a discrete setting by giving exact solutions to the problem for piecewise constant functions in the presence of noise. In this case, edges can be exactly recovered if the noise is sufficiently small. After optimization, segmentation is completed using edge detection. We find that our image segmentation approach yields good results when applied to the segmentation of pulmonary nodules.

url: http://hdl.handle.net/1813/5459
date: 2007-04-02
creator: Verma, A.;Li, Y.;Kim, Y.;Coleman, Thomas F.
viewed: 54

title: Dynamic Hedging With a Deterministic Local Volatility Function Model
abstract: We compare the dynamic hedging performance of the deterministic local volatility function approach with the implied/constant volatility method. Using an example in which the underlying price follows an absolute diffusion process, we illustrate that hedge parameters computed from the implied/constant volatility method can have significant error even though the implied volatility method is able to calibrate the current option prices of different strikes and maturities. In particular the delta hedge parameter produced by the implied/constant volatility method is consistently significantly larger than that of the exact delta when the underlying price follows an absolute diffusion. In order to compute a better hedge parameter, accurate estimation of the local volatility function in a region surrounding the current asset price is crucial. We illustrate that a suitably implemented volatility function method can estimate this local volatility function sufficiently accurately to generate more accurate hedge parameters. Hedging using this volatility function for the absolute diffusion example leads to a smaller average absolute hedging error when compared with using the implied/constant volatility rate. When comparing the hedging performance in the S and P 500 index option market as well as the S and P 500 futures option market, we similarly observe that the delta hedge parameter from the implied/constant volatility method is typically greater than that using the volatility function approach. Examination of the hedging error reveals that using a larger delta factor greater than that of the true volatility yields more positive average hedging error, assuming the underlying follows a deterministic volatility model. We observe that, in both the S and P 500 index option market and futures option market, the average absolute hedging error using the volatility function approach is smaller than that of the implied/constant volatility method for a sufficiently long hedging horizon, approximately 17 days for the S and P 500 index options and 6 days for the S and P 500 futures options. In addition, the average hedging error using the volatility function approach is always smaller than that of the implied/constant volatility method.

url: http://hdl.handle.net/1813/5460
date: 2007-04-02
creator: Pang, Jong-Shi;Huang, Jacqueline
viewed: 36
title: An MPEC Approach to Inverse Pricing of American Options: The Case of an Implied Volatility Surface
abstract: This paper presents a novel approach to deal with the computation of an implied volatility surface of American options written on a risky asset. The approach is based on the simple observation that this computational problem is the inverse of the forward pricing problem of American options. As detailed in [17], the latter forward problem can be modeled by a discretized partial differential linear complementarity system. As such, the inverse problem, i.e., the implied volatility problem, becomes an instance of a Mathematical Program with Equilibrium Constraints, which is a class of constrained optimization problem with a finite-dimensional parametric linear comlementarity system as part of its constraints. Two methods for solving an MPEC are described and applied to the problem of computing and implied volatility surface of American options. Some computational results on experimental data are reported.

url: http://hdl.handle.net/1813/5461
date: 2007-04-02
creator: Hyden, Paul;Avramidis, Athanassios
viewed: 36
title: Efficiency Improvements for Pricing American Options with a Stochastic Mesh
abstract: rlo simulation. First, we develop a mesh-based, biased-low estimator. By recursively averaging the low and high estimators at each stage, we obtain a significantly more accurate point estimator at each of the mesh points. Second, adapt the importance sampling ideas for simulation of European path-dependent options in Glasserman, Heidelberger, and Shahabuddin (1998a) to pricing of American options with a stochastic mesh.

Third, we sketch generalizations of the mesh method and we discuss links with other techniques for valuing American options. Our empirical results show that the bias-reduced point estimates are much more accurate than the standard mesh-method point estimators. Importance sampling is found to increase accuracy for a smooth option-payoff functions, while variance increases are possible for non-smooth payoffs.

url: http://hdl.handle.net/1813/5462
date: 2007-04-02
creator: Kalos, M. H.;Zhang, Shiwei
viewed: 49
title: Exact Monte Carlo Calculations for Fermions on a Parallel Machine
abstract: We describe how a recently published algorithm - which addresses the sign problem within the context of the Green's function Monte Carlo method - can be implemented in a parallel distributed environment. The method of parallelization maintains large granularity and therefore large overhead. Despite the stochastic nature of the algorithm, good load-balancing can be accomplished and reproducibility is ensured.

url: http://hdl.handle.net/1813/5463
date: 2007-04-02
creator: Liao, Aiping;Coleman, Thomas F.
viewed: 64
title: An efficient trust region method for unconstrained discrete-time optimal control problems
abstract: Discrete-time optimal control (DTOC) problems are large-scale optimization problems with a dynamic structure. In previous work this structure has been exploited to provide very fast and efficient local procedures. Two examples are the differential dynamic programming algorithm (DDP) and the stagewise Newton procedure -- both require only O(N) operations per iteration, where N is the number of timesteps. Both exhibit a quadratic convergence rate. However, most algorithms in this category do not have a satisfactory global convergence strategy. The most popular global strategy is shifting: this sometimes works poorly due to the lack of automatic adjustment to the shifting element. In this paper we propose a method that incorporates the trust region idea with the local stagewise Newton's method. This method possesses advantages of both the trust region idea and the stagewise Newton's method, i.e., our proposed method has strong global and local convergence properties yet remains economical. Preliminary numerical results are presented to illustrate the behavior of the proposed algorithm. We also collect in the Appendix some DTOC problems that have appeared in the literature.

url: http://hdl.handle.net/1813/5464
date: 2007-04-02
creator: Todd, Michael J.;Liao, Aiping
viewed: 31
title: Solving LP Problems Via Weighted Centers
abstract: The feasibility problem for a system of linear inequalities can be converted into an unconstrained optimization problem using ideas from the ellipsoid method, which can be viewed as a very simple minimization technique for the resulting nonlinear function. Using more sophisticated algorithms, we develop and investigate more efficient methods, which lead to two kinds of weighted centers for the feasible set. With these centers, we develop new algorithms for solving linear programming problems.

url: http://hdl.handle.net/1813/5465
date: 2007-04-02
creator: Patron, Maria-Cristina;Li, Yuying;Kim, Yohan;Coleman, Thomas
viewed: 58

title: Robustly Hedging Variable Annuities with Guarantees Under Jump and Volatility Risks
abstract: Accurately quantifying and robustly hedging options embedded in the guarantees of variable annuities is a crucial task for insurance companies in preventing excessive liabilities. Due to sensitivities of the benefits to tails of the account value distribution, a simple Black-Scholes model is inadequate. A model which realistically describes the real world price dynamics over a long time horizon is essential for the risk management of the variable annuities. In this paper, both jump risk and volatility risk are considered for risk management of lookback options embedded in guarantees with a ratchet feature. We evaluate relative performances of delta hedging and dynamic discrete risk minimization hedging strategies. Using the underlying as the hedging instrument, we show that, under a Black-Scholes model, local risk minimization hedging is significantly better than delta hedging. In addition, we compare risk minimization hedging using the underlying with that of using standard options. We demonstrate that, under a Merton's jump diffusion model, hedging using standard options is superior to hedging using the underlying in terms of the risk reduction. Finally we consider a market model for volatility risks in which the at-the-money implied volatility is a state variable. We compute risk minimization hedging by modeling at-the-money Black-Scholes implied volatility explicitly; the hedging effectiveness is evaluated, however, under a joint underlying and implied volatility model which also includes instantaneous volatility risk. Our computational results suggest that, when implied volatility risk is suitably modeled, risk minimization hedging using standard options, compared to hedging using the underlying, can potentially be more effective in risk reduction under both jump and volatility risks.

url: http://hdl.handle.net/1813/5466
date: 2007-04-02
creator: Patron, Maria-Cristina;Li, Yuying;Coleman, Thomas F
viewed: 55
title: Hedging guarantees in variable annuities (under both market and interest rate risks)
abstract: In order to prevent possibly very large losses, insurance companies have to devise risk management strategies for the guarantees provided by variable annuities. When hedging the options embedded in these guarantees, due to their long maturities and sensitivity to the underlying accounts tail distributions, it is important to use an appropriate model for the stochastic evolution of the account values as well as the stochastic interest rates. This paper illustrates the discrete hedging of lookback options embedded in guarantees with ratchet features, under jump risk and interest rate risk. Since discrete hedging and the model considered for the underlying price dynamics lead to an incomplete financial market, we compute hedging strategies using local risk minimization. Our numerical results show that computing the hedging strategies under a joint model for the real-world underlying price dynamics and the short interest rates, leads to effective risk reduction. We investigate the performance of hedging using underlying assets and hedging using liquid options. We illustrate that the additional effectiveness in risk reduction, achieved by hedging using options instead of the underlying, can be lost if the interest risk is not accurately modeled in the hedging computation. However, when both equity and interest rate risks are appropriately modeled, hedging with options is superior to hedging with the underlying assets. We also analyze the sensitivity of the hedging performance to the correlation between the underlying asset and the short interest rate.

url: http://hdl.handle.net/1813/5468
date: 2007-04-03
creator: Chinchalkar, Shirish
viewed: 19
title: Computing Eigenvalues and Eigenvectors of a Dense Real Symmetric Matrix on the Ncube 6400
abstract: This report demonstrates parallel versions of the Eispack functions TRED2 and TQL2 for finding all eigenvalues and eigenvectors of a dense, real symmetric matrix on the Ncube 6400. There are several

techniques for solving this problem. An efficient and accurate method is tridiagonalization of the original matrix A (TRED2), followed by application of the QR method on the resulting tridiagonal matrix (TQL2). Since the eigenvalues are the roots of a characteristic polynomial, bisection and inverse iteration can be used to compute all eigenvalues and eigenvectors. This method is significantly faster than the QR method provided the eigenvalues are well separated. This technical report will also describe the algorithms TREDs and TQL2 and their parallel counterparts in greater detail. The results of numerical experiments on large problems on a 1024 processors Ncube 6400 are also presented.

url: http://hdl.handle.net/1813/5469
date: 2007-04-03
creator: Trefethen, Lloyd N.;Higham, Desmond J.
viewed: 19
title: Stiffness of ODEs
abstract: It is argued that even for a linear system of ODEs with constant coefficients, stiffness cannot properly be characterized in terms of the eigenvalues of the Jacobian, because stiffness is a transient phenomenon whereas the significance of eigenvalues is asymptotic. Recent theory from the numerical solution of PDEs is adapted to show that a more appropriate characterization of stiffness can be based upon pseudospectra instead of spectra. Numerical experiments with an adaptive ODE solver illustrate these findings.

url: http://hdl.handle.net/1813/5470
date: 2007-04-03
creator: Hoisie, Adolfy;Henry, Greg
viewed: 17
title: Block Factorizations on a Cluster of RS/6000s
abstract: This paper discusses optimizing computational linear algebra algorithms on a ring cluster of IBM RS/6000s. We offer the results of a block Cholesky factorization and the underlying BLAS to demonstrate the advantage of using blocking algorithms on such architectures. A thorough analysis of the complexities of the problem is provided. Different communication protocols, serial versus parallel execution, and optimization of data traffic is explored. We provide insight into some of the techniques we have observed in exploiting this particular design. The implementations demonstrate that this important architecture can be utilized effectively for sufficiently large dense matrix computations.

url: http://hdl.handle.net/1813/5471
date: 2007-04-03
creator: Henry, Greg
viewed: 25
title: BLAS Based on Block Data Structures
abstract: The optimization of the BLAS is discussed, with examples given for the IBM superscalar RISC S/6000. The approach suggested is to use block data structures based on store-by-block schemes. We give results and analysis of the optimization of DGEMM. We also suggest how these results can be applied to the higher level factorizations and the other BLAS. Results are given to show the advantages of using block data structures.

url: http://hdl.handle.net/1813/5472
date: 2007-04-03
creator: Coleman, Thomas;Wu, Zhijun
viewed: 61
title: A Parallel Row Distributed Linear Algebra System (PRDLA Users' Guide)

abstract: The purpose of this system is to provide an easy-to-use et of basic parallel matrix manipulation subroutines, in C, for use on the Intel iPSC/860 hypercube. Most of the subroutines exhibit good performance, but not necessarily optimal. Users are welcome to use these subroutines as building blocks in their own codes, to modify if the situation warrants this, or just to study the implementation to help guide their own programming. The subroutines all operate under the assumption that matrices are distributed by row in a natural wrap mapping. That is, if we assume p processors, row 1 is mapped to processor 0, row 2 is mapped to processor 1, row p is mapped to processor p-1, row p+1 is mapped to processor 0, etc. If this is deemed to restrictive, the user is welcome to use these codes as a starting point and develop their own codes (perhaps under less restrictive assumptions). The codes are not directly portable to other computer systems. However, the codes do use PICL (the portable instrumented communication library, developed at Oak Ridge National Laboratory); therefore, provided PICL is available the codes are easily ported.

url: http://hdl.handle.net/1813/5473
date: 2007-04-03
creator: Trefethen, Lloyd N.;Greenbaum, Anne
viewed: 22
title: GMRES/CR and Arnoldi/Lanczos as Matrix Approximation Problems
abstract: The GMRES and Arnoldi algorithms, which reduce to the CR and Lanczos algorithms in the symmetric case, both minimize ||p(A)b|| over polynomials p of degree n. The difference is that p is normalized at z=0 for GMRES and at z=infinity for Arnoldi. Analogous "ideal GMRES" and "ideal Arnoldi" problems are obtained if one removes b from the discussion and minimizes ||p(A)|| instead. Investigation of these true and ideal approximation problems gives insight into how fast GMRES converges and how the Arnoldi iteration locates eigenvalues.

url: http://hdl.handle.net/1813/5474
date: 2007-04-03
creator: Shoemaker, Christine A.;Liao, Li-zhi
viewed: 30
title: Advantages of Differential Dynamic Programming Over Newton's Method for Discrete-time Optimal Control Problems
abstract: Differential Dynamic Programming (DDP) and stagewise Newton's method are both quadratically convergent algorithms for solving discrete time optimal control problems. Although these two algorithms share many theoretical similarities, they demonstrate significantly different numerical performance. In this paper, we will compare and analyze these two algorithms in detail and derive another quadratically convergent algorithm which is a combination of the DDP algorithm and Newton's method. This new second-order algorithm plays a key role in the explanation of the numerical differences between the DDP algorithm and Newton's method. The detailed algorithmic and structural differences for these three algorithms and their impact on numerical performance will be discussed and explored. Two test problems with various dimensions solved by these three algorithms will be presented. One nonlinear test problem demonstrates that the DDP algorithm can be as much as 28 times faster than the stagewise Newton's method. The numerical comparsion indicates that the DDP algorithm is numerically superior to the stagewise Newton's method.

url: http://hdl.handle.net/1813/5475
date: 2007-04-03
creator: Pingali, Keshav;Li, Wei
viewed: 28
title: A Singular Loop Transformation Framework Based on Non-singular Matrices
abstract: In this paper, we discuss a loop transformation framework that is based on integer non-singular

matrices. The transformations included in this framework are called A-transformations and include permutation, skewing and reversal, as well as transformation called loop scaling. This framework is more general than existing ones; however, it is also more difficult to generate code in our framework. This paper shows how integer lattice theory can be used to generate efficient code. An added advantage of our framework over existing ones is that there is a simple completion algorithm which, given a partial transformation matrix, produces a full transformation matrix that satisfies all dependencies. This completion procedure has applications in parallelization and in the generation of code for NUMA machines.

url: http://hdl.handle.net/1813/5476
date: 2007-04-03
creator: Pingali, Keshav;Li, Wei
viewed: 80
title: Access Normalization: Loop Restructuring for NUMA Compilers
abstract: A common feature of many scalable parallel machines is non-uniform memory access - a processor can access data in its local memory ten to a thousand times faster than it can access local data. In addition, when a number of remote accesses must be made, it is usually more efficient to use block transfers of data rather than to use many small messages. To run well on such machines, software must exploit these features. We believe it is too onerous for a programmer to do this by hand, so we have been exploring the use of restructuring compiler technology for this purpose. In this paper, we start with a language like FORTRAN-D with user-specified data distributions and develop a systematic loop transformation strategy called access normalization that restructures loop nests to exploit both locality and block transfers whenever possible. We demonstrate the power of our techniques using routines from the BLAS (Basic Linear Algebra Subprograms) library. Our loop transformation strategy is expressed in the framework of invertible matrcies and integer lattice theory, and it is an important generalization of Banerjee's framework of unimodular matrices.

url: http://hdl.handle.net/1813/5477
date: 2007-04-03
creator: Henry, Greg
viewed: 24
title: Increasing Data Reuse in the Unsymmetric QR Algorithm
abstract: This paper models data use in the Unsymmetric QR Eigenvalue Algorithm to improve performance on machines with memory hierarchy. Most of the algorithms and strategies presented can be implemented so that they are numerically similar to strategies found in such libraries as LAPACK and EISPACK ([1,5]). We provide tests to show improvement of performance. Some strategies implemented include the use of block methods, transposing the matrix, reducing the average stride, reducing data movement with hybrid steps, and using block data structures.

url: http://hdl.handle.net/1813/5478
date: 2007-04-03
creator: Sun, Chunguang
viewed: 26
title: Efficient Parallel Solutions of Large Sparse SPD Systems on Distributed-memory Multiprocessors
abstract: We consider several issues involved in the solution of sparse symmetric positive definite system by multifrontal method on distributed-memory multiprocessors. First, we present a new algorithm for computing the partial factorization of a frontal matrix on a subset of processors which significantly improves the performance of a distributed multifrontal algorithm previously designed. Second, new parallel algorithms for computing sparse forward elimination and sparse backward substitution are described. The new algorithms solve the sparse triangular systems in multi- frontal fashion. Numerical experiments run

on an Intel iPSC/860 and an Intel iPSC/2 for a set of problems with regular and irregular sparsity structure are reported. More than 180 million flops per second during the numerical factorization are achieved for a three- dimensional grid problem on an iPSC/860 machine with 32 processors.

url: http://hdl.handle.net/1813/5479
date: 2007-04-03
creator: Vavasis, Stephen A.;Mitchell, Scott A.
viewed: 76
title: Quality Mesh Generation in Three Dimensions
abstract: We show how to triangulate a three dimensional polyhedral region with holes. Our triangulation is optimal in the following two senses. First, our triangulation achieves the best possible aspect ratio up to a constant. Second, for any other triangulation of the same region into m triangles with bounded aspect ratio, our triangu- lation has size n=O(m). Such a triangulation is desired as an initial mesh for a finite element mesh refinement algorithm. Previous three dimensional triangulation schemes either worked only on a restricted class of input, or did not guarantee well shaped tetra- hedra, or were not able to bound the output size. We build on some of the ideas presented in previous work by Bern, Eppstein, and Gilbert, who have shown how to triangulate a two dimensional polyhedral region with holes, with similar quality and optimality bounds.

url: http://hdl.handle.net/1813/5480
date: 2007-04-03
creator: Vavasis, Stephen A.
viewed: 28
title: Stable Numerical Algorithms for Equilibrium
abstract: An equilibrium system (also known as a KKT system, a saddle- point system, or a sparse tableau) is a square linear system with a certain structure. G. Strang has observed that equilibrium systems arise in optimization, finite elements, structural analysis, and electrical networks. Recently, G.W. Stewart established a norm bound for a type of equilibrium system in the case that the "stiff- ness" portion of the system is very ill-conditioned. In this paper, we investigate the algorithmic implications of Stewart's result. We show that all standard textbook algorithms for equilibrium systems are unstable. Then we show that a certain hybrid method has the right stability property.

url: http://hdl.handle.net/1813/5481
date: 2007-04-03
creator: Chinchalkar, Shirish
viewed: 35
title: IPSC-MATLAB Reference Manual
abstract: IPSC-MATLAB is a programming environment for running MATLAB programs on the Intel iPSC/860 hypercube. The system is designed such that the user can execute computationally intensive poitions of MATLAB programs on the hypercube, whereas all other code is executed on a Sun-4 workstation (SPARCstation). The workstation acts as a remote host for the hypercube. MATLAB variables can migrate from the front-end (workstation) to the back-end (hypercube) and vice versa. IPSC-MATLAB combines the flexibility of MATLAB programming with the speed of the Intel hypercube.
Writing parallel programs in Fortran or C for the hypercube is a tedious task. Testing and debugging programs is difficult and time consuming. On the other hand, MATLAB, which runs on workstations, provides a convenient means of writing programs. However, because of the limited speed and memory of workstations, large problems cannot be solved. The hypercube is fast and has more memory. IPSC-MATLAB attempts to use the workstation as well as the hypercube to provide the user with a fast, flexible

environment for programming.

url: http://hdl.handle.net/1813/5482
date: 2007-04-03
creator: Crovella, Mark;Bergmark, Donna
viewed: 27
title: Case Study in KSR Programming: Finding Outliers by the Minimum Volume Ellipsoid Method
abstract: This case study describes the enablement of a parallel application on Cornell Theory Center's KSR1, a highly parallel machine from Kendall Square Research. The application is from statistics, and exposes some interesting facets of the KSR as well as some parallel programming tools and techniques. Statistics are a novel application area for supercomputing, at least at the Cornell Theory Center. First we describe the application itself, then the approaches to parallelizing it, and finally present some results.

url: http://hdl.handle.net/1813/5483
date: 2007-04-03
creator: Coleman, Thomas F.
viewed: 188
title: Advanced Computing Research Institute Semi-annual Research Activity Report, April 1992 - September 1992
abstract: The Advanced Computing Research Institute (ACRI) is a unit of the Cornell Theory Center and is affiliated with the Cornell Computer Science Department. The ACRI is concerned with research in scientific computation and its application to engineering and scientific problems. Of particular importance is the use of and potential of advanced computer architectures and environments. Research areas include parallelizing compilers for scientific computation and the design of algorithms for numerical linear algebra, optimization, and partial differential equations. Currently, ACRI researchers are collaborating on several large-scale applications in the computational sciences, including: protein-folding and related molecular chemistry problems, structural optimization and biomechanics, particle methods for turbulent combustion, discrete-control problems, and the application of boundary element methods. The parallel computers available to the ACRI for research include the Theory Center machines - a 64-node KSR computer, an IBM ES/9000, a network of IBM RS/6000s, as well as Computer Science resources: an 8K CM-200, a 32-node Intel iPSC/860, and a 64-node BBN Butterfly. This report consists of two parts. The first part contains a short summary of the progress made in the last six months on each of the four main projects: parallelizing compilers, computational linear algebra, computational optimization, and numerical methods for partial differential equations. Included also are a list of ACRI researchers and their research interests, a list of technical reports produced in the last six months, and a list of ACRI seminars. In the second part we highlight one of the projects, the parallelizing compiler work, where we give a more detailed introduction into this area and sketch our novel approach.

url: http://hdl.handle.net/1813/5484
date: 2007-04-03
creator: Pitsianis, Nikos;Loan, Charles Van
viewed: 24
title: Approximation with Kronecker Products
abstract: Let A be an m-by-n matrix with m=m1m2 and n=n1n2. We consider the problem of finding (mathematical formula omitted) so that (mathematical formula omitted) is minimized. This problem can be solved by computing the largest singular value and associated singular vectors of a permuted version of A. If A is symmetric, definite, non-negative, or banded, then the minimizing B and C are similarly structured. The idea of using Kronecker product preconditioners is briefly discussed.

url: http://hdl.handle.net/1813/5485
date: 2007-04-03
creator: Li, Yuying;Coleman, Thomas F.
viewed: 24
title: On the Convergence of Reflective Newton Methods for Large-scale Nonlinear Minimization Subject to Bounds
abstract: We consider a new algorithm, a reflective Newton method, for the problem of minimizing a smooth nonlinear function of many variables, subject to upper and/or lower bounds on some of the variables. This approach generates strictly feasible iterates by following piecewise linear paths ("reflection" paths) to generate improved iterates. The reflective Newton approach does not require identification as an "activity set." In this report we establish that the reflective Newton approach is globally and quadratically convergent. Moreover, we develop a specific example of this general reflective path approach suitable for large-scale and sparse problems.

url: http://hdl.handle.net/1813/5486
date: 2007-04-03
creator: Li, Yuying;Coleman, Thomas F.
viewed: 28
title: A Reflective Newton Method for Minimizing a Quadratic Function Subject to Bounds on Some of the Variables
abstract: We propose a new algorithm, a reflective Newton method, for the minimization of a quadratic function of many variables subject to upper and lower bounds on some of the variables. This method applies to a general (indefinite) quadratic function, for which a local minimizer subject to bounds is required, and is particularly suitable for the large-scale problem. Our new method exhibits strong convergence properties, global and quadratic convergence, and appears to have significant practical potential. Strictly feasible points are generated. Experimental results on moderately large and sparse problems support the claim of practicality for large-scale problems.

url: http://hdl.handle.net/1813/5487
date: 2007-04-03
creator: Wu, Zhijun;Shalloway, David;Coleman, Thomas F.
viewed: 86
title: Isotropic Effective Energy Simulated Annealing Searches for Low Energy Molecular Cluster States
abstract: The search for low energy states of molecular clusters is associated with the study of molecular conformation and especially protein folding. This paper describes a new global minimization algorithm which is effective and efficient for finding low energy states and hence stable structures of molecular clusters. The algorithm combines simulated annealing with a class of effective energy functions which are transformed from the original energy function based on the theory of renormalization groups. The algorithm converges to low energy states asymptotically and is more efficient than a general simulated annealing method.

url: http://hdl.handle.net/1813/5488
date: 2007-04-03
creator: Driscoll, Tobin A.;Reddy, Satish C.;Trefethen, Anne E.;Trefethen, Lloyd N.
viewed: 35
title: A New Direction in Hydrodynamic Stability: Beyond Eigenvalues
abstract: Fluid flows that are smooth at low speeds become unstable and then turbulent at higher speeds. This phenomenon has traditionally been investigated by linearizing the equations of flow and looking for

unstable eigenvalues of the linearized problem, but the results agree poorly in many cases with experiments. Nevertheless, it has become clear in recent years that linear effects play a central role in hydrodynamic instability. A reconciliation of these findings with the traditional analysis can be obtained by considering the "pseudospectra" of the linearized problem, which reveal that small perturbations to the smooth flow in the form of streamwise vortices may be amplified by factors on the order of 10**5 by a linear mechanism, even though all the eigenmodes are stable. The same principles apply also to other problems in the mathematical sciences that involve non-orthogonal eigenfunctions.

url: http://hdl.handle.net/1813/5489
date: 2007-04-03
creator: Vavasis, Stephen A.
viewed: 26
title: Complexity Issues in Global Optimization: A Survey
abstract: Complexity theory refers to the asymptotic analysis of problems and algorithms. How efficient is an algorithm for a particular optimization problem, as the number of variables gets large? Are there problems for which no efficient algorithm exists? These are the questions that complexity theory attempts to address. The theory originated in work by Hartmanis and Stearns (1965). By now there is much known about complexity issues in nonlinear optimization. In particular, our recent book Vavasis (1991) contains all the details on many of the results surveyed in this chapter. We begin the discussion with a look at convex problems in the next section. These problems generally have efficient algorithms. In Section 3 we study the complexity of two nonconvex problems that also have efficient algorithms because of special structure. In Section 4, we look into hardness results (proofs of the nonexistence of efficient algorithms) for general nonconvex problems. Finally, in Section 5 we look at recent developments in "approximation" algorithms. We follow the notation in this chapter that lower-case boldface letters are vectors, lower-case italic letters are scalars, and upper-case italic letters are sets or matrices. Superscript T indicates matrix transpose, and aTx indicates inner product. The operators 'less than' and 'greater than' are applied component- wise to vectors; we say x is greater than y if each entry of x is greater than or equal to the corresponding entry of y.

url: http://hdl.handle.net/1813/5490
date: 2007-04-03
creator: Rothman, Ernest E.;Parter, Seymour V.
viewed: 21
title: Preconditioning Legendre Spectral Collocation Approximations to Elliptic Problems
abstract: This work deals with the H(exp 1) condition numbers and the distribution of the Beta~(sub N,M)-singular values of the preconditioned operators{Beta~(exp -1) (sub N,M) W(sub N,M) A^(sub N,M)}. A^(sub N,M) is the matrix representation of the Legendre Spectral Collocation discretization of the elliptic operator "A" defined by A(sub u) := -delta(u) + alpha(sub 1)u(sub x) + alpha(sub 2)u(sub y) + alpha(sub 0)u in omega (the unit square) with boundary conditions: u = 0 on Gamma(sub 0), delta(sub u) divided by delta(mu sub A) = alpha(u) on Gamma(sub 1). Beta~(sub N,M) is the stiffness matrix associated with the finite element discretization of the positive definite elliptic operator "B" defined by B(v) := -Delta(v) + b(sub 0i)v in omega with boundary conditions v = 0 on Gamma(sub 0), delta(v) divided by delta(mu sub B) = B(v) on Gamma(sub 1). The finite element space is either the space of continuous functions which are bilinear on the rectangles determined by the Legendre-Gauss-Lobatto (LGL) points or the space of continuous functions which are linear on a triangulation of omega determined by the LGL points. W(sub N,M) is the matrix of quadrature weights. When A = B we obtain results on the eigenvalues of Beta~(exp -1)(sub N,M) W(sub N,M) B^(sub N,M). We show that there is an integer N(sub 0) and constants alpha,beta with 0 less than alpha less than beta, such that: if min(N,M) gretaer than or equal to N(sub 0),i then all the Beta~(sub N,M)-singular values of Beta~(exp -1)(sub N,M) W(sub N,M) A^(sub N,M) lie in the interval [alpha,beta].Moreover, there is a smaller

interval, [alpha(sub 0), beta(sub 0)], independent of the operator "A", such that: if min(N,M) greatre than or equal to N(sub 0), then all but a fixed finite number of the Beta~(sub N,M)-singular value lie in [alpha(sub 0),beta(sub 0)]. These results are related to results of Manteuffel and Parter [MP]Parter and Wong [PW] and Wong [W1], [W2] for finite element discretizations.

url: http://hdl.handle.net/1813/5491
date: 2007-04-03
creator: Bergmark, Donna
viewed: 49
title: Update on Tools for Parallel Programming at the CNSF
abstract: Not many CNSF users undertake the arduous task of parallelizing their programs. Of course, training, education, and available hardware will have a lot to do with changing this situation, but we feel that tools also have an important role to play. In 1989, we wrote: "At the present time, the general lack of parallel programming tools is an inhibitor to parallel programming at the Cornell National Supercomputer Facility (CNSF). The Technology Integration Group (TIG)is evaluating a number of tools designed to make parallel programming easier, including tools for source analysis, program development and execution analysis. The more effective tools will be 'mainstreamed', i.e. turned over to users, integrated into workshops and consulted on by staff." This provides an update to that status report. The major section ofthis paper describes Tools for Parallel Programming, divided into 12 categories. Each category is summarized in pretty much the same way as in 1989, and then new status and prospects are discussed. The paper concludes with some comments on hybrid program development systems andthe workstation environment. The appendices contain a table of all the tools and list acronyms, names, and institutions.

url: http://hdl.handle.net/1813/5492
date: 2007-04-03
creator: Liao, Ai-Ping
viewed: 29
title: A Modified BFGS Method
abstract: In this paper, we study the global convergence property of the modified BFGS update method proposed by Liao. We show that under certain circumstances this modified BFGS method corrects the eigenvalues better than BFGS does. Our numerical results support this claim and also indicate that the modified BFGS method may be competitive with the BFGS method in general.

url: http://hdl.handle.net/1813/5493
date: 2007-04-03
creator: Schwarz, Paul
viewed: 31
title: A Suite of Software Tools for Managing a Large Parallel Programming Project
abstract: A suite of software tools is presented for managing a large parallel programming project. The tools were selected recognizing that parallel program development is an iterative process and subject to mistakes and that software tools can be useful for maintaining source code flexibility and portability, tracking revisions, and analyzing variable usage and loop structure within a program. The tools discussed are: make, cpp, RCS, and FORGE 90. The concept of a toy program is introduced as a means for experimenting with a simpler version of an application program. Finally, the use of these tools and techniques is demonstrated as part of an optimization and parallelization effort for a scientific application program called ZELIG.

url: http://hdl.handle.net/1813/5494
date: 2007-04-03

creator: Wu, Zhijun;Shalloway, David;Coleman, Thomas F.
viewed: 96
title: A Parallel Build-up Algorithm for Global Energy Minimizations of Molecular Clusters Using Effective Energy Simulated Annealing
abstract: This work studies the build-up method for the global minimizationproblem for molecular conformation, especially protein folding. The problem is hard to solve for large molecules using general minimization approaches because of the enormous amount of required computation. We therefore propose a build-up process to systematically "construct" the optimal molecular structures. A prototype algorithm is designed using the anisotropic effective energy simulated annealing method at each build-up stage. The algorithm has been implemented on the InteliPSC/860 parallel computer, and tested with the Lennard-Jones microcluster conformation problem. The experiments showed that the algorithm was effective for relatively large test problems, and also very suitable for massively parallel computation. In particular, for the 72-atom Lennard-Jones microcluster, the algorithm found a structure whose energy is lower than any others found in previous studies.

url: http://hdl.handle.net/1813/5495
date: 2007-04-03
creator: Sudan, R. N.;Lantz, Steven R.
viewed: 89
title: Magnetoconvection Dynamics in a Stratified Layer. I. 2D Simulations and Visualization (Revised 10/93)
abstract: To gain insight into the problem of fluid convection below the solar photosphere, time-dependent magnetohydrodynamic convection is studied by numerical simulation of the magneto-anelastic equations, a model appropriate for low Mach numbers. Numerical solutions to the equations are generated on a two-dimensional Cartesian mesh by a finite-difference, predictor-corrector algorithm. The thermodynamic properties of the fluid are held constant at the rigid, stress-free top and bottom boundaries of the computational box, while lateral boundaries are treated as periodic. In most runs the background polytropic fluid configuration is held fixed at Rayleigh number R=5.44 times the critical value, Prandtl number P=1.8, and aspect ratio a=1, while the magnetic parameters are allowed to vary. The resulting dynamical behavior is shown to be strongly influenced by a horizontal magnetic field which is imposed at the bottom boundary. As the field strength increases from zero, an initially unsteady "single-roll" state, featuring complex time dependence, is replaced by a steady "traveling-wave" tilted state; then, an oscillatory or "sloshing" state; then, a steady two-roll state with no tilting; and finally, a stationary state. Because the magnetic field is matched onto a potential field at the top boundary, it can penetrate into the nonconducting region above. By varying the magnetic diffusivity, the concentrations of weak magnetic fields at the top of these flows can be shown to be explainable in terms of an advection-diffusion balance.

url: http://hdl.handle.net/1813/5496
date: 2007-04-03
creator: Presberg, David;Bergmark, Donna
viewed: 24
title: Initial Experiments in the Integration of ParaScope and Lambda
abstract: This document describes the incorporation of the Lambda loop transformation Toolkit into the ParaScope parallel programming environment. The goal was to extend the functionality of ParaScope, to determine the usefulness of the Lambda Toolkit in environments other than that of its original development, and to evaluate the quality of code generation before and after incorporation of Lambda-based analysis and transformation. We learned that ParaScope could be extended, but only by very brave people; we learned that the Lambda Toolkit could be used by other programming systems to good effect; we also compared two

different proposed interfaces for the Lambda Toolkit.

url: http://hdl.handle.net/1813/5497
date: 2007-04-03
creator: Kalos, Malvin H.
viewed: 41
title: Perturbative Forward Walking in the Context of the Mirror Potential Approach to the Fermion Problem
abstract: We introduce and discuss a perturbative variant of "forward walking" in Quantum Monte Carlo and develop the theory as applied to many-fermion problems.

url: http://hdl.handle.net/1813/5498
date: 2007-04-03
creator: Wu, Jianguo
viewed: 32
title: Modeling the Landscape as a Dynamic Mosaic of Patches: Some Computational Aspects
abstract: The only thing that is certain about Nature is its patchiness. Patchiness is ubiquitous, occurring across systems, organizational levels, and spatio-temporal scales. Traditional modeling approaches in ecology often fail to recognize spatial patchiness because they usually assume spatial homogeneity. A landscape may be viewed as a hierarchical mosaic system of patches that are different in their age, size, shape, content, and other aspects. The spatial change of the patch mosaic results in the landscape pattern, whereas the phase change of individual patches at the local scale and temporal change in patch mosaics at larger scales gives rise to the landscape dynamics. Following such a patch dynamics conceptualization, a spatially explicit patch dynamic modeling approach has been developed based on a serpentine annual grassland. The model has two basic submodels: a spatially-explicit, age/size- structured patch demographic model and a multi-specific plant population dynamic model of a non-equilibrium island biogeographic type. In this paper, the basic structure and some computational aspects of the model are discussed.

url: http://hdl.handle.net/1813/5499
date: 2007-04-03
creator: Wu, Zhijun
viewed: 48
title: The Effective Energy Transformation Scheme as a General Continuation Approach to Global Optimization with Application to Molecular Conformation
abstract: This paper discusses a generalization of the special function transformation scheme for global minimization for molecular conformation used in [3,4,14,15]. Theories for the method as a general continuation approach are established. We show that the method can transform an onlinear objective function into a class of gradually deformed, but "smoother", functions. An optimization procedure can then be applied to the new functions successively, to trace the solution back to theoriginal function. Two types of transformation are defined: the isotropic and the anisotropic. We show that both, although not applicable numerically to arbitrary functions because of the required high dimensional integration, can be applied to a large class of nonlinear partially separable functions, and, in particular, the energy functions for molecular conformation. Methods to compute exactly the required transformations are given. Advantages of this transformation approach over the conventional homotopy methods also are discussed.

url: http://hdl.handle.net/1813/5500
date: 2007-04-03
creator: Liao, Aiping;Coleman, Thomas F.

viewed: 19
title: An Efficient Trust Region Method for Unconstrained Discrete-Time Optimal Control Problems
abstract: Discrete-time optimal control (DTOC) problems are large-scaleoptimization problems with a dynamic structure. In previous work this structure has been exploited to provide very fast and efficient local procedures. Two examples are the differential dynamic programming algorithm (DDP) and the stagewise Newton procedure - both require only O(N) operations per iteration, where N is the number of time steps. Both exhibit a quadratic convergence rate. However, most algorithms in this category do not have a satisfactory global convergence strategy. The most popular global strategy is shifting: this sometimes works poorly due to the lack of automatic adjustment to the shifting element. In this paper we propose a method that incorporates the trust region idea with the local stagewise Newton's method. This method possesses advantages of both the trust region idea and the stagewise Newton's method, i.e., our proposed method has strong global and local convergence properties yet remains economical. Preliminary numerical results are presented to illustrate the behavior of the proposed algorithm. We also collect in the Appendix some DTOC problems that have appeared in the literature.

url: http://hdl.handle.net/1813/5501
date: 2007-04-03
creator: Todd, Michael J.;Liao, Aiping
viewed: 20
title: Solving LP Problems via Weighted Centers
abstract: The feasibility problem for a system of linear inequalities can be converted into an unconstrained optimization problem using ideas from the ellipsoid method, which can be viewed as a very simple minimization technique for the resulting nonlinear function. Using more sophisticated algorithms, we develop and investigate more efficient methods, which lead to two kinds of weighted centers for the feasible set. With these centers, we develop new algorithms for solving linear programming problems.

url: http://hdl.handle.net/1813/5502
date: 2007-04-03
creator: Coleman, Thomas F.;Chinchalkar, Shirish
viewed: 44
title: Parallel Structural Optimization Applied to Bone Remodeling on Distributed Memory Machines
abstract: This paper demonstrates parallel structural optimization methods on distributed memory MIMD machines. We have restricted ourselves to the simpler case of minimizing a multivariate non-linear function subject to bounds on the independent variables, when the objective function is expensive to evaluate as compared to the linear algebra portion of the optimization. This is the case in structural applications, when a large three-dimensional finite element mesh is used to model the structure. This paper demonstrates how parallelism can be exploited during the function and gradient computation as well as the optimization iterations. For the finite element analysis, a 'torus-wrapped' skyline solver is used. The reflective Newton method which attempts to reduce the number of iterations at the expense of more linear algebra per iteration is compared with the more conventional active set method. All code is developed for an Intel iPSC/860, but it can be ported to other distributed memory machines. The methods developed are applied to problems in bone remodeling. In the area of biomechanics, optimization models can be used to predict changes in the distribution of material properties in bone due to the presence of an artificial implant. The model we have used minimizes a linear combination of the mass and strain energy in the entire domain subject to bounds on the densities in each finite element. Early results show that the early reflective Newton method can outperform active set methods when a significant number of variables are not active at the minimum.

url: http://hdl.handle.net/1813/5503

date: 2007-04-03
creator: Kalos, M.H.;Zhang, Shiwei
viewed: 45
title: Exact Monte Carlo Calculations for Fermions on a Parallel Machine
abstract: We describe how a recently published algorithm--which addresses the sign problem with the context of the Green's function Monte Carlo method--can be implemented in a parallel distributed environment. The method of parallelization maintains large granularity and therefore low overhead. Despite the stochastic nature of the algorithm, good load-balancing can be accomplished and reproducibility is ensured.

url: http://hdl.handle.net/1813/5504
date: 2007-04-03
creator: Ye, Yinyu;Vavasis, Stephen A.
viewed: 83
title: An Accelerated Interior Point Method Whose Running Time Depends Only on A
abstract: We propose a "layered-step" interior point (LIP) algorithm for linear programming. This algorithm follows the central path, either with shortsteps or with a new type of step called a "layered least squares" (LLS) step. The algorithm returns the exact global minimum after a finite numberof steps - in particular, after O (mathematical symbol omitted) iterations, where c(A) is a function of the coefficient matrix. The LLS steps can be thought of as accelerating a path-following interior point method whenever near-degeneracies occur. One consequence of the new method is a new characterization of the central path: we show that it composed of at most n-squared alternating straight and curved segments. If the LIP algorithm is applied to integer data, we get as another corollary a new proof of a well-known theorom by Tardos that linear programming can be solved in strongly polynomial time provided that A contains small-integerentries.

url: http://hdl.handle.net/1813/5505
date: 2007-04-03
creator: Trefethen, Lloyd N.;Driscoll, Tobin A.
viewed: 41
title: Pseudospectra of the Wave Operator with an Absorbing Boundary
abstract: For systems which can be described by u(sub t) = Au with a highly non-normal matrix or operator A, the spectrum of A may describe the behavior of the system poorly. One such operator arises from the one-dimensional wave equation on a finite interval with a homogeneous Dirichlet condition at one end and a linear damping condition at the other. In this paper the pseudospectra (norm of the resolvent) of this operator are computed in an energy norm, using analytical techniques and computations with discrete approximations. When the damping condition is perfectly absorbing, the pseudospectra are half-planes parallel to the imaginary axis, and in other cases they are periodic in the imaginary direction and approximate strips of finite thickness. The non-normality of the operator is related to the behavior of the system and the limitations of spectral analysis.

url: http://hdl.handle.net/1813/5506
date: 2007-04-03
creator: Liao, Aiping
viewed: 22
title: Some Efficient Algorithms for Unconstrained Discrete-time Optimal Control Problems
abstract: The differential dynamic programming algorithm (DDP)and the stagewise Newton procedure are two typical examples of efficient local procedures for discrete-timeoptimal control (DTOC) problems. It is desirable to generalize these local procedures to globally convergent methods. One successful globalization was recently proposed by Coleman and Liao [3] which combines the trust region idea with Pantoja's stagewise

Newton procedure. In this paper, we propose several algorithms for DTOC problems which combine a modified "dogleg" algorithm with DDP or Pantoja's Newton procedure. These algorithms possess advantages of both the dogleg algorithm and the DDP or the stagewise procedure, i.e.,they have strong global and local convergence properties yet remain economical. Numerical results are presentedto compare these algorithms and the Coleman-Liao algorithm.

url: http://hdl.handle.net/1813/5507
date: 2007-04-03
creator: Chinchalkar, Shirish
viewed: 23
title: The Application of Automatic Differentiation to Problems in Engineering Analysis
abstract: Automatic differentiation is a technique of computing the derivative of a function or a subroutine written in a higher level language such as FORTRAN or C. Significant progress has been made in this field in the last few years. Here, we give a short exposition to automatic differentiation and demonstrate its applicability to several fields of engineering analysis.

url: http://hdl.handle.net/1813/5508
date: 2007-04-04
creator: Pavlik, Clarie E.;Armstrong, Marc P.;Marciano, Richard J.
viewed: 31
title: Experiments in the Concurrent Computation of Spatial Association on the KSR1
abstract: Spatial association measures, when computed for large data sets, have significant computational requirements. Parallel processing is one way to address these requirements. The design of parallel programs, however, requires careful planning since many factors under programmer control affect the efficiency of the resulting computations. In this paper, two strategies of parallel processing are described using as an illustration a measure of spatial association, G(d). An evaluation is made of the efficiency of the parallel implementations by varying the problem size and the number of processors used in parallel. The results obtained indicate that parallel processing can currently enable analysts to work in near-real-time with problems that range in the tens of thousands of observations; such problems require less than two minutes of execution time on the KSR1. Also super linear speed ups of almost 1500 are obtained for the computation phase of the problem.

url: http://hdl.handle.net/1813/5509
date: 2007-04-04
creator: Torne, Jorge F.
viewed: 26
title: How Parallel Programming Tools are Used
abstract: Parallel programming is a hot topic among scientists and engineers. The number of parallel machines available to them is constantly increasing. These powerful machines provide a new research platform for engineers and scientists. In order to exploit all their power, new programming techniques are needed. Fortunately, several parallel programming tools have appeared to make this complex programming endeavor much easier. We analyze paths to parallel programming from traditional scientific programming through parallelization of a molecular simulation application. We hope this paper encourages scientists and engineers at Cornell's Theory Center to take the step towards parallelization.

url: http://hdl.handle.net/1813/5510
date: 2007-04-04
creator: Colombo, L.;Goedecker, S.
viewed: 20

title: An Efficient Linear Scaling Algorithm for Tight Bonding Molecular Dynamics
abstract: A novel formulation for tight binding total energy calculations and tight binding molecular dynamics, which scales linearily with the size of the system, is presented. The linear complexity allows us to treat systems of very large size and the algorithm is already faster than the best implementation of classical diagonalization for systems of 64 atoms. In addition, it is naturally parallelizable and it permits us therefore to perform molecular dynamics simulations of systems of unprecedented size. Finite electronic temperatures can also be taken into account. We illustrate this method by investigating structural and dynamical properties of solid and liquid carbon at different densities.

url: http://hdl.handle.net/1813/5511
date: 2007-04-04
creator: Barkema, G. T.;MacFarland, T.
viewed: 45
title: Parallel Simulation of the Ising Model
abstract: (The following contains mathematical formula and symbols that may become distorted in ASCII text.) New methods for parallelizing Ising model simulations are presented. A parallel single-spin Metropolis algorithm has been implemented with a speedup of 27 on 50 processors of the KSR-1 parallel computer. Our parallel Swendsen-Wang algorithm obtains a speedup of 3.2 on 9 processors of the same computer. Both of these simulations were carried out on 200x200 lattices. The parallel Local Cluster algorithm has been implemented with an almost linear speedup. We also discuss ongoing research using the parallel Local Cluster algorithm.

url: http://hdl.handle.net/1813/5512
date: 2007-04-04
creator: Loan, Charles Van;Pitsianis, Nikos
viewed: 89
title: Vectorization of Multiple Small Matrix Problems
abstract: Multiple independent matrix problems of very small size appear in a variety of different fields. In this work, we study the implementation of elementary linear algebra subroutines so as to best use vectorizing compilers and vector hardware for multiple small problem instances. We cheek the performance improvement over the single-instance optimized codes on different vector supercomputers. We also describe how to automate the transformation of a single-instance linear algebra solver into a multiple instance solver

url: http://hdl.handle.net/1813/5513
date: 2007-04-04
creator: Vavasis, Stephen A.;Bond, David M.
viewed: 50
title: Fast Wavelet Transforms for Matrices Arising from Boundary Element Methods
abstract: (The following contains mathematical formulae and symbols that may become distorted in ASCII text.) For many boundary element methods applied to Laplace's equation in two dimensions, the resulting integral equation has both an integral with a logarithmic kernel and an integral with a discontinuous kernel. If standard collocation methods are used to discretize the integral equation we are left with two dense matrices. We consider expressing these matrices in terms of wavelet bases with compact support via a fast wavelet transform as in Beylkin, Coifman, and Rokhlin. Upper bounds on the size of the wavelet transform elements are obtained. These bounds are then used to show that if the original matrices are of the size N x N, the resulting transformed matrices are sparse, having only O(N log N) significant entries. Some numerical results will also be presented. Unlike Beylkin, Coifman and Rokhlin who use the fast wavelet transform as a numerical approximation to a continuous operator already expressed in a full wavelet basis of L2(IR), we think

of the fast wavelet transform as a change of basis matrix for a finite dimension, and apply it to a discretized function or matrix. As a result, we can use this fast wavelet transform as a "black box" transformation in existing boundary element codes.

url: http://hdl.handle.net/1813/5514
date: 2007-04-04
creator: Wu, Zhijun;Coleman, Thomas F.
viewed: 50
title: Parallel Continuation-Based Global Optimization for Molecular Conformation and Protein Folding
abstract: This paper presents our recent work on developing parallel algorithms and software for solving the global minimization problem for molecular conformation, especially protein folding. Global minimization problems are difficult to solve when the objective functions have many local minimizers, such as the energy functionsfor protein folding. In our approach, to avoid directly minimizing a "difficult" function, a special integral transformation is introduced to transform the function into a class of gradually deformed, but "smoother" or "easier" functions. An optimization procedure is then applied to the new functions successively, to trace their solutions back to the original function. The method can be applied to a large class of nonlinear partially separable functions including energy functions for molecular conformation and protein folding. Mathematical theory for the method, as a special continuation approach to global optimization, is established. Algorithms with different solutions tracing strategies are developed. Different levels of parallelism are exploited for the implementation of the algorithms on massively parallel architectures.

url: http://hdl.handle.net/1813/5515
date: 2007-04-04
creator: Choudhary, Alok N.;Tumuluri, Chaitanya
viewed: 28
title: Exploitation of Latency Hiding on the KSR1 - Case Study: The Barnes Hut Algorithm
abstract: This study is aimed at examining the performance of dynamic, irregular and loosely synchronous class of applications on the KSR1 distributed shared memory COMA system. The Barnes-Hut tree based algorithm for simulating galactic evolution [1], was chosen as a representative of this class of applications. The performance measures include the overall time-stepping loop execution time, the efficacy of the scaling rules (EES and RCTS) proposed in [2] as well as the computational load balance achieved by the CostZone data partitioning scheme [1] under these scaling rules. We define notions of geographical locality, transfer locality flux and partition locality flux to explain the sources of remote memory accesses in the application. The contributions of our study include two runtime latency hiding techniques PST and PREFH proposed for the effective and automatic utilization of the poststore and prefetch instructions to hide the latencies of remote memory accesses. The architectural support assumed, compiler analysis required and code instrumentation schemes for the implementation of the PST and PREFH techniques are presented in this paper. We also examine the scalability of our schemes under the afore mentioned scaling rules. These schemes were tuned for a 32k particle simulation size on a 112 processor configuration, producing a reduction of 30% in the overall loop execution time of the simulation. Further, a combination of the schemes, PREPST, produced an overall reduction of 50% in the loop execution time of simulation. These improvements were traced to a reduction in the problems of locality fluxes which arose as the application was scaled under the EES and RCTS rules/ Interestingly, the problems of locality fluxes manifested themselves as load imbalance conditions in the application. We found that our schemes did not scale too well under EES scaling, but produced appreciable reductions in execution timings under RCTS scaling. It needs to be emphasized that our work involved the study of a whole application and on a 128 processor KSR1 machine, as opposed to most other work reported to date which examine performances of computational kernels on 32 or 64 processor configurations only.

url: http://hdl.handle.net/1813/5516
date: 2007-04-04
creator: Breeman, M.;Barkema, G.T.;Biham, Ofer
viewed: 58
title: Rate Equations for the Growth of Cu Islands on Cu(001)
abstract: The kinetics of island nucleation and growth during deposition of Cu atoms on Cu(001) is studied using rate equations. The equations are derived using microscopic calculations of the energy landscape on the surface, previously used in Monte Carl (MC) simulations. This allows a quantitative comparison between the rate equations and the MC results. Our rate equations take into account atoms that fall on the bare substrate as well as on top of existing islands, the mobility of single atoms and small islands, the coalescence of adjacent islands and the possible separation of atoms from island edges. The rate equations are used to explore the island size distribution and island density as a function of the coverage and deposition rates. These rate equations provide a useful and flexible tool that allows to easily modify particular microscopic properties of the system such as the mobility of small islands or the rate of coalescence and examine their effect while leaving all other features intact.

url: http://hdl.handle.net/1813/5517
date: 2007-04-04
creator: Trefethen, Lloyd N.;Toh, Kim-Chuan
viewed: 88
title: Calculation of Pseudospectra by the Arnoldi Iteration
abstract: The Arnoldi iteration, usually viewed as a method for calculating eigenvalues, can also be used to estimate pseudospectra. This possibility may be of practical importance, for in applications involving highly non-normal matrices or operators, such as hydrodynamic stability, pseudospectra may be physically more significant than spectra.

url: http://hdl.handle.net/1813/5518
date: 2007-04-04
creator: Presberg, David;Bergmark, Donna
viewed: 51
title: The Integration of ParaScope and Lambda
abstract: We have been experimenting with combining three powerful language tools for large, scientific, parallel Fortran codes. One tool is ParaScope, a programming envirnment; another tool is the Lambda Toolkit, a collection of routines for performing loop transformations using invertible matrices; the third is FORGE 90, a collection of tools for parallelizing Fortran programs. Initial sucess with incorporating the Lambda Toolkit into ParaScope led us to undertake the work leading to a new program preparation strategy, in which one first uses a modified ParaScope to perform DataAccess Normalization, then uses FORGE 90 to produce a parallel program for a distributed memory platform. We describe the details of this strategy and present some performance results for the IBM SP1. We conclude that the combination of ParaScope and the Lambda Toolkit (called “ped-Lambda”) is a useful transformation tool.

url: http://hdl.handle.net/1813/5519
date: 2007-04-04
creator: Pottle, Marcia;Bergmark, Donna
viewed: 29
title: Optimization and Parallelization of a Commodity Trade Model for the SP1, Using Parallel Programming Tools
abstract: We compare two different approaches to parallelization of Fortran programs. The first approach

is to optimize the serial code so that it runs as fast as possible on a single processor, and then optimize the parallel version. In this paper a variety of parallel programming tools is used to obtain an optimal, parallel version of an economic policy modelling application for the IBM SP1. We apply a new technique called Data Access Normalization; we use an extended ParaScope as our parallel programming environment; we use FORGE 90 as our parallelizer; and we use KAP as our optimizer. We make a number of observations about the effectiveness of these tools. Both strategies obtain a working, parallel program, but use different tools to get there. On this occasion, both KAP and Data Access Normalization lead to the same critical transformation of inverting four of the twelve loop nests in the original program. The next most important optimization is parallel I/O, one of the few transformations that had to be done by hand. Speedups are obtained on the SP1 (using MPLp communication over the High Speed Switch).

url: http://hdl.handle.net/1813/5520
date: 2007-04-04
creator: Colombo, L.;Goedecker, S.
viewed: 25
title: Tight Binding Molecular Dynamics on Parallel Computers
abstract: With a new and intrinsically parallel algorithm for Tight Binding Molecular Dynamics we obtain a performance of 3.4 Gigaflops per million dollar on a cluster of 8 Hewlett Packard workstations in a simulation of 216 Silicon atoms. One time step with this new algorithm takes as much time for the 216 atom system as one time step with a conventional algorithm on a NEC-SX3 supercomputer. In addition, the linear scaling of new algorithm allows us to calculate systems of unprecendented size which are not any more accessible by the combination of standard algorithms and vector supercomputers.

url: http://hdl.handle.net/1813/5521
date: 2007-04-04
creator: Sun, Chunguang
viewed: 53
title: Parallel Multifrontal Solution of Sparse Linear Least Squares Problems on Distributed-memory Multiprocessors
abstract: We describe the issues involved in the design and implementation of efficient parallel algorithms for solving sparse linear least squares problems on distributed-memory multiprocessors. We consider both the QR factorization method due to Golub and the method of corrected semi-normal equations due to Bjorck. The major tasks involved are sparse QR factorization, sparse triangular solution and sparse matrix-vector multiplication. The sparse QR factorization is accomplished by a parallel multifrontal scheme recently introduced. New parallel algorithms for solving the related sparse triangular systems and for performing sparse matrix-vector multiplications are proposed. The arithmetic and communication complexities of our algorithms on regular grid problems are presented. Experimental results on an Intel iPSC/860 machine are described.

url: http://hdl.handle.net/1813/5522
date: 2007-04-04
creator: Toll, Thomas F.
viewed: 20
title: Software Management Tools
abstract: This report comprises the final report for a Cornell Theory Center intership during the Spring 1994 semester. The goal of the internship was to organize a major software package for a research group in chemistry to be portable, flexible, and easy to maintain.

url: http://hdl.handle.net/1813/5523
date: 2007-04-04
creator: Umrigar, C. J.;Singh, D. J.;Khein, Alexander
viewed: 44
title: All-Electron Study of Gradient Corrections to the Local Density Functional in Metallic Systems
abstract: Using the all-electron Linearized Augmented Plane Wave (LAPW) method, we calculate the effect of including gradient corrections to the exchange correlation functional on the structural properties of the simple metal Al, transition metals Ta, W, Pt, and noble metals Cu, Ag, Au. For all the systems studied, the local density approximation (LDA) yields bond-lengths that are too short and bulk moduli that are too large. The generalized gradient functional introduced by Perdew and Wang (PW91) yields corrections that are in the right direction (larger bond-lengths and smaller bulk moduli), but it frequently over compensates, particularly for the heavier elements. The PW 91 functional predicts the lattice constant and bulk modulus of Al and Cu more accurately than the LDA but yields values thatare less accurate than the LDA for W, Pt, Au.

url: http://hdl.handle.net/1813/5524
date: 2007-04-04
creator: Pingali, Keshav;Li, Wei
viewed: 85
title: The Lambda Loop Transformation Toolkit (User's Reference Manual)
abstract: Loop transformations are becoming critical to exploiting parallelism and data locality in parallelizing and optimizing compilers. This document describes the Lambda loop transformation toolkit, an implementation of the non-singular matrix transformation theory, which can represent any linear one-to-one transformation. Lambda has a simple interface, and is independent of any compiler intermediate representation. It has been used in parallelizing compilers for multiprocessor machines as well as optimizing compilers for uniprocessor machines.

url: http://hdl.handle.net/1813/5525
date: 2007-04-04
creator: Liao, Aiping
viewed: 32
title: A New Parallel Algorithm for Global Optimization with Application to the Molecular Cluster Problem
abstract: In this paper we present a simple algorithm for global optimization. This algorithm combines random searches with efficient local minimization algorithms. The proposed algorithm begins with an initial "local minimizer." In each iteration, a search direction is generated randomly, along which some points are chosen as the initial points for the local optimization algorithm and several "local minimizers" are obtained. The next iteration is determined by comparing these localminimizers. We will discuss the expected number of iterations for finding a global minimizer with this algorithm. Several variants of the algorithm that take advantage of the partially separable structure are proposed for the Lennard-Jones cluster problem and tested on the IBM SP1 parallel computer. Our numerical results show that our algorithms are promising.

url: http://hdl.handle.net/1813/5526
date: 2007-04-04
creator: Liao, A.
viewed: 42
title: Pull the Weighted Center Towards the Solution of LP
abstract: In the paper of Liao and Todd [3] two weighted centers are introduced and used to design algorithms for solving systems of linear inequalities. The linear programming problems can be solved via the weighted

centers of a sequence of linear inequalities formed by letting the objective be an extra constraint and increasing the lower bound corresponding to the objective function as long as it is possible. In this paper we study the second kind of weighted center of [3] which ismore computationally oriented and show that, under a regularity assumption, the weighted center of the linear inequality with the objective as an extra constraint converges to the solution of the linear programming problem under consideration as the upper bound corresponding to the objective function is pulled towards the infinity. We propose a relaxed version of one of the algorithms of [3]. This modified version does not try to find an accurate center during each iteration; instead, an approximate center which is the k-th feasible iterate is determined in the k-th iteration. We show that this modified algorithm finds an e-solution in finity many iterations. Some limited numerical results are presented to compare our algorithm with the simplex method and indicate that our algorithm is promising.

url: http://hdl.handle.net/1813/5527
date: 2007-04-04
creator: Branch, Mary Ann
viewed: 36
title: Getting CUTE with Matlab
abstract: CUTE is a testing environment for nonlinear programming algorithms developed by Bongartz, Conn, Gould, and Toint ([CUTE: Constrained and unconstrained testing environment , Research Report RC 18860, IBM T.J. Watson Research Center, Yorktown Heights, USA, 1993]). The test problems in this environment are encoded in standard input format (SIF) and accessed by a set of FORTRAN subroutines. An extension to this environment was developed to allow fast access to the CUTE test problems from Matlab. This report describes this new Matlab interface to CUTE and how to use it.

url: http://hdl.handle.net/1813/5528
date: 2007-04-04
creator: Pingali, Keshav
viewed: 28
title: Advanced Computing Research Institute Annual Research Activity Report September 1993 - September 1994
abstract: The Advanced Computing Research Institute (ACRI) is a unit of the Cornell Theory Center and is affiliated with the Cornell Computer Science Department. The ACRI is concerned with research in scientific computation and its application to engineering and scientific problems with the emphasis on the use and potential of advanced computer architecture and environments. Research areas include restructuring compilers for scientific computation, and the design of algorithms for numerical linear algebra, optimization, and differential equations. Currently, ACRI researchers are collaborating on several large-scale applications in the computational sciences, including: protein-folding and related molecular chemistry problems, structural optimization and biomechanics, particle methods for turbulent combustion, discrete-control problems, and the application of boundary elementmethods. The parallel computers available to ACRI for research include the Theory Center machines - a 128-node KSR computer, a 64-node IBM SP, and a network of IBM RS/6000s. This report contains a short summary of the progress made in the last year on each of the four main projects: parallelizing compilers, computational linear algebra, computational optimization, and numerical methods for partial differential equations. Included also are a list of ACRI researchers and their research interests, a list of technical reports produced this last year, and a list of ACRI seminars.

url: http://hdl.handle.net/1813/5529
date: 2007-04-04
creator: Langer, J. S.;Shaw, Bruce E.;Myers, Christopher R.

viewed: 42
title: Slip Complexity in a Crustal-Plane Model of an Earthquake Fault
abstract: We study numerically the behavior of a two-dimensional elastic plate (acrustal plane) that terminates along one of its edges at a homogeneous fault boundary. Slip-weakening friction at the boundary, inertial dynamics in the bulk, and uniform slow loading via elastic coupling to a substrate combine to produce a complex, deterministically chaotic sequence of slipping events. We observe a power-law distribution of small to moderately large events and an excess of very large events. For the smaller events, the moments scale with the rupture length in a manner that is consistent with seismological observations. For the largest events, rupture occurs in the form of narrow propagating pulses.

url: http://hdl.handle.net/1813/5530
date: 2007-04-04
creator: Li, Yuying
viewed: 40
title: On Global Convergence of a Trust Region and Affine Scaling Method for Nonlinearly Constrained Minimization
abstract: (The following contains mathematical formulae and symbols that may become distorted in ASCII text.) A nonlinearly constrained optimization problem can be solved by the exact penalty approach involving non differentiable functions (summation(i)of |ci(x)|) and (summation(i) of max(0,ci(x))). In [11], a trust region affine scaling approach based on a 2-norm subproblem is proposed for solving a nonlinear l 1 problem. The (quadratic) approximation and the trust region subproblem are defined using affine scaling techniques. Explicit sufficient decrease conditions are proposed to obtain a limitpoint satisfying complementarity, dual feasibility, and second order optimality. In this paper, we present the global convergence properties of this new approach.

url: http://hdl.handle.net/1813/5531
date: 2007-04-04
creator: Li, Yuying
viewed: 28
title: A Trust Region and Affine Scaling Method for Nonlinearly Constrained Minimization
abstract: (The following contains mathematical formulae and symbols that may become distorted in ASCII text.) A nonlinearly constrained optimization problem can be solved by the exact penalty approach involving non differentiable functions (summation(i)of |ci(x)|) and (summation(i) of max(0,ci(x))). In the paper, a trust region affine scaling approach based on a 2-norm subproblem is proposed for solving a nonlinear l 1 problem. The (quadratic) approximation and the trust region subproblem are defined using affine scaling techniques. Explicit sufficient decrease conditions based on the approximations are suggested for obtaining a limit point satisfying complementarity, Kuhn-Tucker conditions, and second order necessary conditions. In global convergence analysis of the method is presented in [4].

url: http://hdl.handle.net/1813/5532
date: 2007-04-04
creator: Santosa, Fadil;Li, Yuying
viewed: 35
title: An Affine Scaling Algorithm for Minimizing Total Variation in Image Enhancement
abstract: A computational algorithm is proposed for image enhancement based on total variation minimization with constraints. This constrained minimization problem is introduced by Rudin et al [13,14,15] to enhance blurred and noisy images. Our computational algorithm solves the constrained minimization problem directly by adapting the affine scaling method for the unconstrained l 1 problem [3]. The resulting computational

scheme, when viewed as an image enhancement process, has the feature that it can be used in an interactive manner in situations where knowledge of the noise level is either unavailable or unreliable. This computational algorithm can be implemented with a conjugate gradient method. It is further demonstrated that the interactive enhancement process is efficient.

url: http://hdl.handle.net/1813/5533
date: 2007-04-04
creator: Adamo, Jean-Marc
viewed: 46
title: ARCH, An Object-Oriented Library for Asynchronous and Loosely Synchronous System Programming
abstract: ARCH is a C++-based library for asynchronous and loosely synchronous system programming. The current version offers a set of programming constructs that are outlined below:*** Threads: The construct is presented as a class from which the user can derive his own classes. The class encapsulates a small set of status variables and offers a set of functions for declaration, initialization, scheduling, priority setting, yielding and stopping.*** Processes: A process is a more regular and structured programming construct whose scheduling and termination obey additional synchronization rules. Together with the synchronous point-to-point communication system offered in the library (see below), processes favor a parallel programming style similar to OCCAM's (actually, an extension of it that removes most static features and allows processes to share data). The semantics of this model is well understood and will undoubtedly facilitate the development of correct large asynchronous code. The library has been designed so that the C++ compiler is able to check the static semantics of programs (complete type checking, send-recv correct matching, ...).*** Synchronous communication: Threads and processes synchronize and communicate via communication channels. There are four types of communication channels for local or remote synchronization or synchronous point-to-point communication. Inter-processor channels are essentially tools for building virtual topologies. The channel classes offer functions to send to or receive from a channel and get the size of the latest received message. More specialized synchronization-communication tools can be derived from channels.*** Global data and pointers: Beside threads, the library offers basic tools for developing distributed data abstractions. Global data are data that can be defined at given locations in the distributed memory but are visible from all processors. Global pointers are a generalization of C++ pointers that allow for addressing global data at any place over the distributed memory. As usual pointers, global pointers are subjected to arithmetic and logic manipulations (incrementation, dereferencing, indexing, comparision...). The library provides basic operators for global data and pointer definition.*** Global read/write functions: Global pointer expressions provide global references over the distributed memory that can subsequently be used asarguments to global read/write functions. These functions allow the processors to get access to all global data regardless of their locations over the distributed memory. In their most complete form, the read/write functions operate as remote procedure calls. At the programmer's level, global read/write functions appear as "one-sided": a read/write operationis executed on the processor that needs to read/write global data but need not be explicitly handled by the processor associated to the memory holding the data.*** Spread and remote Arrays. Two basic distributed data structures have been built in the library. Spread arrays are arrays that have some of their dimensions spread over the distributed memory according to a given policy. Remote arrays are arrays that are defined at a given place in the distributed memory but can be accessed from any other. The spread and remote array classes (SpreadArray and RemoteArray) provide functions for global reference calculation. Global references can subsequently be used as arguments to global read/write functions. One can specialize global pointers to operate on spread or remote arrays. The global pointer class (Star class) offers distinct arithmetic and logic operator sets for unassigned, spread and remote global pointers. The library encourages parallel code writing in a style that relies on the object-oriented approach: first, build the abstractions that the application at hand relies on; next, make an efficient implementation of the abstraction; and finally, develop

the application on top of them. The abstractions can be distributed data types derived from those built in the library (spread and remote arrays: see code of the segmentation algorithm provided with the library) or new distributed types built in the same way or types reused from other applications. This approach should favor parallel code production with many desirable properties such as efficiency, portability, reusability, ... The library uses MPI as a communication interface. The current implementation runs on the IBM-SP2. Two versions of the library have currently been released.The first one is based on the IBM C++ compiler and MPI library. The second one makes use of the GNU g++ compiler and the MPICH public domain version of MPI. Porting the latter to any parallel machine supporting these two software systems should be straightforward.

url: http://hdl.handle.net/1813/5534
date: 2007-04-04
creator: Beauchamp, Weldon
viewed: 49
title: Tectonic evolution of the Atlas Mountains, North Africa
abstract: Copyright 1998, Weldon Beauchamp.
See also:
http://atlas.geo.cornell.edu/dissertations/Beauchamp_1998.htmThe Atlas Mountains of North Africa are one of the largest intracontinental mountain belts in the world. Despite the size of this orogen, the basic kinematic and tectonic evolution of the Atlas Mountains has previously not been well understood. These mountains formed hundreds of kilometers from active plate margins. The formation of the Atlas Mountains was greatly influenced by a previous Mesozoic intracontinental rift system. This rift system spanned half of the African continent and was larger in breadth than the Red Sea.
This study set out to synthesize existing data and studies of the Atlas Mountains and integrate these data with new geological, geophysical and remote sensing data. The construction of a tectonic map was undertaken to define the tectonic units and terraines of North Africa. The delineation of these regions allow for the study of how they have interacted during the kinematic evolution of the Atlas system.
Geological field work was undertaken to study the kinematics of inversion tectonics and to construct a balanced geological-geophysical transect. The transect suggests shortening across the orogen (36 km) was achieved by thrusting along detachments at several levels in the upper crust. Syn-rift and post-rift sedimentary rocks were uplifted by the reactivation of Synrift normal faults and newly formed thin-skinned thrust faults. A restoration of the deformed cross section indicates the original Atlas rift basin was approximately 113 kilometers wide.
Shortening across the High Atlas Mountains resulted in a partitioning of strain, with the greatest magnitude of shortening occurring along the margins of the High Atlas Mountains. The partitioning of strain may involve the transfer of shortening from the margins at shallow depths, to the mid-lower crust in the central region of the orogen. Thrusting in the High Atlas Mountains is bivergent, with thrusts dipping to the south along the northern margin, and northward dipping faults to the south.
The presence of preexisting structural geometries such as accommodation zones, fault ramps, fault relays and en echelon faulting formed by rift processes will have an effect on subsequent compressional stress fields generated by plate convergence and other tectonic processes. Superposed folding which is disharmonic may in fact be a unique characteristic to inverted rift systems that result in intracontinental mountain belts.

url: http://hdl.handle.net/1813/5535
date: 2007-04-04
creator: Beghoul, Mohammed Noureddine
viewed: 32
title: Lithospheric structure of the western United States and the Tibetan Plateau: Implications on their

mechanism of uplift
abstract: Copyright 1991, Mohammed Noureddine Beghoul. See also: http://atlas.geo.cornell.edu/dissertations/Beghoul_1991.htmThis dissertation seeks to determine the upper mantle structure and the mechanisms responsible for the Cenozoic uplift of the high terranes located near plate boundaries: the Tibetan Plateau and western North America. The upper mantle structure is determined using the first P arrivals obtained from the International Seismological Centre (ISC) at regional distances (2 - 22 degrees).

In the first chapter a methodology is presented for computing mantle lid Pn velocities using ISC data together with a detailed error analysis. Application of this algorithm to Colorado Plateau yields an average Pn velocity of 8.12 +/- 0.09 km/s. This value is higher than the one reported in the literature but similar to that beneath stable midcontinent regions. We use this Pn value and the Cenozoic history of the plateau to constrain the mode of uplift.

In chapter two, using the same techniques, we confirm the lower Pn velocity beneath the Basin and Range Province and show the presence of about 4% intrinsic azimuthal Pn velocity anisotropy in the mantle lid beneath the Basin and Range. The direction of high velocity coincides with the direction of present-day extension in the Basin and Range Province (i.e., NW - SE). We show that this anisotropy is the result of Cenozoic extension rather than a cumulative signature of older tectonic events.

In chapter three, a modified version of the algorithm and detailed mapping of Sn attenuation allow the determination of mantle lid thickness beneath the western United States and Tibet. We show that the mantle lid thickness beneath the southern 2/3 of Tibet ranges from 135-165 km thick. This value is similar to the one we find for the Great Plains.

The deep structure, Cenozoic uplift, and various other geophysical and geological data of these two high terranes are consistent with the subduction of flat slabs beneath them. The continental Indian Plate is still beneath the southern 2/3 of Tibet, but the oceanic Farallon Plate has already been delaminated from the overriding North American Plate.

url: http://hdl.handle.net/1813/5536
date: 2007-04-04
creator: Best, John
viewed: 91
title: Crustal evolution of the northern Arabian Platform beneath the Syrian Arab Republic
abstract: Copyright 1991, John Best. See also: http://atlas.geo.cornell.edu/dissertations/Best_1991.htmNewly released geological and geophysical data from the Syrian Arab Republic are used to document the geological history of the northern Arabian platform in the Middle East. The primary observation of this synthesis is the focusing of various phases of Phanerozoic deformation (Mesozoic rifting and Cenozoic transpression) along strike of a proposed Proterozoic suture that has acted as a long-lived zone of crustal weakness. This deformation zone is presently manifested by the intracontinental Palmyride mountain belt, an inverted rift, trending NE-SW through central Syria. The geological history recognized for the northern Arabian platform is similar in many respects to that of the southern Arabian platform, including: (1) Proterozoic convergence and cratonization, (2) minor Cambrian extension, (3) a relatively stable Paleozoic margin of Gondwanaland marked by predominantly clastic deposition, (4) eastward tilting of the Arabian plate in the Cenozoic. The important difference in the evolution of the northern platform from the southern platform occurs during the Mesozoic with the development of the Levantine margin in the eastern Mediterranean and the Palmyride rift in the continental interior.

The intracontinental Palmyride mountain belt is the result of Late Cretaceous-present inversion of the Palmyride rift. Reactivation of rift boundary faults occurred in response to transpressive movement along basement-controlled strike-slip faults. The belt is divided into three provinces based on changes in structural style: the south Palmyride fold belt characterized by narrow, en enchelon ridges, the Bishri, and Bilas blocks expressed as broad, antiformal structures. The mountain belt may be characterized by thin-skinned

deformation in the south fold belt and thick-skinned deformation in the northern and eastern provinces.

url: http://hdl.handle.net/1813/5537
date: 2007-04-04
creator: Chaimov, Thomas
viewed: 126
title: Balanced cross sections, seismic stratigraphy, and structural interpretation of the intracontinental Palmyride fold belt, Syria
abstract: Copyright 1991, Thomas Chaimov. See also: http://atlas.geo.cornell.edu/dissertations/Chaimov_1991.htmThe Palmyride fold belt in central Syria is the result of Late Mesozoic and Cenozoic inversion of a Late Paleozoic and Mesozoic intraplate trough located within the northern Arabian platform. Detailed analysis of available seismic reflection profiles from the Palmyrides reveals the Late Mesozoic to present transpressive structures of the Palmyrides and clarifies the timing and magnitude of such deformation within the belt. Uplift of the Mesozoic Palmyride trough began in the Late Cretaceous, rejuvenated in the Middle Eocene, and culminated in the period from the Miocene to present. Each of the three episodes of deformation was temporally associated with a distant (~300 km) Arabian plate margin tectonic event as follows: (1) Late Cretaceous collision between the northern and eastern margin of the Arabian plate and a microplate or island arc; (2) Middle Eocene incipient faulting of the Red Sea/Dead Sea fault system; and (3) Miocene to present shortening of the Arabian-Eurasian plate collision zone along the Bitlis/Zagros suture in Turkey and Iran.
Despite this repeated tectonism, only 20-25 km of shortening accumulated in the southwestern, most strongly deformed sector of the belt, diminishing to only a few kilometers 400 km along strike to the northeast. And although Triassic evaporites form local detachment surfaces, there has been no large-scale lateral transport of Mesozoic and Cenozoic rocks over Paleozoic rocks in the Palmyrides of Syria. Rather, deep structures in Paleozoic rocks appear to be in general concord with structures in overlying Mesozoic and Cenozoic rocks.

url: http://hdl.handle.net/1813/5538
date: 2007-04-04
creator: Gomez, Francisco
viewed: 120
title: Late Cenozoic tectonics of the Middle Atlas Mountains, Morocco: Continental deformation in the diffuse western Mediterranean plate boundary
abstract: Copyright 1999, Francisco Gomez. See also: http://atlas.geo.cornell.edu/dissertations/Gomez_1999.htmThe Atlas Mountains of North Africa, located in the African foreland of the Alpine mountain belts, comprise a 2,000 km long Cenozoic mountain chain whose development was guided by older Mesozoic rift structures. This dissertation examines one component, the Middle Atlas Mountains of Morocco, using geological and geophysical data to constrain the tectonic development of the mountain chain. These results are then placed in the broader context of regional deformation. The NE-SW trending Middle Atlas Mountains are obliquely oriented within the late Cenozoic regional stress field, resulting in deformation partitioned into strike-slip faulting and thrust-related folding. Kinematic analyses of fault-slip data and earthquake focal mechanisms demonstrate that compressional deformation dominates the Folded Middle Atlas, whereas strike-slip faulting, with possible horizontal extension, predominates in the Tabular Middle Atlas. Geological field observations, digital topography, LANDSAT imagery, and seismicity provide evidence for recent tectonics in the Middle Atlas.
In the central Middle Atlas, cross-section balancing across the 20 km wide fold belt demonstrates about 4.7 km of Cenozoic horizontal shortening producing 800 m of structural relief. Other constraints on crustal thickening suggest a discrepancy between contraction and thickening. One possible explanation involves partitioning crustal deformation with depth: The upper crust shortens by thickening (faulting and folding),

whereas the lower crust deforms laterally.

At the northern extent of the mountain chain, the Guercif Basin developed where the Middle Atlas abut the Rif thrust belt. Similar timing of extensional deformation and proximity with the Rif, suggest that the Guercif Basin has been influenced by Rif tectonics. Stratal relations demonstrate that uplift of the Middle Atlas is a late Cenozoic phenomenon.

In Morocco, shortening of the High and Middle Atlas Mountains accommodated 20-45% of the total African-Eurasian plate convergence since the Early Miocene. The diffuse plate boundary comprises large, relatively rigid crustal blocks (Moroccan Meseta, High Plateau, and Saharan Platform) bounded by narrow deformable zones (the Atlas). In this context, the Middle Atlas can be interpreted as an accommodation zone resulting from differential movements between two large crustal blocks impinging on stable Africa. The Atlas Mountains exemplify the possible structural influence of inherited crustal weaknesses in a diffuse plate boundary such as the western Mediterranean region.

url: http://hdl.handle.net/1813/5539
date: 2007-04-04
creator: Ni, James
viewed: 109
title: Seismicity and active tectonics of the Himalayas and Tibetan Plateau
abstract: Copyright 1984, James Ni. See also: http://atlas.geo.cornell.edu/dissertations/Ni_1984.htmAvailable geophysical and geological data are analyzed with additional new data to further the understanding of the fundamental tectonic processes involved in the Himalayan-Tibetan continental collision zone. Seismicity of the Himalayas suggests that at present the Indian Plate underthrusts the Himalayas as a coherent unit along a shallow detachment. The geometry of this detachment beneath the Lesser Himalayas is constrained by well data and well-determined focal depths of moderate-sized earthquakes. This detachment surface, at or near the top of the downgoing Indian plate, dips at approximately a 15 degree angle from about 10-km to 20-km depth. This result supports a model of the active tectonics of the Himalayas as "thin-skinned" and analogous to the Paleozoic tectonics of the southern Appalachian Collision Zone.

New seismological observations of velocities and propagation characteristics of Pn, Sn and Lg waves beneath the Himalaya-Tibet and surrounding region can be interpreted, although not uniquely, to indicate the shallow-angle underthrusting of the Indian continental lithosphere beneath the Tibetan Plateau. The most significant observation is that, except beneath the northern part, high-frequency Sn waves propagate efficiently in the uppermost mantle beneath the Tibetan Plateau. Strong attenuation of Sn waves suggests the existence of a low-Q zone in the uppermost mantle beneath northern Tibet.

Analysis of Landsat imagery and fault plane solutions of shallow crustal earthquakes in both the Tethyan Himalayas and Tibet indicate that normal faulting and east-west extension are the dominant mode of deformation occurring in the late Cenozoic time. The normal faulting is due to an east-west deviatoric tensional stress within the elevated Tethyan Himalayas and Tibet.

Seismicity combined with structural elements mapped from digitally processed Landsat 3 Multispectral Scanner (MSS) data provide valuable information about neotectonic processes in the overthrusting western Himalayan blocks. The rhomboidal-shaped upper Sutlej River Basin consists of many NNE-trending fault blocks and is interpreted as a pull-apart basin. This pull-apart basin is explained as a result of oblique underthrusting of the Indian plate beneath Himalayas-Tibet.

url: http://hdl.handle.net/1813/5540
date: 2007-04-04
creator: Seber, Dogan
viewed: 108
title: Lithospheric and upper mantle structure beneath northern Morocco and central Syria

abstract: Copyright 1995, Dogan Seber. See also: http://atlas.geo.cornell.edu/dissertations/Seber_1995.htmNorthern Morocco and central Syria accommodate two of the most significant intraplate mountain belts on earth: the Atlas Mountains (High and Middle) and the Palmyride mountains, respectively. In contrast to interplate mountain belts like the Rif mountains in northern Morocco, intraplate mountain belts develop away from any plate boundaries. Hence, their formation is more difficult to explain. In this dissertation, seismological data from a recently installed digital seismic network in Morocco along with other available datasets, such as Bouguer gravity, seismic reflection, and surface geology, are analyzed in order to map the three-dimensional structure of the lithosphere and upper mantle beneath northern Morocco. Seismic data are also used in explaining some aspects of earthquake hazards in Morocco. New geodynamic models are proposed for both the Atlas and Rif mountains of northern Morocco. Teleseismic tomography results show that the lithosphere beneath the Atlas mountains is relatively thinner as evidenced by slower velocity anomalies. In contrast, beneath the Rif mountains a relatively fast upper mantle velocities are observed. Isostatic gravity anomalies show that the central High Atlas has a thick (~45 km) and isostatically compensated crust, whereas the Middle Atlas with a crustal thickness of about 30 km is not compensated, and that they are probably dynamically supported. The spatial distribution of intermediate-depth seismicity, regional seismic waveform propagation characteristics, Bouguer gravity anomalies, seismic reflection and drill hole data as well as surface geology are used to argue that the lithosphere beneath the Rif region has delaminated and it is sinking into the asthenosphere. This ongoing delamination process is proposed to have formed the Rif and Betic mountain belts around the Alboran Sea.

The Palmyride intraplate mountain belt in central Syria, which shows a similar geologic history to the Atlas system of Morocco, is also studied. The upper part of the crust is mapped in central Syria beneath the Palmyrides fold-thrust belt and adjacent areas using very dense seismic refraction data. The results show that beneath the axis of the Palmyrides mountain belt a deep (~11 km) trough, formed in the Mesozoic, exists despite the Cenozoic inversion and uplift.

url: http://hdl.handle.net/1813/5541
date: 2007-04-04
creator: Vavasis, Stephen A.;Hough, Patricia D.
viewed: 23
title: Complete Orthogonal Decomposition for Weighted Least Squares
abstract: Consider a full-rank weighted least squares problem in which the weight matrix is highly ill-conditioned. Because of the ill-conditioning, standard methods for solving least-squares problems, QR factorization and the nullspace method for example, break down. G.W. Stewart established a norm bound for such a system of equations, indicating that it may be possible to find an algorithm that gives an accurate solution. S.A. Vavasis proposed a new definition of stability that is based on this result. He also defined the NSH algorithm for solving this least-squares problem and showed that it satisfies his definition of stability. In this paper, we propose a complete orthogonal decomposition algorithm to solve this problem and show that it is also stable. This new algorithm is simpler and more efficient than the NSH method.

url: http://hdl.handle.net/1813/5542
date: 2007-04-04
creator: Avula, Veena
viewed: 26
title: Enhancement of Environments for Analysis of Trace Files of Parallel Programs
abstract: One of the important phases of parallel programming is performance analysis. Trace data provides information about where time is spent in programs. Since this data is huge, a tool for analyzing and visualizing the trace data is convenient and necessary for performance analysis of parallel programs. Environments which provide such a faclility are many and varied. In this report, we discuss our work on the enhancement

of one such environment for accessibility over more platforms and better visualization capabilities. The environment is Pablo.

url: http://hdl.handle.net/1813/5543
date: 2007-04-04
creator: Yuan, Wei;Coleman, Thomas F.
viewed: 29
title: A New Trust Region Algorithm for Equality Constrained Optimization
abstract: We present a new trust algorithm for solving nonlinear equality constrained optimization problems. At each iterate a change of variables is performed to improve the ability of the algorithm to follow the constraint level sets. The algorithm employs L2 penalty function for obtaining global convergence. Under certain assumptions we prove that this algorithm globally converges to a point satisfying the second order necessary optimally conditions; the local convergence rate is quadratic. Results of preliminary numerical experiments are presented.

url: http://hdl.handle.net/1813/5544
date: 2007-04-04
creator: Yuan, Wei;Coleman, Thomas F.
viewed: 64
title: A Quasi-Newton L2-Penalty Method for Minimization Subject to Nonlinear Constraints
abstract: We present a modified L2 penalty function method for equality constrained optimization problems. The pivotal feature of our algorithm is that at every iterate we invoke a special change of variables to improve the ability of the algorithm to follow the constraint level sets. This change of variables gives rise to a suitable block diagonal approximation to the Hessian which is then used to construct a quasi-Newton method. We show that the complete algorithm is globally convergent with a local Q-superlinearly convergence rate. Preliminary results are given for a few problems.

url: http://hdl.handle.net/1813/5545
date: 2007-04-04
creator: Roberts, B.W.;Newman, M.E.J.
viewed: 36
title: Mass-Extinction: Evolution and the Effects of External Influences on Unfit Species
abstract: We present a new model for extinction in which species evolve in bursts or 'avalanches,' during which they become on average more susceptible to environmental stresses such as harsh climates and so are more easily rendered extinct. Results of simulations and analytic calculations using our model show a power-law distribution of extinction sizes which is in reasonable agreement with fossil data. We also see a number of features qualitatively similar to those seen in the fossil record. For example, we seefrequent smaller extinctions in the wake of a large mass extinction, which arise because there is reduced competition for resources in the aftermath of a large extinction event, so that species which would not normally be able to compete can get a foothold, but only until the next cold winter or bad attack of the flu comes along to wipe them out.

url: http://hdl.handle.net/1813/5546
date: 2007-04-04
creator: Driscoll, Tobin A.
viewed: 24
title: Eigenmodes of Isospectral Drums
abstract: Recently it was proved that there exist nonisomeric planar regions that have identical Laplace spectra. That is, one cannot "hear the shape of a drum." All known examples of such regions are bounded by polygons

with reentrant corners. While the isospectrality can be proven mathematically, analytical techniques are unable to produce eigenvalues themselves. Furthermore, standard numerical methods for computing the eigenvalues, such as adaptive finite elements, are highly inefficient. Physical experiments have been performed to measure the spectra, but the accuracy and flexibility of this method are limited. We describe an algorithm due to Descloux and Tolley that blends finite elements with domain decomposition, and show that, with a modification that doubles its accuracy, this algorithm can be used to compute efficiently the eigenvalues for polygonal regions. We present results accurate to twelve digits for the most famous pair of isospectral drums, as well as results for another pair.

url: http://hdl.handle.net/1813/5547
date: 2007-04-04
creator: Santosa, Fadil
viewed: 26
title: A Level-set Approach Inverse Problems Involving Obstacles
abstract: An approach for solving inverse problems involving obstacles is proposed. The approach uses a level-set method which has been shown to be effective in treating problems involving moving boundaries. We develop two computational methods based on this idea. One method results in a nonlinear time-dependent partial differential equation for the level-set function whose evolution minimizes the residual in the data fit. The second method is an optimization that generates a sequence of level-set functions that reduces the residual. The methods are illustrated in two applications: a deconvolution problem, and a diffraction screen reconstruction problem.

url: http://hdl.handle.net/1813/5548
date: 2007-04-04
creator: Sun, Chunguang
viewed: 45
title: Parallel Solution of Sparse Linear Least Squares Problems on Distributed-memory Multiprocessors
abstract: This paper studies the solution of large-scale sparse linear least squares problems on distributed-memory multiprocessors. The method of corrected semi-normal equations is considered. New block-oriented parallel algorithms are developed for solving the related sparse triangular systems. The arithmetic and communication complexities of the new algorithms applied to regular grid problems are analyzed. The proposed parallel sparse triangular solution algorithms together with a block-oriented parallel sparse QR factorization algorithm result in a highly efficient block-oriented approach to the parallel solution of sparse linear least squares problems on distributed-memory multiprocessors. Performance of the block-oriented approach is demonstrated empirically through an implementation on an IBM Scalable POWER parallel system SP2. The largest problem solved has over two million rows and more than a quarter million columns. The execution speed for the numerical factorization of this problem achieves over 3.7 gigaflops per second on an IBM SP2 machine with 128 processors.

url: http://hdl.handle.net/1813/5549
date: 2007-04-04
creator: Kalos, Malvin H.
viewed: 36
title: Model Fermion Monte Carlo with Correlated Pairs
abstract: The issues that prevent the development of efficient and stable algorithms for fermion Monte Carlo in continuum systems are reexamined with special reference to the implications of the "plus/minus" symmetry. This is a property of many algorithms that use signed walkers, namely that the dynamics are unchanged when the signs of the walkers are interchanged. Algorithms that obey this symmetry cannot exhibit the

necessary stability. Specifically, estimates of the overlap with any antisymmetric test function cannot be bounded away from zero in the limit of many iterations. Within the framework of a diffusion Monte Carlo treatment of the Schroedinger equation, it is shown that this symmetry is easily broken for pairs of walkers while at the same time preserving the correct marginal dynamics for each member of the pair. The key is to create different classes of correlations between members of pairs and to use (at least) two distinct correlations for a pair and for the same pair withthe signs exchanged. The ideas are applied successfully for a class of simplemodel problems in two dimensions.

url: http://hdl.handle.net/1813/5550
date: 2007-04-04
creator: Pingali, Keshav;Gupta, Sudeep
viewed: 93
title: Fast Compiled Logic Simulation Using Linear BDDs
abstract: This paper presents a new technique for compiled zero delay logic simulation, and includes extensive experiments that demonstrate its performance on standard benchmarks. Our compiler partitions the circuit into fanout-freeregions (FFRs), transforms each FFR into a linear sized BDD, and converts each BDD into executable code. In our approach, the computation is sublinear in the number of variables within each partition because only one path, from root to leaf, of the BDD is executed; therefore in many cases, substantial computation is avoided. In this way, our approach gets dome to the advantages of oblivious as well as demand-driven evaluation. We investigated the impact of the various heuristics on performance, and based on this data, we recommend good values for design parameters. A performance improvement of up to 67% over oblivious simulation is observed for our benchmarks.

url: http://hdl.handle.net/1813/5551
date: 2007-04-04
creator: Liao, Aiping
viewed: 29
title: Automatic Optimization
abstract: We propose some automatic techniques for unconstrained optimization with the objective function given by some computer program. We show that the Newton step can be calculated in O(m2) operations where m is the number of stages in the function evaluation program. We also show that methods developed in Coleman and Liao [1] and Liao [8] for unconstrained discrete-time optimal control problems can be modified to handle general cases.

url: http://hdl.handle.net/1813/5552
date: 2007-04-04
creator: Eardley, Douglas M.;van Putten, Maurice H.P.M.
viewed: 53
title: Nonlinear Wave Equations for Relativity
abstract: Gravitational radiation is described by canonical Yang-Mills wave equations on the curved space-time manifold, together with evolution equations for the metric in the tangent bundle. The initial data problem is described in Yang-Mills scalar and vector potentials, resulting in Lie-constraints in addition to the familiar Gauss-Codacci relations

url: http://hdl.handle.net/1813/5553
date: 2007-04-04
creator: Li, Yuying;Coleman, Thomas F.;Branch, Mary Ann
viewed: 30

title: A Subspace, Interior, and Conjugate Gradient Method for Large-scale Bound-constrained Minimization Problems
abstract: A subspace adaption of the Coleman-Li trust region and interior method is proposed for solving large-scale bound-constrained minimization problems. This method can be implemented with either sparse Cholesky factorization or conjugate gradient computation. Under reasonable conditions the convergence properties of this subspace trust region method are as strong as those of its full-space version. Computational performance on various large-scale test problems are reported; advantages of our approach are demonstrated. Our experience indicates our proposed method represents an efficient way to solve large-scalebound-constrained minimization problems.

url: http://hdl.handle.net/1813/5554
date: 2007-04-04
creator: Barkema, G.T.;Newman, M.E.J.
viewed: 31
title: Monte Carlo Study of the Random-field Ising Model
abstract: Using a cluster-flipping Monte Carlo algorithm combined with a generalization of the histogram reweighting scheme of Ferrenberg and Swendsen, we have studied the equilibrium properties of the thermal random-field Ising model on a cubic lattice in three dimensions. We have equilibrated systems of L x L x L spins, with values of L up to 32, and for these systems the cluster-flipping method appears to a large extent to overcome the slow equilibration seen in single-spin-flip methods. From the results of our simulations we have extracted values for the critical exponents and the critical temperature and randomnessof the model by finite size scaling. For the exponents we find v=1.02 +- 0.06, B=0.06 +- 0.07, y=1.9 +- 0.2, and mean(y)=2.9 +- 0.2.

url: http://hdl.handle.net/1813/5555
date: 2007-04-04
creator: Vogelius, Michael;Santosa, Fadil;Kaup, Peter G.
viewed: 33
title: A Method for Imaging Corrosion Damage in Thin Plates from Electrostatic Data
abstract: The problem of quantitative nondestructive evaluation of corrosion in plates is considered. The inpection method uses boundary measurements of currents and voltages to determine the material loss caused by corrosion. The development of the method is based on linearization and the assumption that the plate is thin. The behavior of the method is examined in numerical situations.

url: http://hdl.handle.net/1813/5556
date: 2007-04-04
creator: Newman, M.E.J.;Roberts, Bruce W.
viewed: 24
title: A Model for Evolution and Extinction
abstract: We present a model for evolution and extinction in large ecosystems. The model incorporates the effects of interactions between species and the influences of abiotic environmental factors. We study the properties of the model by approximate analytic solution and also by numerical simulation, and use it to make predictions about the distribution of extinctions and species lifetimes that we would expect to see in real ecosystems. It should be possible to test these predictions against the fossil record. The model indicates that a possible mechanism for mass extinction is the coincidence of a large coevolutionary avalanche in the ecosystem with a severe environmental disturbance.

url: http://hdl.handle.net/1813/5557

date: 2007-04-04
creator: Chrisochoides, Nikos
viewed: 85
title: Multithreaded model for dynamic load balancing parallel adaptive PDE computations
abstract: We present a multithreaded model for the dynamic load-balancing ofnumerical, adaptive computations required for the solution of Partial Differential Equations (PDEs) on multiprocessors. Multithreading is used as a means of exploring concurrency in the processor level inorder to tolerate synchronization costs inherent to traditional (non-threaded) parallel adaptive PDE solvers. Our preliminary analysis for parallel, adaptive PDE solvers indicates that multithreading can be used as a mechanism to mask overheads required for the dynamic balancing of processor workloads with computations required for the actual numerical solution of the PDEs. Also, multithreading can simplify the implementation of dynamic load-balancing algorithms, a task that is very difficult for traditional data parallel adaptive PDE computations. Unfortunately, multithreading does not always simplify program complexity, often makes code re-usability not an easy task, and increases software complexity.

url: http://hdl.handle.net/1813/5558
date: 2007-04-04
creator: Vavasis, Stephen A.;Mitchell, Scott A.
viewed: 27
title: An Aspect Ratio Bound for Triangulating a d-grid Cut by a Hyperplane
abstract: We consider the problem of triangulating a d-dimensional uniform grid of d-cubes that is cut by a k-dimensional affine subspace. The goal is to obtain a triangulation with bounded aspect ratio. To achieve this goal, we allow some of the box faces near the affine subspace to be displaced. This problem has applications to finite element mesh generation. For general d and k, the bound on aspect ratio that we attain is double-exponential in d. For the important special case of d = 3, the aspect ratio bound is small enough that the technique is useful in practice.

url: http://hdl.handle.net/1813/5559
date: 2007-04-04
creator: Li, Yuying
viewed: 25
title: A Newton Acceleration of the Weiszfeld Algorithm for Minimizing the Sum of Euclidean Distances
abstract: The Weiszfeld algorithm for continuous location problems can be considered as an iteratively reweighted least squares method. It exhibits linear convergence. In this paper, a Newton type algorithm with similar simplicity is proposed to solve a continuous multifacility location problem with Euclidean distance measure. Similar to the Weiszfeld algorithm, at each iteration the main computation can be solving a weighted least squares problem. A Cholesky factorization of a symmetric positive definite band matrix, typically with a relatively small band width (e.g., a band width of two for a Euclidean location problem on a plane) is required. This new algorithm can be regarded as a Newton acceleration to the Weiszfeld algorithm with fast global and local convergence. The simplicity and efficiency of the proposed algorithm makes it particularly suitable for large-scale Euclidean location problems and parallel implementation. Computational experience also suggests that the proposed algorithm performs remarkably well in the presence of degeneracy and near degeneracy. In addition, it is proven to be globally convergent. Although the local convergence analysis is still under investigation, computation results suggest that it is typically superlinearly convergent.

url: http://hdl.handle.net/1813/5560
date: 2007-04-04
creator: Verma, Arun;Coleman, Thomas F.

viewed: 21
title: The Efficient Computation of Sparse Jacobian Matrices Using Automatic Differentiation
abstract: This paper is concerned with the efficient computation of sparse Jacobian matrices of nonlinear vector maps using automatic differentiation (AD). Specifically, we propose the use of a graph coloring technique, bi-coloring, to exploit the sparsity of the Jacobian matrix J and thereby allow for the efficient determination of J using AD software. We analyze both a direct scheme and a substitution process. We discuss the results of numerical experiments indicating significant practical potential of this approach.

url: http://hdl.handle.net/1813/5561
date: 2007-04-04
creator: Trefethen, Lloyd N.
viewed: 32
title: Pseudospectra of Linear Operators
abstract: The following contains mathematical formulae and symbols that may become distorted in ASCII text format. The advent of ever more powerful computers has brought with it a new way of conceiving some of the fundamental eigenvalue problems of applied mathematics. If a matrix or linear operator "A" is far from normal, its eigenvalues or more generally its spectrum may have little to do with its behavor as measured by quantities such as ||A**N|| or ||exp(tA)||. More may be learned by examining the sets in the complex plane known as the "pseudospectra" of A, defined by level curves of the norm of the resolvent, ||(zI - A)**-1||. Five years ago, the author published a paper that presented computed pseudospectra of thirteen highly non-normal matrices arising in various applications. Since that time, analogous computations have been carried out for differential and integral operators. This paper, a companion to the earlier one, presents ten examples, each chosen to illustrate one or more mathematical or physical principles.

url: http://hdl.handle.net/1813/5562
date: 2007-04-04
creator: Sun, Chunguang
viewed: 41
title: Dealing with Dense Rows in the Solution of Sparse Linear Least Squares Problems
abstract: Sparse linear least squares problems containing a few relatively dense rows occur frequently in practice. Straightforward solution of these problems could cause catastrophic fill and delivers extremely poor performance. This paper studies a scheme for solving such problems efficiently by handling dense rows and sparse rows separately. How a sparse matrix is partitioned into dense rows and sparse rows determines the efficiency of the overall solution process. A new algorithm is proposed to find a partition of a sparse matrix which leads to satisfactory or even optimal performance. Extensive numerical experiments are performed to demonstrate the effectiveness of the proposed scheme. A MATLAB implementation is included.

url: http://hdl.handle.net/1813/5563
date: 2007-04-04
creator: Fox, Geoffrey;Mansour, Nashat;Chrisochoides, Nikos
viewed: 18
title: A Comparison of Optimization Heuristics for the Data Mapping Problem
abstract: In this paper we compare the performance of six heuristics with suboptimal solutions for the data mapping problem of two dimensional meshes that are used for the numerical solution of Partial Differential Equations(PDEs) on multicomputers. The data mapping heuristics are evaluated with respect to seven criteria covering load balancing, interprocessor communication,flexibility and ease of use for a class of single-phase iterative PDE solvers. Our evaluation suggests that the simple and fast block distribution heuristic can be as effective as the other five complex and computationally expensive algorithms.

url: http://hdl.handle.net/1813/5564
date: 2007-04-04
creator: Liao, Aiping
viewed: 31
title: Solving Unconstrained Discrete-time Optimal Control Problems Using Trust Region Method
abstract: Trust region method for a class of large-scale minimization problems, the unconstrained discrete-time optimal control (DTOC) problems, is considered. Although the trust region algorithms developed in [4] and [13] are very economical they lack the ability to handle the so-called hard case. In this paper, we show that the trust region subproblem can be solved within an acceptable accuracy without forming the Hessian explicitly. The new approach is based on the inverse power method for eigenvalue problem and possesses the ability to handle the hard case. Our proposed approach leads to more efficient algorithms for DTOC problems.

url: http://hdl.handle.net/1813/5565
date: 2007-04-04
creator: Mohan, Chilukuri K.;Choudhary, Alok N.;Tumuluri, Chaitanya
viewed: 30
title: Locality-Conscious Load Balancing: Connectionist Architectural Support
abstract: Traditionally, in distributed memory architectures, locality maintenance and load balancing are seen as user level activities involving compiler and runtime system support in software. Such software solutions require an explicit phase of execution, requiring the application to suspend its activities. This paper presents the first (to our knowledge) architecture-level scheme for extracting locality concurrent with the application execution. An artificial neural network coprocessor is used for dynamically monitoring processor reference streams to learn temporally emergent utilities of data elements in ongoing local computations. This facilitates use of kernel-level load balancing schemes thus, easing the user programming burden. The kernel-level scheme migrates data to processor memories evincing higher utilities during load-balancing. The performance of an execution-driven simulation evaluating the proposed coprocessor is presented for three applications. The applications chosen represent the range of load and locality fluxes encounted in parallel programs, with (a) static locality and load characteristics, (b) slowly varying localities for fixed datasetsizes and (c) rapidly fluctuating localities among slowly varying datasetsizes. The performance results indicate the viability and success of the coprocessor in concurrently extracting locality for use in load balancing activities.

url: http://hdl.handle.net/1813/5566
date: 2007-04-04
creator: Umrigar, C.J.;Filippi, Claudia
viewed: 50
title: Multiconfiguration Wavefunctions for Quantum Monte Carlo Calculations of First-row Diatomic Molecules
abstract: We use the variance minimization method to determine accurate wavefunctions for first-row homonuclear diatomic molecules. The form of the wave function is a product of a sum of determinants and a generalized Jastrow factor. One of the important features of the calculation is that we are including low-lying determinants corresponding to single and double excitations from the Hartree-Fock configuration within the space of orbitals whose atomic principal quantum numbers do not exceed those occurring in the Hartree-Fock configuration. The idea is that near-degeneracy correlation is most effectively described by a linear combination of low-lying determinants whereas dynamic correlation is well described by the generalized Jastrow factor. All the parameters occurring in both the determinantal and the Jastrow parts of the wave function are optimized. The optimized wave functions recover 77-94% of the correlation energy

in variational Monte Carlo and 91-99% of the correlation energy in diffusion Monte Carlo.

url: http://hdl.handle.net/1813/5567
date: 2007-04-04
creator: Vavasis, Stephen A.;Driscoll, Tobin
viewed: 37
title: Numerical Conformal Mapping Using Cross-ratios and Delaunay Triangulation
abstract: We propose a new algorithm for computing the Riemann mapping of the unit disk to a polygon, also known as the Schwarz-Christoffel transformation. The new algorithm, CRDT, is based on cross-ratios of the prevertices, and also on cross-ratios of quadrilaterals in a Delaunay triangulation of the polygon. The CRDT algorithm produces an accurate representation of the Riemann mapping even in the presence of arbitrary long, thin regions in the polygon, unlike any previous conformal mapping algorithm. We believe that CRDT can never fail to converge to the correct Riemann mapping, but the correctness and convergence proof depend on conjectures that we have so far not been able to prove. We demonstrate convergence with computational experiments. The Riemann mapping has applications to problems in two-dimensional potential theory and to finite-difference mesh generation. We use CRDT to produce a mapping and solve a boundary value problem on long, thin regions for which no other algorithm can solve these problems.

url: http://hdl.handle.net/1813/5568
date: 2007-04-04
creator: O'Donnell, Timothy;Schneider, David;Hotovy, Steven
viewed: 40
title: Analysis of the Early Workload on the Cornell Theory Center IBM SP2
abstract: Parallel computers have matured to the point where they are capable of running a significant production workload. Characterizing this workload, however, is far more complicated than for the single-processor case. Besides the varying number of processors that may be invoked, the nodes themselves may provide differing computational resources (memory size, for example). In addition, the batch schedulers may introduce further categories of service which must be considered in the analysis. The Cornell Theory Center (CTC) put a 512-node IBM SP2 system into production in early 1995. Extended traces of batch jobs began to be collected in mid-1995 when the usage base became sufficiently large. This paper offers an analysis of this early batch workload.

url: http://hdl.handle.net/1813/5569
date: 2007-04-04
creator: Trefethen, Lloyd N.;Baggett, Jeffrey S.
viewed: 68
title: Low-dimensional models of subcritical transition to turbulence
abstract: In the past five years, working largely independently, five groups of researchers have proposed low-dimensional models of the behavior of parallel shear flows at high Reynolds numbers. These models are compared, and it is found that they are more similar than their authors have recognized. Among other similarities, most of them exhibit a threshold amplitude c=O(R**alpha) as R to infinity for some alpha less than -1, where R is the Reynolds number, for perturbations of the laminar state that may excite transition to turbulence.

url: http://hdl.handle.net/1813/5570
date: 2007-04-04
creator: Sneppen, Kim;Newman, M.E.J.
viewed: 51

title: Avalanches, Scaling, and Coherent Noise
abstract: We present a simple model of a dynamical system driven slowly by externally-imposed coherent noise. Although the system never becomes critical in the sense of possessing spatial correlations of arbitrarily long range, it does organize into a stationary state characterized by avalanches with a universal power-law size distribution. We explain the behavior of the model within a time-averaged approximation, and discuss its connection to the dynamics of earthquakes, the Gutenberg-Richter law, and to recent experiments on avalanches in rice piles.

url: http://hdl.handle.net/1813/5571
date: 2007-04-04
creator: Verma, Arun;Coleman, Thomas F.
viewed: 23
title: Structure and Efficient Jacobian Calculation
abstract: Many computational tasks require the determination of the Jacobian matrix, at a given argument, for a large nonlinear system of equations. Calculation or approximation of a Newton step is a related task. The development of robust automatic differentiation (AD) software allows for "painless" and accurate calculation of these quantities; however, straight forward application of AD software on large-scale problems can require an inordinate amount of computation. Fortunately, large-scale systems of nonlinear equations typically exhibit either sparsity or structure in their Jacobian matrices. In this paper we proffer general approaches for exploiting sparsity and structure to yield efficient ways to determine Jacobian matrices (and Newton steps) via automatic differentiation.

url: http://hdl.handle.net/1813/5572
date: 2007-04-04
creator: Trefethen, Lloyd N.;Myers, Chris;Czajkowski, Grezgorz J.;Chang, Chi-Chao;Menon, Vijay S.;Trefethen, Anne E.
viewed: 59
title: MultiMATLAB: MATLAB on Multiple Processors
abstract: MATLAB(R), a commercial product of The MathWorks, Inc., has become one of the principal languages of desktop scientific computing. A system is described that enables one to run MATLAB conveniently on multiple processors. Using short, MATLAB-style commands like Eval, Send, Recv, Bcast, Min, and Sum, the user operating within one MATLAB session can start various processes in a fashion that maintains MATLAB's traditional user-friendliness. Multi-processor graphics is also supported. The system currently runs under MPICH on an IBM SP2 or a network of Unix workstations, and extensions are planned to networks of PCs. MultiMATLAB is potentially useful for education in parallel programming, for prototyping parallel algorithms, and for fast and convenient execution of easily parallelizable numerical computations on multiple processors.

url: http://hdl.handle.net/1813/5573
date: 2007-04-04
creator: Trefethen, Lloyd N.;Toh, Kim-Chuan
viewed: 25
title: The Chebyshev Polynomials of a Matrix
abstract: A Chebyshev polynomial of a square matrix A is a monic polynomial of specified degree that minimizes ||p(A)||(sub2). The study of such polynomials is motivated by the analysis of Krylov subspace iterations in numerical linear algebra. An algorithm is presented for computing these polynomials based on reduction to a semidefinite program which is then solved by a primal-dual interior point method. Examples of Chebyshev polynomials of matrices are presented, and it is noted that if A is far from normal, the lemniscates

of these polynomials tend to approximate pseudospectra of A.

url: http://hdl.handle.net/1813/5574
date: 2007-04-04
creator: Driscoll, Tobin Allen
viewed: 26
title: Domain Decomposition Methods for Conformal Mapping and Eigenvalue Problems
abstract: Domain decomposition is widely used in the numerical solution of elliptic boundary value problems. It is appealing in part because of improved efficiency and straightforward parallelization. Conceptually, domain decomposition often exploits a natural feature of elliptic problems: data at one point may have an exceedingly weak influence on the solution at a far-removed point. The application of domain decomposition to other elliptic problems is less fully developed. One such area is numerical conformal mapping. We introduce the SC Toolbox for Matlab, an interactive graphical software package for the Schwarz-Christoffel mapping of polygons. The Toolbox can be used for interior and exterior mapping from several fundamental domains. Elongations in the polygon lead to crowding, in which the preimages of affected vertices are exponentially close together. Such regions are candidates for decomposition. We describe CRDT, an overlapping subdomain method developed with Vavasis for numerical Schwarz-Christoffel mapping. The method uses Delaunay triangulation to decompose the polygon into overlapping quadrilaterals, which in turn define cross-ratios that form the basis of a nonlinear system. Each quadrilateral induces an embedding of the prevertices so that locally, the map can be computed accurately. Apparently CRDT can deal with any degree of crowding, as is demonstrated by examples. Another application in conformal mapping is in Symm's integral equation. An important feature of existing software for Symm's equation is the efficient treatment of corner singularities. Careful generalization to multiple domains allows this treatment to be preserved and extended. An onoverlapping formulation leads to a linear system that is ideal for Schur complementation. The resulting method asymptotically requires a fraction of the single-domain work and is easily parallelized. We also consider a domain decomposition algorithm for the Laplace eigenvalue problem on polygons. This method, an improvement on one described by Descloux and Tolley, searches for the matching of Fourier-Bessel expansions at each corner to locate eigenvalues. We apply the algorithm to the "isospectral drums" discovered by Gordon, Webb, and Wolpert to find 25 eigenvalues to 12 digits. The method is far more accurate and efficient than standard methods for this problem.

url: http://hdl.handle.net/1813/5575
date: 2007-04-04
creator: Bojancyk, Adam W.;Durie, Robert C.;Lebak, James M.
viewed: 28
title: Toward a Portable Parallel Library for Space-Time Adaptive Methods
abstract: Space-time adaptive processing (STAP) refers to a class of methods for detecting targets using an array of sensors. The output of the array is weighted using data collected from the sensors over a given period of time. An optimal method of calculating weights exists; however, this method is usually computationally impractical. Therefore, various heuristic methods are used that approximate the optimal method. These heuristics use many of the same operations and are computationally demanding. We are in the process of constructing a portable, parallel library of subroutines useful for constructing STAP heuristics. As a first step in this process, we implemented one STAP heuristic, higher-order post-Doppler processing, using three different parallel methods on the IBM SP2 and the Intel Paragon: these methods characterize different parallel approaches to the STAP problem. From implementing these algorithms, we have been able to identify components for our parallel library. We propose models for some of the components and give preliminary timing results for the parallel methods.

url: http://hdl.handle.net/1813/5576
date: 2007-04-04
creator: Hotovy, Steve
viewed: 50
title: Workload Evolution on the Cornell Theory Center IBM SP2
abstract: The Cornell Theory Center (CTC) put a 512-node IBM SP2 system into production in early 1995, and extended traces of batch jobs began to be collected in June of that year. An analysis of the workload shows that it has not only grown, but that its characteristics have changed over time. In particular, job duration increased with time, indicative of an expanding production workload. In addition, there was increasing use of parallelism. As the load has increased and larger jobs have become more frequent, the batch management software (IBM's LoadLeveler) has had difficulty in scheduling the requested resources. New policies were established to improve the situation. This paper will profile how the workload has changed over time and give anin-depth look at the maturing workload. It will examine how frequently certain resources are requested and analyze user submittal patterns. It will also describe the policies that were implemented to improve the scheduling situation and their effect on the workload.

url: http://hdl.handle.net/1813/5577
date: 2007-04-04
creator: Trefethen, Lloyd N.;Toh, Kim-Chuan;Driscoll, Tobin A.
viewed: 36
title: Matrix Iterations: The Six Gaps Between Potential Theory and Convergence
abstract: The theory of the convergence of Krylov subspace iterations for linear systems of equations (conjugate gradients, biconjugate gradients, GMRES, QMR, Bi-CGSTAB, ...) is reviewed. For a computation of this kind, an estimated asymptotic convergence factor rho less than 1 can be derived by solving a problem of potential theory or conformal mapping. Six approximations are involved in reducing the actual computation to this scalar estimate. These six approximations are discussed in a systematic way and illustrated by a sequence of examples computed with tools of numerical conformal mapping and semidefinite programming.

url: http://hdl.handle.net/1813/5578
date: 2007-04-04
creator: Newman, M.E.J.
viewed: 28
title: Self-organized criticality, evolution, and extinction
abstract: Statistical analysis indicates that the fossil exctinction record is compatible with a distribution of extinction events whose frequency is related to their size by a power law with exponent tau approx. = 2. This result is in agreement with preductions based on self-organized critical models of extinction, and might well be taken as evidence for self-organizing behavior in terrestrial evolution. We argue however that there is a much simpler explanation for the appearance of a power law in terms of extinctions caused by stresses (either biotic or abiotic) to which species are subjected by their environment. We give an explicit model of this process and discussits properties and implications for the interpretation of the fossil record.

url: http://hdl.handle.net/1813/5579
date: 2007-04-04
creator: Gonze, Xavier;Umrigar, C.J.;Filippi, Claudia
viewed: 42
title: Separation of the Exchange-Correlation Potential into Exchange plus Correlation: an Optimized Effective Potential Approach
abstract: Most approximate exchange-correlation functionals used within density functional theory are

constructed as the sum of two distinct contributions for exchange and correlation. Separating the exchange component from the entire functional is useful since, for exchange, exact relations exist under uniform density scaling and spin scaling. In the past, accurate exchange-correlation potentials have been generated from essentially exact densities but they have not been correctly decomposed into their separate exchange and correlation components (except for two-electron systems). Using a recently proposed method, equivalent to the solution of an optimized effective potential problem with the corresponding orbitals replaced by the exact Kohn-Sham orbitals, we obtain the separation according to the density functional theory definition. We compare the results for the Ne and Be atoms with those obtained by the previously used appromixate separation scheme.

url: http://hdl.handle.net/1813/5580
date: 2007-04-04
creator: Umrigar, C.J.;Gonze, Xavier;Filippi, Claudia
viewed: 71
title: Generalized gradient approximations to density functional theory: comparison with exact results
abstract: In order to assess the accuracy of commonly used approximate exchange-correlation density functionals, we present a comparison of accurate exchange and correlation potentials, exchange energy densities and energy components with the corresponding approximate quantities. Four systems are used as illustrative examples: the model system of two electrons in a harmonic potential and the De, Be and Ne atoms. A new ingredient in the paper is the separation of the exchange-correlation potential into exchange and correlation according to the density functional theory definition.

url: http://hdl.handle.net/1813/5581
date: 2007-04-04
creator: Heinig, George;Bojanczyk, A.W.
viewed: 22
title: Transformation Techniques for Toeplitz and Toeplitz-plus-Hankel Matrices Part I. Transformations
abstract: Transformations of the form A to C1AC2 are investigated that transform Toeplitz and Toeplitz-plus-Hankel matrices into generalized Cauchy matrices. C1 and C2 are matrices related to the discrete Fourier transformation or to various real trigonometric transformations. Combining these results with pivoting techniques, in part II algorithms for Toeplitz and Toeplitz-plus-Hankel systems will be presented that are more stable than classical algorithms.

url: http://hdl.handle.net/1813/5582
date: 2007-04-04
creator: Heinig, George;Bojanczyk, A.W.
viewed: 19
title: Transformation Techniques for Toeplitz and Toeplitz-plus-Hankel Matrices Part II. Algorithms
abstract: In the first part of the paper transformations mapping Toeplitz and Toeplitz-plus-Hankel matrices into generalized Cauchy matrices were studied. In this second part fast algorithms for LU-factorization and inversion of generalized Cauchy matrices are discussed. It is shown that the combination of transformation pivoting techniques leads to algorithms for indefinite Toeplitz and Toeplitz-plus-Hankel matrices that are more stable than the classical ones Special attention is paid to the symmetric and hermitian cases.

url: http://hdl.handle.net/1813/5583
date: 2007-04-04
creator: Li, Yuying
viewed: 18

title: Piecewise Differentiable Minimization for Ill-posed Inverse Problems
abstract: Based on minimizing a piece wise differentiable lp function subject to a single inequality constraint, this paper discusses algorithms for a discretized regularization problem for ill-posed inverse problems. We examine computational challenges of solving this regularization problem. Possible minimization algorithms such as the steepest descent method, iteratively weighted least squares (IRLS) method and a recent globally convergent affine scaling Newton approach are considered. Limitations and efficiency of these algorithms are demonstrated using the geophysical travel time tomographic inversion and image restoration applications.

url: http://hdl.handle.net/1813/5584
date: 2007-04-04
creator: Verma, Arun
viewed: 23
title: On the Efficient Methods to Solve ODEs and BVPs Using Automatic Differentiation
abstract: A large number of physical phenomena are modeled by a system of ODEs or a system of implicit ODEs. We demonstrate applicability of automatic differentiation (AD) for solving: (1) Boundary value problems in ODEs and implicit ODEs. (2) Initial state and parameter estimation problems. The impact of using AD is two fold. Firstly, efficient methods for computing the gradient vectors and Jacobian matrices have been developed using AD. Secondly the process of getting derivatives via AD is robust, more user friendly, and provides error free derivatives. Furthermore, techniques using AD have been developed which exploit structure in the user's computation, and particularly the structure we observe in boundary value problems or state/parameter estimation problems. We demonstrate by a few experiments the efficiency gained by the usage of AD in solving these problems.

url: http://hdl.handle.net/1813/5585
date: 2007-04-04
creator: Hoisie, Adolfy;Goedecker, Stefan
viewed: 47
title: Scalable Parallel Electronic Structure Calculations on the IBM SP2
abstract: We have developed a highly efficient and scalable electronic structure code for parallel computers using message passing. The algorithm takes advantages of the natural parallelism in quantum chemistry problems to obtain very high performance even on a large number of processors. Most of the terms which scale cubically with respect to the number of atoms have been eliminated allowing the treatment of very large systems. It uses one of the most precise versions of Density Functional Theory, namely Self-Interaction Corrected Density Functional Theory.

url: http://hdl.handle.net/1813/5586
date: 2007-04-04
creator: Lutoborski, A.;Bojanczyk, A.W.
viewed: 29
title: The Procrustes Problem for Orthogonal Stiefel Matrices
abstract: (This abstract contains mathematical symbols that may not reproduce wellin ASCII text.) In this paper we consider the Procrustes problem on the manifold of orthogonal Stiefel matrices. That is, given matrices A epsilon R(m*k), B epsilon R(m*p), m greater tahn or equal to p greater than or equal to k, we seek the minimum of ||A - BQ||2 for all matrices Q epsilon R(p*k), QTQ = I(k*k). We introduce a class of relaxation methods for generating minimizing sequences and offer a geometric interpretation of these methods. Results of numerical experiments illustrating the convergence of the methods are given.

url: http://hdl.handle.net/1813/5587

date: 2007-04-04
creator: Hough, Patricia D.
viewed: 22
title: Stable and Efficient Solution of Weighted Least-Squares Problems with Applications in Interior Point Methods
abstract: In this thesis, we consider two closely related problems. The first is a full-rank weighted least-squares problem with a weight matrix that is positive definite, diagonal, and extremely ill conditioned. The ill-conditioning can cause standard algorithms to compute solutions with, in some cases, no digits of accuracy. Theory suggests the existence of an algorithm that will compute an accurate solution despite the ill-conditioning in the weight matrix. We describe a new algorithm, the Complete Orthogonal Decomposition (COD) Algorithm, for solving the weighted least-squares problem and show that it has this desirable property. In addition, the COD Algorithm is based on standard, well-understood techniques and is straightforward to implement. A natural application for the weighted least-squares problem described in the previous paragraph is interior point methods for linear programming. We discuss the problem in this context, and describe how the COD algorithm can be extended and used in this setting. Unlike other algorithms, this one is stable for interior point methods without assuming nondegeneracy in the linear programming instance. Computational experiments indicate that it is more reliable than other algorithms when the problem is near degenerate. The second problem involves a particular interior point algorithm. In 1994, Vavasis and Ye proposed a new primal-dual path-following interior point method, the layered-step interior point (LIP) method. This algorithm interleaves traditional steps with longer, layered least-squares (LLS) steps. Computation of a LLS step requires solving a weighted least-squares problem similar to the one described above, but the weight matrix also has the property that the weights fall into well-separated groups. This additional structure allows the problem to be broken down into smaller, constrained problems with well-conditioned weight matrices. The smaller problems can then be solved stably with standard algorithms, and the LLS step can be computed. Vavasis and Ye did not propose a particular algorithm for solving the LLS problem. In this thesis, we present an algorithm based on Cholesky factorization. The algorithm is such that a modified version of the sparse Cholesky code of Ng and Peyton of Oak Ridge National Laboratories can be used. Thus, the theoretical results are straight forward, and this algorithm proves to be accurate and efficient in practice.

url: http://hdl.handle.net/1813/5588
date: 2007-04-04
creator: Verma, Arun;Coleman, Thomas F.
viewed: 19
title: Structure and Efficient Hessian Calculation
abstract: Modern methods for numerical optimization calculate (or approximate) the matrix of second derivatives, the Hessian matrix, at each iteration. The recent arrival of robust software for automatic differentiation allows for the possibility of automatically computing the Hessian matrix, and the gradient, given a code to evaluate the objective function itself. However, for large-scale problems direct application of automatic differentiation may be unacceptably expensive. Recent work has shown that this cost can be dramatically reduced in the presence of sparsity. In this paper we show that for structured problems it is possible to apply automatic differentiation tools in an economical way - even in the absence of sparsity in the Hessian.

url: http://hdl.handle.net/1813/5589
date: 2007-04-04
creator: Baggett, Jeffrey Scott
viewed: 37
title: Non-normal Dynamics and Hydrodynamic Stability

abstract: This thesis explores the interaction of non-normality and nonlinearity incontinuous dynamical systems. A solution beginning near a linearly stable fixed point may grow large by a linear mechanism, if the linearization is non-normal, until it is swept away by nonlinearities resulting in a much smaller basin of attraction than could possibly be predicted by the spectrum of the linearization. Exactly this situation occurs in certain linearly stable shear flows, where the linearization about the laminar flow may be highly non-normal leading to the transient growth of certain small disturbances by factors which scale with the Reynolds number. These issues are brought into focus in Chapter 1 through the study of atwo-dimensional model system of ordinary differential equations proposed by Trefethen, et al. [Science, 261, 1993]. In Chapter 2, two theorems are proved which show that the basin of attraction of a stable fixed point, in systems of differential equations combining a non-normal linear term with quadratic nonlinearities, can decrease rapidly as the degree of non-normality is increased, often faster than inverse linearly.
Several different low-dimensional models of transition to turbulence are examined in Chapter 3. These models were proposed by more than a dozen authors for a wide variety of reasons, but they all incorporate non-normal linear terms and quadratic nonlinearities. Surprisingly, in most cases, the basin of attraction of the "laminar flow" shrinks much faster than the inverse Reynolds number.
Transition to turbulence from optimally growing linear disturbances, streamwise vortices, is investigated in plane Poiseuille and plane Couette flows in Chapter4. An explanation is given for why smaller streamwise vortices can lead to turbulence in plane Poiseuille flow. In plane Poiseuille flow, the transient linear growth of streamwise streaks caused by non-normality leads directly to a secondary instability. Certain unbounded operators are so non-normal that the evolution of infinitesimal perturbations to the fixed point is entirely unrelated to the spectrum, even as i to infinity. Two examples of this phenomenonare presented in Chapter 5.

url: http://hdl.handle.net/1813/5590
date: 2007-04-04
creator: Aiyer, Ajay Subramanian
viewed: 47
title: Optimal Portfolio Selection with Fixed Transactions Costs in the presence of Jumps and Random Drift
abstract: In this paper, we study the general problem of optimal portfolio selection with fixed transactions costs in the presence of jumps. We extend the analysis of Morton and Pliska to this setting by modeling the return processes of the risky assets in the investor's portfolio as jump-diffusion processes and derive the expression for the related optimal stopping time problem of a Markov process with jumps and explicitly solve it in the situation when the portfolio consists only of one risky asset. We also provide an asymptotic analysis of our model with one risky asset following the ideas of Wilmott and Atkinson. In the process, we also obtain a solution for the "Merton problem" generalized to the situation when there is credit risk. Finally, we consider the case where the drift of the stockprice process is random and unobservable and obtain expressions for the optimal trading policies.

url: http://hdl.handle.net/1813/5591
date: 2007-04-04
creator: Aiyer, Ajay Subramanian
viewed: 26
title: European Option Pricing with Fixed Transaction Costs
abstract: In this paper, we study the problem of European option pricing in the presence of fixed transaction costs. The problems of optimal portfolio selection and option pricing in the presence of proportional transaction costs has been extensively studied in the mathematical finance literature. However, much less is known when we have fixed transaction costs. In this paper, we show that calculating the price of an European

optioninvolves calculating the value functions of two stochastic impulse control problems and we obtain the explicit expressions for the resultant quasi-variational ine qualities satisfied by the value functions and then carry out a numerical calculation of the option price.

url: http://hdl.handle.net/1813/5592
date: 2007-04-04
creator: Umrigar, C.J.;Goedecker, S.
viewed: 39
title: A critical assessment of the Self-Interaction Corrected Local Density Functional method and its algorithmic implementation
abstract: We calculate the electronic structure of several atoms and small molecules by direct minimization of the Self-Interaction Corrected Local Density Approximation (SIC-LDA) functional. To do this we first derive an expression for the gradient of this functional under the constraint that the orbitals be orthogonal and show that previously given expressions do not correctly incorporate this constraint. In our atomic calculations the SIC-LDA yields total energies, ionization energies and charge densities that are superior to results obtained with the Local Density Approximation (LDA). However, for molecules SIC-LDA gives bond lengths and reaction energies that are inferior to those obtained from LDA. The nonlocal BLYP functional, which we include as a representative GGA functional, out performs both LDA and SIC-LDA forall ground state properties we considered.

url: http://hdl.handle.net/1813/5593
date: 2007-04-04
creator: Umrigar, C.J.;Nightingale, M.P.
viewed: 37
title: Monte Carlo Optimization of Trial Wave Functions in Quantum Mechanics and Statistical Mechanics
abstract: This review covers applications of quantum Monte Carlo methods to quantum mechanical problems in the study of electronic and atomic structure, as well as applications to statistical mechanical problems both of static and dynamic nature. The common thread in all these applications is optimization of many-parameter trial states, which is done by minimization of the variance of the local energy or, more generally for arbitrary eigenvalue problems, minimization of the variance of the configurational eigenvalue.

url: http://hdl.handle.net/1813/5594
date: 2007-04-04
creator: Wohlever, J.C.
viewed: 108
title: Symmetry, Nonlinear Bifurcation Analysis, and Parallel Computation
abstract: In the natural and engineering sciences the equations which model physical systems with symmetry often exhibit an invariance with respect to a particular group "G" of linear transformations. "G" is typically a linear representation of a symmetry group "g" which characterizes the symmetry of the physical system. In this work, we will discuss the natural parallelism which arises while seeking families of solutions to a specific class of nonlinear vector equations which display a special type of group invariance, referred to as equivariance. The inherent parallelism stems for a global de-coupling, due to symmetry, of the full nonlinear equations which effectively splits the original problem into a set of smaller problems. Numerical results from asymmetry-adapted numerical procedure, (MMcontcm.m), written in MultiMATLAB are discussed.

url: http://hdl.handle.net/1813/5595
date: 2007-04-04

creator: Schmidt, K.E.;Kalos, M.H.
viewed: 92
title: Model fermion Monte Carlo with correlated pairs II
abstract: Correlated dynamics can produce stable algorithms for excited states of quantum many-body problems. We study a variety of harmonic oscillator problems to demonstrate the kinds of correlations needed. We show that marginally correct dynamics that produce a stable overlap with an antisymmetrictrial function give the correct fermion ground state.

url: http://hdl.handle.net/1813/5596
date: 2007-04-04
creator: Vavasis, Stephen A.;Mitchell, Scott A.
viewed: 104
title: Quality Mesh Generation in Higher Dimensions
abstract: We consider the problem of triangulating a d-dimensional region. Our mesh generation algorithm, called QMG, is a qradtree-based algorithm that can triangulate any polyhedral region including nonconvexregions with holes. Furthermore, our algorithm guarantees a bounded aspect ratio triangulation provided that the input domain itself has no sharp angles. Finally, our algorithm is guaranteed never to over refine the domain in the sense that the number of simplices produced by QMG is bounded above by a factor times the number produced by any competing algorithm, where the factor depends on the aspect ratio bound satisfied by the competing algorithm. The QMG algorithm has been implemented in C++ and is used as a mesh generator for the finite element method.

url: http://hdl.handle.net/1813/5597
date: 2007-04-04
creator: Umrigar, C.J.;Huang, Chien-Jung
viewed: 104
title: Local correlation energies of two-electron atoms and model systems
abstract: We present nearly-local definitions of the correlation energy density, and its potential and kinetic components, and evaluate them for several two-electron systems. This information should provide valuable guidance in constructing better correlation functionals than those in common use. In addition, we demonstrate that the quantum chemistry and the density functional definitions of the correlation energy rapidly approach one another with increasing atomic number.

url: http://hdl.handle.net/1813/5598
date: 2007-04-04
creator: Vavasis, Stephen A.;Bobrovnikova, Elena Y.
viewed: 103
title: Accurate Solution of Weighted Least Squares by Iterative Methods
abstract: We consider the weighted least-squares (WLS) problem with a very ill-conditioned weight matrix. Weighted least-squares problems arise in many applications including linear programming, electrical networks, boundary value problems, and structures. Because of roundoff errors, standard iterative methods for solving a WLS problem with ill-conditioned weights may not give the correct answer. Indeed, the difference between the true and computed solution (forward error) may be large. We propose an iterative algorithm, called MINRES-L, for solving WLS problems. The MINRES-L method is the application of MINRES, a Krylov-space method due to Paige and Saunders, to a certain layered linear system. Using a simplified model of the effects of round off error, we prove that MINRES-L gives answers with small forward error. We present computational experiments for some applications.

url: http://hdl.handle.net/1813/5604
date: 2007-04-04
creator: Li, Yuying;Coleman, Thomas F.;Boyle, Katharyn A.
viewed: 40
title: Hedging a Portfolio of derivatives by Modeling Cost
abstract: We consider the problem of hedging the loss of a given portfolio of derivatives using a set of more liquid derivative instruments. We illustrate why the typical mathematical formulation for this hedging problem is ill-posed. We propose to determine a hedging portfolio by minimizing a proportional cost subject to an upper bound on the hedge risk; this bound is typically slightly larger than the optimal hedge risk achievable without cost consideration. We illustrate that the optimal hedging portfolio obtained by the proposed method is attractive since it consists of fewer instruments with a comparable risk. Finally we illustrate the importance of modeling volatility uncertainty in hedge risk minimization.

url: http://hdl.handle.net/1813/5605
date: 2007-04-04
creator: Kreitz, Christoph.;Eaton, Richard;Constable, Robert;Bickford, Mark;Allen, Stuart F.
viewed: 90
title: A Nuprl-PVS Connection: Integrating Libraries of Formal Mathematics.
abstract: We describe a link between the Nuprl and PVS proof systems that enables users to access PVS from the Nuprl theorem proving environment, to import PVS theories into the Nuprl library, and to browse both Nuprl and PVS theories in a unified formal framework. The combined system is a first step towards a digital library of formalized mathematics that can be shared and used in complex applications.

url: http://hdl.handle.net/1813/5606
date: 2007-04-04
creator: Sirer, Emin;Polte, Milo;Robson, Mark;Goel, Sharad
viewed: 53
title: Herbivore: A Scalable and Efficient Protocol for Anonymous Communication
abstract: Anonymity is increasingly important for networked applications amidst concerns over censorship and privacy. In this paper, we describe Herbivore, a peer-to-peer, scalable, tamper-resilient communication system that provides provable anonymity and privacy. Building on dining cryptographer networks, Herbivore scales by partitioning the network into anonymizing cliques. Adversaries able to monitor all network traffic cannot deduce the identity of a sender or receiver beyond an anonymizing clique. In addition to strong anonymity, Herbivore simultaneously provides high efficiency and scalability, distinguishing it from other anonymous communication protocols. Performance measurements from a prototype implementation show that the system can achieve high bandwidths and low latencies when deployed over the Internet.

url: http://hdl.handle.net/1813/5607
date: 2007-04-04
creator: Stodghill, Paul;Pingali, Keshav;Marques, Daniel;Bronevetsky, Greg
viewed: 41
title: Automated Application-level Checkpointing of MPI Programs
abstract: Because of increasing hardware and software complexity, the running time of many computational science applications is now more than the mean-time-to-failure of high-performance computing platforms. Therefore, computational science applications need to tolerate hardware failures. In this paper, we focus on the stopping failure model in which a faulty process hangs and stops responding to the rest of the system. We argue that tolerating such faults is best done by an approach called application-level coordinated non-blocking

checkpointing, and that existing fault-tolerance protocols in teh literature are not suitable for implementing this approach. In this paper, we present a suitable protocol, and show how it can be used with a precompiler that instruments C/MPI programs to save application and MPI library state. An advantage of our approach is that it is independent of the MPI implementation. We present experimental results that argue that the overhead of using our system can be small.

url: http://hdl.handle.net/1813/5608
date: 2007-04-04
creator: McCallum, Andrew;Caruana, Rich;Cohn, David
viewed: 24
title: Semi-supervised Clustering with User Feedback
abstract: We present a new approach to clustering based on the observation that ``it is easier to criticize than to construct.'' Our approach of {\em semi-supervised clustering} allows a user to iteratively provide feedback to a clustering algorithm. The feedback is incorporated in the form of constraints which the clustering algorithm attempts to satisfy on future iterations. These constraints allow the user to guide the clusterer towards clusterings of the data that the user finds more useful. We demonstrate semi-supervised clustering with a system that learns to cluster news stories from a Reuters data set. %This paper presents semi-supervised clustering, a new approach to %clustering that allows users to provide advice to the clustering %algorithm that guides it towards clusterings they prefer. %Semi-supervised clustering begins with traditional, fully unsupervised %clustering to find an initial clustering of the data. The clustered %data is then presented to the user so that they may critique it. User %feedback provides a set of constraints that the system tries to %satisfy to find a new clustering that the user prefers. This process %of presenting clustered data to the user, and refining the clustering %in response to user feedback, is repeated until the user is happy with %the clusters. We present a clustering algorithm that learns from user %feedback to find a clustering metric that yields clusters the user is %happy with. We demonstrate the algorithm on the Reuters and 20 %Newsgroups domains.

url: http://hdl.handle.net/1813/5609
date: 2007-04-04
creator: Constable, Robert L.;Bickford, Mark
viewed: 33
title: A Logic of Events
abstract: There is a well-established theory and practice for creating correct-by-construction functional programs by extracting them from constructive proofs of assertions of the form "For all x:A there exists y:B.R(x,y))." There have been several efforts to extend this methodology to concurrent programs, say by using linear logic, but there is no practice and the results are limited. In this paper we define a logic of events that justifies the extraction of correct distributed processes from constructive proofs that system specifications are achievable, and we describe an implementation of an extraction process in the context of constructive type theory. We show that a class of message automata, similar to IO automata and to active objects, are realizers for this logic. We provide a relative consistency result for the logic. We show an example of protocol derivation in this logic, and show how to embed temporal logics such as TLA+ in the event logic.

url: http://hdl.handle.net/1813/5610
date: 2007-04-04
creator: Slivkins, Aleksandrs
viewed: 41
title: Parametrized Tractability of Edge-Disjoint Paths on Directed Acyclic Graphs

abstract: Given a graph and pairs $s_i t_i$ of terminals, the edge-disjoint paths problem is to determine whether there exist $s_i t_i$ paths that do not share any edges. We consider this problem on ditected acyclic graphs. It is known to be NP-complete and solvable in time $n^{O(k)}$ where k is the number of paths. It has been a long-standing open question whether it is fixed-parameter tractable in k. We resolve this question in the negative: we show that the problem is $W[1]$-hard. In fact it remains $W[1]$-hard even if the demand graph consists of two sets of parallel edges. On a positive side, we give an $O(k! n)$ algorithm for the special case when G is acyclic and $G+H$ is Eulerian, where H is the demand graph. We generalize this result (1) to the case when $G+H$ is ``nearly" Eulerian, (2) to an analogous special case of the unsplittable flow problem. Finally, we consider a related NP-complete routing problem when only the first edge of each path cannot be shared, and prove that it is fixed-parameter tractable on directed graphs.

url: http://hdl.handle.net/1813/5611
date: 2007-04-04
creator: Chen, Hubie
viewed: 96
title: Quantified Constraint Satisfaction Problems: Closure Properties,
Complexity, and Proof Systems
abstract: There has been much prior work on understanding the complexity of the constraint satisfaction problem (CSP), a broad framework capturing many combinatorial problems. This paper studies a natural and strict generalization of the CSP, the quantified constraint satisfaction problem (QCSP). In the CSP, all variables are existentially quantified; in the QCSP, some variables may be universally quantified. Our contributions include proof systems for the QCSP and the identification of three broad tractable subclasses of the QCSP. Central to our study is the algebraic notion of closure properties of constraints, which has been previously used to study the CSP.

url: http://hdl.handle.net/1813/5612
date: 2007-04-04
creator: Kozen, Dexter;Hardin, Chris
viewed: 25
title: On the Complexity of the Horn Theory of REL
abstract: We show that the universal Horn theory of relational Kleene algebras is Pi-1-1-complete.

url: http://hdl.handle.net/1813/5613
date: 2007-04-04
creator: Morrisett, Greg;Cheney, James
viewed: 19
title: A Linearly Typed Assembly Language
abstract: Today's type-safe low-level languages rely on garbage collection to recycle heap-allocated objects safely. We present LTAL, a safe, low-level, yet simple language that ``stands on its own": it guarantees safe execution within a fixed memory space, without relying on external run-time support. We demonstrate the expressiveness of LTAL by giving a type-preserving compiler for the functional core of ML. But this independence comes at a steep price: LTAL's type system imposes a draconian discipline of linearity that ensures that memory can be reused safely, but prohibits any useful kind of sharing. We present the results of experiments with a prototype LTAL system that show just how high the price of linearity can be.

url: http://hdl.handle.net/1813/5614
date: 2007-04-04
creator: Hinze, Ralf;Cheney, James

viewed: 26
title: First-Class Phantom Types
abstract: Classical phantom types are datatypes in which type constraints are expressed using type variables that do not appear in the datatype cases themselves. They can be used to embed typed languages into Haskell or ML. However, while such encodings guarantee that only well-formed data can be constructed, they do not permit type-safe deconstruction without additional tagging and run-time checks. We introduce first-class phantom types, which make such constraints explicit via type equations. Examples of first-class phantom types include typed type representations and typed higher-order abstract syntax trees. These types can be used to support typed generic functions, dynamic typing, and staged compilation in higher-order, statically typed languages such as Haskell or Standard ML. In our system, type constraints can be equations between type constructors as well as type functions of higher-order kinds. We prove type soundness and decidability for a Haskell-like language extended by first-class phantom types.

url: http://hdl.handle.net/1813/5615
date: 2007-04-04
creator: Chen, Hubie
viewed: 100
title: Quantified Constraint Satisfaction and Small Commutative Conservative Operations
abstract: The constraint satisfaction problem (CSP) is a broad framework capturing many combinatorial search problems. A natural and strict generalization of the CSP is the quantified constraint satisfaction problem (QCSP). The CSP involves deciding the truth of constraint networks where all variables are existentially quantified; the QCSP is defined similarly, but variables may be both existentially and universally quantified. While the CSP and QCSP are in their general formulation intractable, they can be parameterized by restricting the constraint language, that is, the types of constraints that are permitted in problem instances. Much attention has been directed towards classifying the complexity of all constraint languages in the case of the CSP. In this paper, we continue the recently initiated study of QCSP complexity by identifying a new family of tractable constraint languages, namely, constraint languages over domains of small size that are closed under a commutative conservative operation. This gives the first QCSP tractability result based on binary operations which may be non-associative. We also give a complete classification of maximal constraint languages over domains of size three.

url: http://hdl.handle.net/1813/5616
date: 2007-04-04
creator: Shanmugasundaram, Jayavel;Robie, Jonathan;Botev, Chavdar;Amer-Yahia, Sihem
viewed: 30
title: TeXQuery: A Full-Text Search Extension to XQuery (Part III: Use Cases Solutions)
abstract: This report describes the TeXQuery use cases solutions. TeXQuery is a full-text search extension to XQuery.

url: http://hdl.handle.net/1813/5617
date: 2007-04-04
creator: Shanmugasundaram, Jayavel;Robie, Jonathan;Botev, Chavdar;Amer-Yahia, Sihem
viewed: 27
title: TeXQuery: A Full-Text Search Extension to XQuery (Part I: Language Specification)
abstract: This report describes the TeXQuery language specification. TeXQuery is a full-text search extension

to XQuery.

url: http://hdl.handle.net/1813/5618
date: 2007-04-04
creator: Shanmugasundaram, Jayavel;Robie, Jonathan;Botev, Chavdar;Amer-Yahia, Sihem
viewed: 27
title: TeXQuery: A Full-Text Search Extension to XQuery (Part II: Formal Semantics)
abstract: This report describes the formal semantics of TeXQuery. TeXQuery is a full-text search extension to XQuery.

url: http://hdl.handle.net/1813/5619
date: 2007-04-04
creator: Kozen, Dexter;Aboul-Hosn, Kamal
viewed: 112
title: KAT-ML: An Interactive Theorem Prover for Kleene Algebra with Tests
abstract: KAT-ML is an interactive theorem prover for Kleene algebra with tests (KAT). The system is designed to reflect the natural style of reasoning with KAT that one finds in the literature. We describe the main features of the system and illustrate its use with some examples.

url: http://hdl.handle.net/1813/5620
date: 2007-04-04
creator: Schneider, Fred B.;Morrisett, Greg;Hamlen, Kevin W.
viewed: 30
title: Computability Classes for Enforcement Mechanisms
abstract: A precise characterization of those security policies enforceable by program rewriting is given. This characterization exposes and rectifies problems in prior work on execution monitoring, yielding a more precise characterization of those security policies enforceable by execution monitors and a taxonomy of enforceable security policies. Some but not all classes can be identified with known classes from computational complexity theory.

url: http://hdl.handle.net/1813/5621
date: 2007-04-04
creator: Ezick, James
viewed: 38
title: An Optimizing Compiler for Batches of Temporal Logic Formulas
abstract: Model checking based on validating temporal logic formulas has proven practical and effective for numerous applications from verifying hardware designs to proving the correctness of software. As systems based on this approach have become more mainstream, a need has arisen to deal effectively with large batches of formulas over a common model. Presently, most systems validate formulas one at a time, with little or no interaction between validation of separate formulas. This is the case despite the fact that for a wide range of applications a certain level of redundancy between domain-related formulas can be anticipated. This paper presents an optimizing compiler for batches of temporal logic formulas. A component of the Carnauba Model Checking System, this compiler addresses the need to handle batches of temporal logic formulas by leveraging the framework common to optimizing programming language compilers. Just as a traditional optimizing compiler attempts to exploit redundancy and other solvable properties in programs to reduce the demand on a runtime system, this compiler exploits similar properties in groups of formulas to reduce the demand on a model checking engine. Optimizations are performed via a set of distinct, interchangeable

optimization passes operating on a common intermediate representation. The intermediate representation is capable of representing formulas over the full modal mu-calculus, and the optimization techniques are applicable to any temporal logic that can be translated into the modal mu-calculus. The compiler offers a unified framework for expressing well understood single-formula optimizations as well as numerous inter-formula optimizations that capitalize on redundancy and logical implication. The result is a system that, when applied to a potentially heterogeneous collection of formulas over a common problem domain, is able to measurably reduce the time and space requirements of the subsequent model checking engine.

url: http://hdl.handle.net/1813/5622
date: 2007-04-04
creator: Kozen, Dexter
viewed: 24
title: On the Representation of Kleene Algebras with Tests
abstract: We investigate conditions under which a given Kleene algebra with tests is isomorphic to an algebra of binary relations. Two simple separation properties are identified that, along with star-continuity, are sufficient for nonstandard relational representation. An algebraic condition is identified that is necessary and sufficient for the construction to produce a standard representation.

url: http://hdl.handle.net/1813/5623
date: 2007-04-04
creator: Dziobiak, Stanislaw M.
viewed: 39
title: A comparison of eager and lazy class initialization in Java
abstract: We prove that under some natural condition eager class initialization of a Java program P, as proposed in Kozen and Stillerman (2002), does not depend on the choice of a topological sort of the graph of class initialization dependencies of P. We also identify further natural conditions under which the eager and lazy class initializations of P assign the same initial values to the static fields of P. The latter result partially solves a problem raised in Kozen and Stillerman (2002).

url: http://hdl.handle.net/1813/5624
date: 2007-04-04
creator: Shanmugasundaram, Jayavel;Botev, Chavdar;Amer-Yahia, Sihem
viewed: 33
title: TeXQuery: A Full-Text Search Extension to XQuery
abstract: One of the key benefits of XML is its ability to represent a mix of structured and unstructured (text) data. Although current XML query languages such as XPath and XQuery can express rich queries over structured data, they can only express very rudimentary queries over text data. We thus propose TeXQuery, which is a powerful full-text search extension to XQuery. TeXQuery provides a rich set of fully composable full-text search primitives, such as Boolean connectives, phrase matching, proximity distance, stemming and thesauri. TeXQuery also enables users to seamlessly query over both structured and text data by embedding TeXQuery primitives in XQuery, and vice versa. Finally, TeXQuery supports a flexible scoring construct that can be used to score query results based on full-text predicates. TeX- Query is one of the proposals submitted to the W3C Full-Text Task Force, whose charter is to extend XQuery with full-text search capabilities.

url: http://hdl.handle.net/1813/5625
date: 2007-04-04
creator: Ezick, James
viewed: 53

title: Resolving Constrained Existential Queries over Context-Sensitive Analyses
abstract: A context-sensitive analysis is an analysis in which program elements are interpreted with respect to the context in which they occur. For analyses on imperative languages, this often refers to considering the behavior of called procedures with respect to the calling-stack contexts that precede them. Algorithms for performing or approximating these types of analyses make up the core of interprocedural program analysis and are pervasive; having applications in program optimization, checkpointing, and model checking. This paper presents an abstraction of a popular form of context-sensitive analysis based on iteratively encapsulating the cumulative effect of a recurring piece of code. Given an analysis fitting this abstraction, a technique is presented for resolving queries of the form: Is there an occurring context, subject to a given stack-context constraint, in which a particular set of facts holds at a particular location? This practical technique, based on manipulating regular languages, is capable not only of answering queries of this form, but also of generating a compact mechanism for dynamically applying the output of the analysis to contexts as they occur. A comprehensive example is presented along with performance data on a case study code. Finally, a selection of potential applications is discussed.

url: http://hdl.handle.net/1813/5626
date: 2007-04-04
creator: Rugina, Radu
viewed: 32
title: Region Analysis for Imperative Languages
abstract: This paper presents a region inference framework designed specifically for imperative programs with dynamic allocation and destructive updates. Given an input program, the algorithm automatically translates it into an output program with region annotations on procedures and allocation commands, and with explicit region creation and removal commands. Our framework formulates the analysis problem as a three-step algorithm. In the first phase, it infers region annotations for record declarations in the input language. Second, it performs a unification-based flow analysis of the program, inferring region types at each point in the program. In particular, it determines region types for allocation commands and procedure calls. In the third phase, it uses a single-pass algorithm to inspect each point in the program and insert region creation and removal commands in the control flow of the output program. This transformation ensures that regions are live whenever they are being used, while minimizing region lifetimes. The algorithm is simple, efficient, and provably correct. Furthermore, we show that the framework can be extended with more aggressive analyses (at the expense of making it less modular or more complex), such as interprocedural region liveness or shape analysis, to further improve the accuracy and performance of memory management. More generally, our framework allows existing analysis technology for imperative languages, such as points-to or shape analysis, to be easily integrated and applied to the region inference problem.

url: http://hdl.handle.net/1813/5627
date: 2007-04-04
creator: Kozen, Dexter
viewed: 93
title: Kleene Algebra with Tests and the Static Analysis of Programs
abstract: We propose a general framework for the static analysis of programs based on Kleene algebra with tests (KAT). We show how KAT can be used to statically verify compliance with safety policies specified by security automata. We prove soundness and completeness over relational interpretations. We illustrate the method on an example involving the correctness of a device driver.

url: http://hdl.handle.net/1813/5628

date: 2007-04-04
creator: Erlingsson, Ulfar
viewed: 32
title: The Inlined Reference Monitor Approach to Security Policy Enforcement
abstract: Embedding security enforcement code into applications is an alternative to traditional security mechanisms. This dissertation supports the thesis that such Inlined Reference Monitors, or IRMs, offer many advantages and are a practical option in modern systems. IRMs enable flexible general-purpose enforcement of security policies, and they are especially well suited for extensible systems and other non-traditional platforms. IRMs can exhibit similar, or even better, performance than previous approaches and can help increase assurance by contributing little to the size of a trusted computing base. Moreover, IRMs' agility in distributed settings allows for their cost-effective and trustworthy deployment in many scenarios. In this dissertation, IRM implementations are derived from formal automata-based specifications of security policies. Then, an IRM toolkit for Java is described in detail. This Java IRM toolkit uses an imperative policy language that allows a security policy, in combination with the details of its enforcement, to be given in a single complete specification. Various example policies, including the stack-inspection policy of Java, illustrate the approach. These examples shed light on practical issues in policy specification, the support needed from an IRM toolkit, and the advantages of the IRM approach.

url: http://hdl.handle.net/1813/5629
date: 2007-04-04
creator: Shanmugasundaram, Jayavel;Amer-Yahia, Sihem;Botev, Chavdar
viewed: 28
title: On the Completeness of Full-Text Search Languages for XML
abstract: We study formal properties of full-text search languages for XML. Our main contribution is the development of a formal model for full-text search based on the positions of tokens in XML nodes. Building on this model, we define a full-text calculus based on first-order logic, and a full-text algebra based on the relational algebra. We show that the full-text calculus and algebra are equivalent even in the presence of arbitrary position-based predicates, such as distance predicates and phrase matching. This suggests a notion of completeness for full-text languages. None of the full-text search languages that we are aware of are complete under the above characterization. We propose a new full-text language that is complete and naturally generalizes existing full-text languages. Our formalization in terms of the relational model can also serve as the basis for (a) joint optimization of structured and full-text search queries, and (b) ranking full-text search query results by leveraging existing work on the probabilistic relational model.

url: http://hdl.handle.net/1813/5630
date: 2007-04-04
creator: Ng, Vincent
viewed: 86
title: Machine Learning for Coreference Resolution: Recent Successes and
Future Challenges
abstract: State-of-the-art coreference resolution systems are mostly knowledge-based systems that operate by relying on a set of hand-crafted coreference resolution heuristics. Recently, however, machine learning approaches have been shown to be a promising way to build coreference resolution systems that are more robust than their knowledge-based counterparts. Nevertheless, there are several key issues in existing machine learning approaches to the problem that are either not explored or being overlooked, potentially leading to a deterioration of system performance. This document examines each of these issues in detail and suggests potential solutions.

url: http://hdl.handle.net/1813/5631
date: 2007-04-04
creator: Yona, Golan;Davis, Jason
viewed: 33
title: Prediction of protein-protein interactions and the interaction site from sequence information - an extensive study of the co-evolution model
abstract: This paper studies new variants of the co-evolution model for prediction of protein-protein interactions from sequence information. Given two query proteins, the method uses information extracted from a database search to generate a multiple alignment and compute the likelihood that the two proteins interact. The model uses four elements, starting from the correlated divergence between proteins from different species, through potentials of correlated mutations, charge and hydrogen bonds. The significance of these measures is estimated from large populations of interacting and non interacting protein pairs. A variant over an EM algorithm is used to identify the subset of the database proteins (the homologs of the query proteins) that are more likely to interact, and a modified correlated mutations model is employed to maximize the strength of the signals. The algorithm not only tries to suggest if two proteins interact, but also attempts to detect the localized binding box interaction region, information that is hardly ever available. We tune and test our model over a large set of protein interactions we extract from BIND.

url: http://hdl.handle.net/1813/5632
date: 2007-04-04
creator: Redz, Anna;Schneider, Fred B.;Marsh, Michael A.;Zhou, Lidong
viewed: 43
title: Distributed Blinding for ElGamal Re-encryption
abstract: A protocol is given that allows a set of n servers to cooperate and produce an ElGamal ciphertext encrypted under one key from an ElGamal ciphertext encrypted under another, but without plaintext ever becoming available. The protocol is resilient to floor(n-1)/3 of the servers being compromised and requires no assumptions about execution speeds or message delivery delays. Two new building blocks employed---a distributed blinding protocol and verifiable dual encryption proofs---could have uses beyond re-encryption protocols.

url: http://hdl.handle.net/1813/5633
date: 2007-04-04
creator: Yona, Golan;Dirks, William
viewed: 33
title: A comprehensive study of the notion of functional link between genes based on microarray data, promoter signals, protein-protein interactions and pathway analysis
abstract: It is commonly accepted that genes with similar expression profiles are functionally related. However, so far no clear distinction has been made as for the type of the functional link between genes as suggested by microarray data. Similarly expressed genes can be part of the same complex as interacting partners; they can participate in the same pathway without interacting directly; they can perform similar functions; or they can simply have similar regulatory sequences. Here we embark on a rigorous study of the notion of functional link as implied from expression data. We analyze different similarity measures of gene expression profiles and assess their usefulness and robustness in detecting biological relationships by comparing the similarity scores with results obtained from databases of interacting proteins, promoter signals, and cellular pathways, as well as through sequence comparisons and pathway modeling. We also introduce new similarity measures we specifically developed for the analysis of expression data. These measures are based on statistical analysis and better discriminate genes which are functionally nearby and faraway. With the optimized similarity measures we proceed to analyze other aspects of this data.

Specifically, we introduce a method of inferring the type of relationship by correlating the expression data with all the other data sets. This method allows us to not only predict when genes are functionally related but also to suggest how they are related. We then cluster the data using clustering algorithms that are specially tailored to deal with noisy data. Finally we propose methods for assessing the significance of clusters and study the correspondence between gene clusters and biochemical pathways.

url: http://hdl.handle.net/1813/5634
date: 2007-04-04
creator: Kedem, Klara;Yona, Golan
viewed: 42
title: The URMS-RMS hybrid algorithm for fast and sensitive local protein structure alignment
abstract: We present an efficient and sensitive hybrid algorithm for local structure alignment of a pair of 3D protein structures. The hybrid algorithm employs both the URMS (Unit-vector Root Mean Squared) metric and the RMS metric. Initial transformations (rotations) are identified using the algorithm. These rotations are then clustered and an RMS based dynamic programming algorithm is invoked to find the maximal local similarities for representative rotations of the clusters. Our algorithm searches efficiently the transformation space using a fast screening protocol. Given the transformation based parameters, the algorithm rigorously finds the optimal alignments. Statistical significance of the alignments is estimated using a model that accounts for both the score of the match and the RMS. We tested our algorithm over the SCOP classification of protein domains. Our algorithm performs very well, its main advantages being (1) it combines the RMS and the URMS metrics (2) it searches extensively the transformation space (3) it can detect complex similarities and structural repeats (4) it is symmetric.

url: http://hdl.handle.net/1813/5635
date: 2007-04-04
creator: Kopylov, Alexei
viewed: 49
title: Type Theoretical Foundations for Data Structures, Classes, and Objects
abstract: In this thesis we explore the question of how to represent programming data structures in a constructive type theory. The basic data structures in programing languages are records and objects. Most known papers treat such data structure as primitive. That is, they add new primitive type constructors and supporting axioms for records and objects. This approach is not satisfactory. First of all it complicates a type theory a lot. Second, the validity of the new axioms is not easily ablished. As we will see the naive choice of axioms can lead to contradiction even in the simplest cases. We will show that records and objects can be defined in a powerful enough type theory. We will also show how to use these type constructors to define abstract data structure.

url: http://hdl.handle.net/1813/5636
date: 2007-04-04
creator: Myers, Andrew C.;Zheng, Lantian
viewed: 44
title: Dynamic Security Labels and Noninterference
abstract: This paper explores information flow control in systems in which the security classes of data can vary dynamically. Information flow policies provide the means to express strong security requirements for data confidentiality and integrity. Recent work on security-typed programming languages has shown that information flow can be analyzed statically, ensuring that programs will respect the restrictions placed on data. However, real computing systems have security policies that vary dynamically and that cannot be determined at the time of program analysis. For example, a file has associated access permissions that

cannot be known with certainty until it is opened. Although one security-typed programming language has include support for dynamic security labels, there has been no examination of whether such a mechanism can securely control information flow. In this paper, we present an expressive language-based mechanism for securely manipulating dynamic security labels. The mechanism is presented both in the context of a Java-like programming language and, more formally, in a core language based on the typed lambda calculus. This core language is expressive enough to encode previous dynamic label mechanisms; as importantly, any well-typed program is provably secure because it satisfies noninterference.

url: http://hdl.handle.net/1813/5637
date: 2007-04-04
creator: Zhou, Lidong;Schneider, Fred B.
viewed: 35
title: Distributed Trust: Supporting Fault-tolerance and Attack-tolerance
abstract: Fault-tolerance and attack-tolerance are crucial for implementing a trustworthy service. An emerging thread of research investigates interactions between fault-tolerance and attack-tolerance---specifically, the coupling of replication with threshold cryptography for use in environments satisfying weak assumptions. This coupling yields a new paradigm known as distributed trust, which is the subject of this paper.

url: http://hdl.handle.net/1813/5638
date: 2007-04-04
creator: Shanmugasundaram, Jayavel;Gehrke, Johannes;Linga, Prakash;Crainiceanu, Adina
viewed: 55
title: Querying Peer-to-Peer Networks Using P-Trees
abstract: Peer-to-peer (P2P) systems provide a robust, scalable and decentralized way to share and publish data. However, most existing P2P systems only provide a very rudimentary query facility; they only support equality or keyword search queries over files. We believe that future P2P applications, such as resource discovery on a grid, will require more complex query functionality. As a first step towards this goal, we propose a new distributed, fault-tolerant P2P index structure for resource discovery applications called the P-tree. P-trees efficiently evaluate range queries in addition to equality queries. We describe algorithms to maintain a P-tree under insertions and deletions of data items/peers, and evaluate its performance using both a simulation and a real distributed implementation. Our results show the efficacy of our approach.

url: http://hdl.handle.net/1813/5639
date: 2007-04-04
creator: Petride, Sabina;Halpern, Joseph Y.;Constable, Robert C.;Bickford, Mark
viewed: 50
title: Knowledge-Based Sythesis of Distributed Systems Using Event Structures
abstract: To produce a program guaranteed to satisfy a given specification one can synthesize it from a formal constructive proof that a computation satisfying that specification exists. This process is particularly effective if the specifications are written in a high-level language that makes it easy for designers to specify their goals. We consider a high-level specification language that results from adding knowledge to a fragment of Nuprl specifically tailored for specifying distributed protocols, called event theory. We then show how high-level knowledge-based programs can be synthesized from the knowledge-based specifications using a proof development system such as Nuprl. Methods of Halpern and Zuck [1992] then apply to convert these knowledge-based protocols to ordinary protocols. These methods can be expressed as heuristic transformation tactics in Nuprl.

url: http://hdl.handle.net/1813/5640

date: 2007-04-04
creator: Heber, Gerd;Pingali, Keshav;Cronin, Rob;Stodghill, Paul
viewed: 26
title: Performance Analysis of the Pipe Problem, a Multi-Physics Simulation Based on Web Services
abstract: The ongoing convergence of grid computing and web services has inspired a number of studies on the use of SOAP-based web services for scientific computing. These studies have exposed several performance problems in using SOAP-based communication; to eliminate these bottlenecks, extensions to the SOAP standard and sophisticated implementation strategies have been proposed. In this paper, we will describe the ASP system, a simulation testbed based on web services for simulating multi-physics, coupled fluid/thermal/mechanical/fracture problems. The system is organized as a collection of geographically-distributed software components in which each component provides a web service, and uses standard SOAP-based web service protocols to interact with other components. There are a number of advantages to organizing a system in this way, which we discuss. We have analyzed the performance of our system for several applications and a number of problem sizes and have found that the overhead for using SOAP-based web services is small and tends to decrease as the problem size increases. Our results suggest that the previously identified potential bottlenecks may not be major issues in practice, and that a standards-compliant implementation like ours can delivery excellent scalable performance even on tightly-coupled problems, provided web services are used judiciously.

url: http://hdl.handle.net/1813/5641
date: 2007-04-04
creator: Schneider, Fred B.;Sirer, Emin Gun;Josephson, William
viewed: 32
title: Peer-to-Peer Authentication with a Distributed Single Sign-On Service
abstract: CorSSO is a distributed service for authentication in networks. It allows application servers to delegate client identity checking to combinations of authentication servers potentially residing in separate administrative domains. In CorSSO, authentication policies enable the system to tolerate expected classes of attacks and failures. A novel partitioning of the work associated with authentication of principals means that the system scales well with increases in the numbers of users and services.

url: http://hdl.handle.net/1813/5642
date: 2007-04-04
creator: Sirer, Emin Gun;Ramasubramanian, Venugopalan
viewed: 39
title: Better than 1 Hop Lookup Performance with Proactive Caching
abstract: High lookup latencies prohibit peer-to-peer overlays from being used in many performance intensive applications, even though they provide self-organization, scalability, and failure resilience. In this paper, we show that lookup performance of structured DHTs can be improved to any desirable constant, even under 1 hop, by controlled proacive replication. By exploiting the popularity distribution of objects, we can minimize the number of replicas and reduce the storage and bandwidth cost of replication. This enables structured DHTs to efficiently support a wide variety of latency sensitive applications. We describe three different applications, namely DNS, web access, and content distribution, and show how they can derive significant performance gains by using DHTs.

url: http://hdl.handle.net/1813/5643
date: 2007-04-04
creator: Riedewald, Mirek;Gehrke, Johannes;Das, Abhinandan
viewed: 30

title: Semantic Approximation of Data Stream Joins
abstract: We consider the problem of approximating sliding window joins over data streams in a data stream processing system with limited resources. In our model, we deal with resource constraints by shedding load in the form of dropping tuples from the data streams. We make two main contributions. First, we define the problem space by discussing architectural models for data stream join processing and surveying suitable measures for the quality of an approximation of a set-valued query result. Second, we examine in detail a large part of this problem space. More precisely, we consider the number of generated result tuples as the quality measure, and we propose optimal offline and fast online algorithms for it. In a thorough experimental study with synthetic and real data we show the efficacy of our solutions.

url: http://hdl.handle.net/1813/5644
date: 2007-04-04
creator: Fluet, Matthew;Constable, Robert;Allen, Stuart
viewed: 37
title: Expressing and Implementing the Computational Content Implicit in Smullyan's Account of Boolean Valuations
abstract: In Smullyan's classic book, First-Order Logic, the notion of a Boolean valuation is central in motivating his analytical tableau proof system. Smullyan shows that these valuations are unique if they exist, and then he sketches an existence proof. In addition he suggests a possible computational procedure for finding a Boolean valuation, but it is not related to to the existence proof. A computer scientist would like to see the obvious explicit recursive algorithm for evaluating propositional formulas and a demonstration that the algorithm has the properties of a Boolean valuation. Ideally, the algorithm would be derived from the existence proof. It turns out to be unexpectedly difficult to find a natural existence proof from which the algorithm can be extracted, and it turns out that the implicit computational content of Smullyan's argument is not found where one might expect it. We show that using the notion of a very dependent function type, it is possible to specify the Boolean valuation and prove its existence constructively so that the natural recursive algorithm is extracted and is known to have the mathematically required properties by virtue of its construction. We illustrate all of these points using the Nuprl proof development system.

url: http://hdl.handle.net/1813/5645
date: 2007-04-04
creator: Domshlak, Carmel;Brafman, Ronen
viewed: 76
title: Database Preference Queries Revisited
abstract: In recent years, the database community has paid increasing attention to the formulation and treatment of preference queries. In this paper, we discuss a number of semantic and computational issues that preference queries raise. First, we examine the currently favored interpretation of such queries in database systems, showing that it is simply inappropriate semantically. Next, we suggest the ceteris paribus semantics as an appealing alternative that has long been accepted by economists and philosophers. Finally, we examine the computational problem of evaluating preference queries using the recently introduced operator BEST. We show that while BEST can be intractable given the ceteris paribus semantics, an appealing alternative, ORD, can be implemented efficiently for a wide class of preference queries.

url: http://hdl.handle.net/1813/5646
date: 2007-04-04
creator: Gal, Avigdor;Domshlak, Carmel
viewed: 47
title: Schema Meta-Matching

abstract: Schema matching is a basic operation in the data integration process, and several tools for automating it have been proposed and evaluated in the database community. While in many domains these tools succeed to find the right matching between concepts, empirical analysis shows that there is no single algorithm that is guaranteed to succeed in all possible domains. In this paper we introduce schema meta-matching, a novel framework for composing an arbitrary ensemble of algorithms for schema matching. Informally, schema meta-matching is about computing a "consensus" ranking of alternative mappings between two sets of concepts, given the "individual" graded rankings provided by several schema matching algorithms. We introduce several algorithms for this problem, varying from adaptations of some standard techniques for general quantitative rank aggregation, to novel techniques specific to the problem of schema matching, and to combinations of both.

url: http://hdl.handle.net/1813/5647
date: 2007-04-04
creator: Fluet, Matthew
viewed: 36
title: Monadic Regions: Formal Type Soundness and Correctness
abstract: Drawing together two lines of research (that done in type-safe region-based memory management and that done in monadic encapsuation of effects), we give a type-preserving translation from a variation of the region calculus of Tofte and Talpin into an extension of System F augmented with monadic types and operations. Our source language is a novel region calculus, dubbed the Single Effect Calculus, in which sets of effects are specified by a single region representing an upper bound on the set. Our target language is F^RGN, which provides an encapsulation operator whose parametric type ensures that regions (and values allocated therein) are neither accessible nor visible outside the appropriate scope.

url: http://hdl.handle.net/1813/5648
date: 2007-04-04
creator: Walter, Bruce;Bala, Kavita;Ramanarayanan, Ganesh
viewed: 50
title: Feature-Based Textures
abstract: This paper introduces feature-based textures, a new image representation that combines features and texture samples for high-quality texture mapping. Features identify boundaries within a texture where samples change discontinuously. They can be extracted from vector graphics representations, or explicity added to raster images to improve sharpness. Texture lookups are then interpolated from samples while respecting these boundaries. We present results from a software implementation of this technique demonstrating quality, efficiency and low memory overhead.

url: http://hdl.handle.net/1813/5649
date: 2007-04-04
creator: Li, Yuying;coleman, thomas f.;alexander, siddharth
viewed: 26
title: Minimizing CVaR and VaR for a portfolio of derivatives
abstract: Value at risk (VaR) and conditional value at risk (CVaR) are the most frequently used risk measures in current risk management practice. As an alternative to VaR, CVaR is attractive since it is a coherent risk measure. We analyze the problem of computing the optimal VaR and CVaR portfolios. In particular, we illustrate that VaR and CVaR minimization problems for derivatives portfolios are typically ill-posed. For example, the VaR and CVaR minimizations based on delta-gamma approximations of the derivative values typically have an infinite number of solutions. In this paper, we focus on the portfolio selection problem which yields a portfolio of the minimum CVaR with a specified rate of return. We propose to include cost

as an additional preference criterion for the CVaR optimization problem. We demonstrate that, with the addition of a proportional cost, it is possible to compute an optimal CVaR derivative investment portfolio with significantly fewer instruments and comparable CVaR and VaR. A computational method based on a smoothing technique is proposed to solve a simulation based CVaR optimization problem efficiently. Comparison is made with the linear programming approach for solving the simulation based CVaR optimization problem.

url: http://hdl.handle.net/1813/5650
date: 2007-04-04
creator: Sirer, Emin Gun;Guha, Saikat
viewed: 28
title: Distributed Constraint-based Location Discovery in Ad hoc Networks
abstract: Location discovery is a fundamental building block for many mobile applications. Yet dedicated infrastructure for determining node locations is expensive, energy consuming, and simply unavailable under certain development scenarios. This paper presents an accurate,cheap and scalable protocol for location discovery. Called Zoom, this protocol operates by setting up and solving a system of geographic constraints based on connectivity information from the underlying communication network. Zoom achieves high accuracy by aggressively extracting constraints from the link layer, by propagating this information across multiple network hops and by explicitly tracking the set of possible locations for any given node instead of a single position estimate. Physical experiments with motes show that a large number(98%)of the nodes in a network can determine their positions based on a small number(30%)of landmark nodes with high accuracy(median error less than 30% of transmission range).

url: http://hdl.handle.net/1813/5651
date: 2007-04-04
creator: Myers, Andrew;Chong, Stephen;Nystrom, Nathaniel
viewed: 90
title: Scalable Extensibility via Nested Inheritance
abstract: Inheritance is a useful mechanism for factoring and reusing code. However, it has limitations for building extensible systems. We describe nested inheritance, a mechanism that addresses some of the limitations of ordinary inheritance and other code reuse mechanisms. Using our experience with an extensible compiler framework, we show how nested inheritance can be used to construct highly extensible software frameworks. The essential aspects of nested inheritance are formalized in a simple object-oriented language with an operational semantics and type system. The type system of this language is sound, so no run-time type checking is required to implement it and no run-time type errors can occur. We describe our implementation of nested inheritance as an unobtrusive extension of the Java language, called Jx. Our prototype implementation translates Jx code to ordinary Java code, without duplicating inherited code.

url: http://hdl.handle.net/1813/5652
date: 2007-04-04
creator: Lorigo, Lor;Kreitz, Christoph;Eaton, Richard;Constable, Robert;Bickford, Mark;Allen, Stuart
viewed: 59
title: FDL: A Prototype Formal Digital Library
abstract: This manual describes the first prototype of a new kind of system which we call a Formal Digital Library (FDL). We designed the system and assembled the prototype as part of a research project sponsored by the Office of Naval Research entitled Building Interactive Digital Libraries of Formal Algorithmic Knowledge. A key purpose of the prototype library is to demonstrate that it is possible to build a system with many of the properties called for in the project proposal and to illustrate important scenarios for its use. Experience

with the prototype library will influence the design and construction of an improved system. The current prototype includes some expediences that made it possible to create a working system in less than a year. The prototype FDL is one part of the overall project. There are other theoretical and experimental efforts that are described in other publications. The library described here contains definitions, theorems, theories, proof methods, and articles about topics in computational mathematics and books assembled from them. Currently it supports these objects created with the theorem proving systems MetaPRL, Nuprl and PVS. We intend to include material from other implemented logics such as Minlog, Coq, HOL, Isabelle, and Larch in due course. In addition to the purely formal material, the Library supports mathematically literate hypertext articles that cite and use the formal concepts. These include explanations of reference algorithms and explanations of formal mathematical models used in applications. Many operations on the Library are automated and extensible. The basic operations are to find and read material, organize it, and submit new material. New operations can be defined algorithmically. This manual is intended to help users understand the operation of the Library and to demonstrate to those interested in the project what else we intended to build and how it will be used.

url: http://hdl.handle.net/1813/5653
date: 2007-04-04
creator: Kozen, Dexter
viewed: 90
title: Natural Transformations as Rewrite Rules and Monad Composition
abstract: Eklund et al. (2002) present a graphical technique aimed at simplifying the verification of various category-theoretic constructions, notably the composition of monads. In this note we take a different approach involving string rewriting. We show that a given tuple (T,mu,eta) is a monad if and only if T is a terminal object in a certain category of functors and natural transformations, and that this fact can be established by proving confluence of a certain string rewriting system. We illustrate the technique on the monad composition problem of Eklund et al.

url: http://hdl.handle.net/1813/5654
date: 2007-04-04
creator: Shekita, Eugene;Beyer, Kevin;Shanmugasundaram, Jayavel;Guo, Lin
viewed: 32
title: Efficient Inverted Lists and Query Algorithms for Structured Value Ranking in Update-Intensive Relational Databases
abstract: We propose a new ranking paradigm for relational databases called Structured Value Ranking (SVR). SVR uses {\em structured data values} to score (rank) the results of keyword search queries over text columns. Our main contribution is a new family of inverted list indices and associated query algorithms that can support SVR efficiently in update-intensive databases, where the structured data values (and hence the scores of documents) change frequently. Our experimental results on real and synthetic data sets using BerkeleyDB show that we can support SVR efficiently in relational databases.

url: http://hdl.handle.net/1813/5655
date: 2007-04-04
creator: Sirer, Emin Gun;Williams, Daniel
viewed: 23
title: Optimal Parameter Selection for Efficient Memory Integrity Verification Using Merkle Hash trees
abstract: A secure, tamper proof execution environment is critical for trustworthy network computing. Newly emerging hardware, such as those developed as part of the TCPA and Palladium initiatives, enables operating systems to implement such an environment through Merkle hash trees. We examine the selection of optimal

parameters, namely blocksize and tree depth, for Merkle hash trees based on the size of the memory region to be protected and the number of memory updates between updates of the hash tree. We analytically derive an expression for the cost of updating the hash tree, show that there is an optimal block size for the leaves of a Merkle tree for a given file size and update interval that minimizes the cost of update operations, and describe a general method by which the parameters of such a tree can be determined optimally.

url: http://hdl.handle.net/1813/5656
date: 2007-04-04
creator: Shanmugasundaram, Jayavel;Novak, Antak;Shao, Feng
viewed: 33
title: Triggers over XML Views of Relational Data
abstract: Current systems that publish relational data as XML views are {\em passive} in the sense that they can only respond to user-initiated queries over the XML views. In this paper, we propose an {\em active} system whereby users can place triggers on (unmaterialized) XML views of relational data. In this architecture, we present scalable and efficient techniques for processing triggers over XML views by leveraging existing support for SQL triggers in commercial relational databases. We have implemented our proposed techniques in the context of the Quark system built on top of IBM DB2. Our performance results indicate that our proposed techniques are a feasible approach to supporting triggers over XML views of relational data.

url: http://hdl.handle.net/1813/5657
date: 2007-04-04
creator: Shanmugasundaram, Jayavel;Gehrke, Johannes;Machanavajjhala, Ashwin;Linga, Prakash;Crainiceanu, Adina
viewed: 119
title: P-Ring: An Index Structure for Peer-to-Peer Systems
abstract: Current peer-to-peer (P2P) index structures only support a subset of the desired functionality for P2P database systems. For instance, some P2P index structures support equality queries but not range queries, while others support range queries, but do not support multiple data items per peer or provide guaranteed search performance. In this paper, we devise a novel index structure called P-Ring that supports both equality and range queries, is fault-tolerant, provides guaranteed search performance, and efficiently supports large sets of data items per peer. We are not aware of any other existing index structure that supports all of the above functionality in a dynamic P2P environment. In a thorough experimental study we evaluate the performance of P-Ring and quantify the performance trade-offs of the different system components. We also compare P-Ring with two other P2P index structures, Skip Graphs and Chord.

url: http://hdl.handle.net/1813/5658
date: 2007-04-04
creator: Riedewald, Mirek;Gehrke, Johannes;Das, Abhinandan
viewed: 34
title: Approximation Techniques for Spatial Data
abstract: Spatial Database Management Systems (SDBMS), e.g., Geographical Information Systems, that manage spatial objects such as points, lines, and hyper-rectangles, often have very high query processing costs. Accurate selectivity estimation during query optimization therefore is crucially important for finding good query plans, especially when spatial joins are involved. Selectivity estimation has been studied for relational database systems, but to date has only received little attention in SDBMS. In this paper, we introduce novel methods that permit high-quality selectivity estimation for spatial joins and range queries. Our techniques can be constructed in a single scan over the input, handle inserts and deletes to the database incrementally, and hence they can also be used for processing of streaming spatial data. In contrast to previous approaches,

our techniques return approximate results that come with provable probabilistic quality guarantees. We present a detailed analysis and experimentally demonstrate the efficacy of the proposed techniques.

url: http://hdl.handle.net/1813/5659
date: 2007-04-04
creator: Schneider, Fred B.;Marsh, Michael A.
viewed: 19
title: CODEX: A Robust and Secure Secret Distribution System
abstract: CODEX (COrnell Data EXchange) stores secrets for subsequent access by authorized clients. It also is a vehicle for exploring the generality of a relatively new approach to building distributed services that are both fault-tolerant and attack-tolerant. Elements of that approach include: embracing the asynchronous (rather than synchronous) model of computation, use of Byzantine quorum systems for storing state, and employing proactive secret sharing with threshold cryptography for implementing confidentiality and authentication of service responses. Besides explaining the CODEX protocols, experiments to measure their performance are discussed.

url: http://hdl.handle.net/1813/5660
date: 2007-04-04
creator: Sirer, Emin Gun;Wong, Bernard
viewed: 20
title: A Lightweight Approach to Network Positioning
abstract: This paper describes a peer-to-peer overlay network for performing location-aware node and path selection in large-scale distributed systems. Our system, Meridian, provides a simple, lightweight and scalable framework for keeping track of location-information for participating nodes. The framework is based on local, relative coordinate systems in multi-resolution rings, direct measurement with scalable node-to-node handoff, and gossip protocols for dissemination. Large scale simulations and an implementation deployed on PlanetLab show that the framework can locate the closest node to given target with less than a 5ms median error, and the simplicity of the approach lends itself to a compact implementation.

url: http://hdl.handle.net/1813/5661
date: 2007-04-04
creator: Srivastava, Divesh;Shanmugasundaram, Jayavel;Koudas, Nick;Korn, Flip;Gehrke, Johannes;Chen, Zhiyuan
viewed: 21
title: Index Structures for Matching XML Twigs Using Relational Query Processors
abstract: Various index structures have been proposed to speed up the evaluation of XML path expressions. However, existing XML path indices suffer from at least one of three limitations: they focus only on indexing the structure (relying on a separate index for node content), or they are useful only for simple path expressions such as root-to-leaf paths, or they cannot be tightly integrated with a relational query processor. Moreover, there is no unified framework to compare these index structures. In this paper, we present a framework defining a family of index structures, including most existing XML path indices. We also propose two novel index structures in this family, with different space-time tradeoffs, that are effective for the evaluation of XML branching path expressions (i.e., twigs) with value conditions. We also show how this family of index structures can be realized using the access methods of the underlying database system. Finally, we present an experimental evaluation to understand the performance tradeoff between index space and twig matching time. The experimental results show that our novel indices achieve orders of magnitude improvement in performance for evaluating twig queries, albeit at a higher space cost, over the use of previously proposed XML path indices that can be tightly integrated with a relational query processor.

url: http://hdl.handle.net/1813/5662
date: 2007-04-04
creator: El-Yaniv, Ran;Chang, Kuan;Birkland, Aaron;Sharon, Itai;Yona, Golan
viewed: 29
title: Correcting BLAST e-values for low-complexity segments
abstract: The statistical estimates of BLAST and PSI-BLAST are of extreme importance to determine the biological relevance of sequence matches. While being very effective in evaluating most matches, these estimates usually overestimate the significance of matches in the presence of low complexity segments. In this paper we present a model, based on divergence measures and statistics of the alignment structure, that corrects BLAST e-values for low complexity sequences without filtering or excluding them. We evaluate our method and compare it to other known methods using the Gene Ontology (GO)knowledge resource as a benchmark. Various performance measures, including ROC analysis, indicate that the new model improves over the state of the art. The program is available at biozon.org/ftp/ and www.cs.technion.ac.il/~itaish/lowcomp/

url: http://hdl.handle.net/1813/5663
date: 2007-04-04
creator: Huttenlocher, Daniel;Felzenszwalb, Pedro
viewed: 40
title: Distance Transforms of Sampled Functions
abstract: This paper provides linear-time algorithms for solving a class of minimization problems involving a cost function with both local and spatial terms. These problems can be viewed as a generalization of classical distance transforms of binary images, where the binary image is replaced by an arbitrary sampled function. Alternatively they can be viewed in terms of the minimum convolution of two functions, which is an important operation in grayscale morphology. A useful consequence of our techniques is a simple, fast method for computing the Euclidean distance transform of a binary image. The methods are also applicable to Viterbi decoding, belief propagation and optimal control.

url: http://hdl.handle.net/1813/5664
date: 2007-04-04
creator: Kozen, Dexter
viewed: 18
title: Toward the Automation of Category Theory
abstract: We introduce a sequent system for basic category-theoretic reasoning suitable for computer implementation. We illustrate its use by giving a complete formal proof that the functor categories Fun[CxD,E] and Fun[C,Fun[D,E]] are naturally isomorphic.

url: http://hdl.handle.net/1813/5665
date: 2007-04-04
creator: Sharp, Alexa;Hartline, Jeff
viewed: 41
title: Hierarchical Flow
abstract: This paper defines a hierarchical version of the maximum flow problem. In this model, the capacities increase over time and the resulting solution is a sequence of flows that build on each other incrementally. Thus far, hierarchical problems considered in the literature have been built on NP-complete problems. To the best of our knowledge, our results are the first to find a polynomial time problem whose hierarchical version is NP-complete. We present approximation algorithms and hardness results for many versions of

this problem, and comment on the relation to multicommodity flow.

url: http://hdl.handle.net/1813/5666
date: 2007-04-04
creator: Stodghill, Paul;Pingali, Keshav;Yotov, Kamen
viewed: 115
title: X-Ray : Automatic Measurement of Hardware Parameters
abstract: There is growing interest in autonomic, self-tuning software that can optimize itself on new platforms, without manual intervention. Optimization requires detailed knowledge of the target platform such as the latency and throughput of instructions, the numbers of registers, and the organization of the memory hierarchy. An autonomic optimization system needs to determine such platform-specific information on its own. In this paper, we describe the design and implementation of X-Ray, which is a tool that automatically measures a large number of such platform-specific parameters. For some of these parameters, we also describe novel algorithms, which are more robust than existing ones. X-Ray is written in C for maximum portability, and it is based on accurate timing of a number of carefully designed micro-benchmarks. A novel feature of X-Ray is that it is easily extensible because it provides simple infrastructure and a code generator that can be used to produce the large number of micro-benchmarks needed for such measurements. There are few existing tools that address this problem. Our experiments show that X-Ray produces more accurate and more complete results than any of them.

url: http://hdl.handle.net/1813/5667
date: 2007-04-04
creator: Stodghill, Paul;Pingali, Keshav;Marques, Daniel;Ezick, James
viewed: 51
title: Man vs. Machine : Comparing Handwritten and Compiler-generated Application-Level Checkpointing
abstract: The contributions of this paper are the following. We describe the implementation of the C^3 system for semi-automatic application-level checkpointing of C programs. The system has (i) a pre-compiler that instruments C programs so that they can save their states at program execution points specified by the user, and (ii) a novel memory allocator that manages the heap as a collection of pools. We describe two static analyses for reducing the overhead of saving and restoring the application state. The first one optimizes stack variables, while the second one optimizes heap data structures. To benchmark our system, we compare the overheads introduced by our semi-automatic approach with the overhead of handwritten application-level checkpointing in an n-body code written by Joshua Barnes. Except for very small problem sizes, these overheads are comparable. We highlight various algorithmic challenges in the optimization of application-level checkpointing that should provide grist for the mills of the PLDI community.

url: http://hdl.handle.net/1813/5668
date: 2007-04-04
creator: Rugina, Radu;Hackett, Brian
viewed: 41
title: Region-Based Shape Analysis with Tracked Locations
abstract: This paper proposes a novel approach to shape analysis: using local reasoning about individual heap locations instead of global reasoning about entire heap abstractions. We present an inter-procedural shape analysis algorithm for languages with destructive updates and formulate it as a dataflow analysis. The key feature is a novel memory abstraction that differs from traditional abstractions in two ways. First, we build the shape abstraction and analysis on top of a pointer analysis. Second, we decompose the shape abstraction into a set of independent configurations, each of which characterizes one single heap location. Our approach:

1) leads to simpler algorithm specifications, because of local reasoning about the single location; 2) leads to efficient algorithms, because of the abstraction decomposition; and 3) makes it easier to develop context-sensitive, demand-driven, and incremental shape analyses. We have developed simple extensions that use the analysis results to find memory errors in programs with explicit deallocation, including memory leaks and accesses through dangling pointers. We have built a prototype system that implements the ideas in this paper and is designed to analyze C programs. Our experimental results support the intuition that local reasoning leads to more scalable analyses.

url: http://hdl.handle.net/1813/5669
date: 2007-04-04
creator: Stodghill, Paul;Pingali, Keshav;Yotov, Kamen
viewed: 33
title: Think Globally, Search Locally
abstract: A key step in program optimization is the determination of optimal values for code optimization parameters such as cache tile sizes and loop unrolling factors. One approach, which is implemented in most compilers, is to use analytical models to determine these values. The other approach, used in library generators like ATLAS, is to perform a global search over the space of parameter values by generating different versions of the code and executing them on the actual machine to find the parameter values that give the best performance. Neither approach is suitable for use in general-purpose compilers that must generate high quality code for large programs running on complex architectures. Model-driven optimization may incur a performance penalty of 10-20\% even for a relatively simple code like matrix multiplication, as was shown recently by Yotov et al. On the other hand, global search is not tractable for optimizing large programs for complex architectures because the optimization space is too large. To address this problem, some researchers are exploring more sophisticated search algorithms such as the simplex method, but it remains to be seen if these methods are successful in reducing search time without compromising on the quality of the solution. In this paper, we advocate a different methodology for generating high-performance code without increasing search time dramatically. Our methodology has three components: (i) modeling, (ii) local search, and (iii) model refinement. We use analytical models to estimate optimal values for transformation parameters. Since it is impossible to build tractable analytical models that capture all the features of complex architectures, we advocate improving these estimates by using a local search in the neighborhood of the model-predicted values. Finally, if the performance gap between handwritten code and generated code is substantial on some architecture, we advocate model refinement. To demonstrate this methodology, we built a modified ATLAS system that used a simple analytical model and local search, and showed that on most architectures, the performance of the code produced by this system was comparable to that of code produced by the original ATLAS system using global search. However, on x86 architectures, the gap in performance was substantial, and could not be bridged by local search alone. We argue that the problem is that the model assumed aggressive operation scheduling to mask instruction latencies, but such scheduling can actually be harmful on x86 architectures, a somewhat surprising fact that does not appear to be known widely. To address this problem, we use model refinement to generate a more sophisticated model that, when combined with local search, enables the production of high-quality code on both RISC and CISC architectures.

url: http://hdl.handle.net/1813/5670
date: 2007-04-04
creator: Stodghill, Paul;Pingali, Keshav;Yotov, Kamen
viewed: 41
title: Automatic Measurement of Memory Hierarchy Parameters
abstract: On modern computers, the running time of many applications is dominated by the cost of memory operations. To optimize such applications for a given platform, it is necessary to have a detailed

knowledge of the memory hierarchy parameters of that platform. In practice, this information is usually poorly documented if at all. Moreover, there is growing interest in self-tuning, autonomic software systems that can optimize themselves for different platforms, and these systems must determine memory hierarchy parameters automatically without human intervention. One solution is to use micro-benchmarks to determine the parameters of the memory hierarchy. In this paper, we argue that existing micro-benchmarks are inadequate, and present novel micro-benchmarks for determining the parameters of all levels of the memory hierarchy, including registers, all caches levels and the translation look-aside buffer. We have implemented these micro-benchmarks into an integrated tool that can be ported with little effort to new platforms. We present experimental results that show that this tool successfully determines memory hierarchy parameters on many current platforms, and compare its accuracy with that of existing tools.

url: http://hdl.handle.net/1813/5671
date: 2007-04-04
creator: Kozen, Dexter;Kot, Lucja
viewed: 52
title: Second-Order Abstract Interpretation via Kleene Algebra
abstract: Most standard approaches to the static analysis of programs, such as the popular worklist method, are first-order methods that inductively annotate program points with abstract values. In this paper we introduce a second-order approach based on Kleene algebra. In this approach, the primary objects of interest are not the abstract data values, but the transfer functions that manipulate them. These elements form a Kleene algebra. The dataflow labeling is not achieved by inductively labeling the program with abstract values, but rather by computing the star (Kleene closure) of a matrix of transfer functions. In this paper we introduce the method and prove soundness and completeness with respect to the standard worklist algorithm.

url: http://hdl.handle.net/1813/5672
date: 2007-04-04
creator: Kozen, Dexter;Kot, Lucja
viewed: 105
title: Kleene Algebra and Bytecode Verification
abstract: Most standard approaches to the static analysis of programs, such as the popular worklist method, are first-order methods that inductively annotate program points with abstract values. In a recent paper we introduced a second-order approach based on Kleene algebra. In this approach, the primary objects of interest are not the abstract data values, but the transfer functions that manipulate them. These elements form a Kleene algebra. The dataflow labeling is not achieved by inductively labeling the program with abstract values, but rather by computing the star (Kleene closure) of a matrix of transfer functions. In this paper we show how this general framework applies to the problem of Java bytecode verification.We show how to specify transfer functions arising in Java bytecode verification in such a way that the Kleene algebra operations (join, composition, star) can be computed efficiently. We also give a hybrid dataflow analysis algorithm that computes the closure of a matrix on a cutset of the control flow graph, thereby avoiding the recalculation of dataflow information along long paths. This method could potentially improve the performance over the standard worklist algorithm when a small cutset can be found.

url: http://hdl.handle.net/1813/5673
date: 2007-04-04
creator: Niculescu-Mizil, Alex;Caruana, Rich
viewed: 25
title: An Empirical Comparison of Supervised Learning Algorithms Using Different Performance Metrics
abstract: We present the results of a large-scale empirical comparison between seven learning methods: SVMs,

neural nets, decision trees, memory-based learning, bagged trees, boosted trees, and boosted stumps. A novel aspect of our study is that we compare these methods on nine different performance criteria: accuracy, squared error, cross entropy, ROC Area, F-score, precision/recall break-even point, average precision, lift, and probability calibration. The models with the best performance overall are neural nets, SVMs, and bagged trees. However, if we apply Platt calibration to boosted trees, they become the best model overall. Detailed examination of the results shows that even the best models perform poorly on some problems or metrics, and that even the worst models sometimes yield the best performance.

url: http://hdl.handle.net/1813/5674
date: 2007-04-04
creator: Stodghill, Paul;Pingali, Keshav;Yotov, Kamen
viewed: 48
title: Automatic Measurement of Hardware Parameters for Embedded Processors
abstract: Embedded processor designs are increasingly based on general-purpose processor families, modified and extended in various ways. However, the production of software for embedded processors remains a challenging problem. One promising approach for addressing this problem is self-optimizing software: instead of writing a program, one implements a program generator that produces a large number of program variants, and then determines empirically which variant performs best. The particular aspect of performance that is optimized can be execution time, power consumption, throughout, etc. To prevent a combinatorial explosion in the number of program variants that have to be considered, self-optimizing systems bound the search space by exploiting knowledge of hardware parameters such as the number of registers, the capacity of the L1 cache, etc. For software to be truly self-optimizing, hardware parameter values relevant for software optimization must be determined automatically. This paper makes the following contributions. We describe X-Ray - a robust and extensible micro-benchmark framework for measuring hardware parameters, in which it is very easy to implement new micro-benchmarks. This is particularly important in the embedded processor context because designers constantly add new features to architectures. We describe novel algorithms for measuring commonly used hardware parameters and show how they can be implemented in this framework. We evaluate our implementation experimentally on both embedded and desktop architectures, and show that it produces more accurate and complete results than existing tools.

url: http://hdl.handle.net/1813/5675
date: 2007-04-04
creator: Constable, Robert
viewed: 26
title: Transforming the Academy: Knowledge Formation in the Age of Digital Information
abstract: Computer-mediated knowledge formation will profoundly change every academic discipline and pose fundamental challenges to the mission of the modern research university in teaching the new knowledge, securing sound methods for creating it, directing it to our deepest intellectual concerns, and insuring that we become wiser for it. Digital information, now measured in petabytes, is expanding rapidly; already most of it will never be examined by any human. Computers show us where to look and help us see patterns and extract meaning. How will this way of knowing impact the research university as the Age of Digital Information unfolds? To grasp the magnitude of the changes we face, it is important to realize that knowledge created with computer assistance goes well beyond classical knowledge formation rising from computer processing of digital information resources on a scale that could not be achieved by all peoples of the earth acting in concert using all their cognitive powers. Computers change the scale at which resources can be examined, and they already provide sufficient discriminatory powers that scale and speed compensate for their currently limited intelligence as they draw conclusions, make predictions, and participate in discoveries. The academy is not generally aware of the potential of this transformation, although some computer

scientists and computational scientist are. The challenge for society is to assimilate digital knowledge and to improve the human condition by its application. We also seek to understand how it will shape our sense of self, individually and collectively as a society and a culture. In all of these tasks, the universities play an indispensable role for which they must prepare.

url: http://hdl.handle.net/1813/5676
date: 2007-04-04
creator: Schneider, Fred B.;Myers, Andrew C.;Clarkson, Michael R.
viewed: 42
title: Belief in Information Flow
abstract: Measurement of information flow requires a definition of leakage, which traditionally has been defined to occur when an attacker's uncertainty about secret data is reduced. We show that this uncertainty-based approach is inadequate for measuring information flow when an attacker is making assumptions about secret inputs and these assumptions might be incorrect. Moreover, we show that such attacker beliefs are an unavoidable aspect of any satisfactory definition of leakage. To reason about information flow based on beliefs, we develop a model that describes how an attacker's belief changes due to the attacker's observation of the execution of a probabilistic (or deterministic) program. The model leads to a new metric for quantitative information flow that measures accuracy rather than uncertainty of beliefs.

url: http://hdl.handle.net/1813/5677
date: 2007-04-04
creator: Slivkins, Aleksandrs
viewed: 29
title: "Distance Estimation and Object Location via Rings of Neighbors"
abstract: We approach several problems on distance estimation and object location using a common technique called \emph{rings of neighbors}. Using this technique on metrics of low doubling dimension, we obtain significant improvements for low-stretch routing schemes, distance labeling, searchable small worlds, and triangulation-based distance estimation. Apart from improving the previously known bounds for these problems, our contributions include extending Kleinberg's small world model to metrics of low doubling dimension, and a short proof of the main result in [Chan et al., SODA'05]. Doubling dimension is a combinatorial (non-geometric) notion of dimensionality that has recently become popular in theoretical CS literature. A collection of rings of neighbors is a sparse distributed data structure that captures the distances and routing information. The idea is that every node u stores pointers to some nodes called 'neighbors'; these pointers are partitioned into several 'rings', so that for some increasing sequence of balls $\{B_i\}$ around u, the neighbors in the i-th ring lie inside B_i; the radii of these balls and the distribution of neighbors in a given ring depend on the specific application. For metrics of low doubling dimension it has been particularly helpful to combine the following two collections of rings: in the first collection, the cardinalities of the balls B_i grow exponentially, and the neighbors are distributed randomly; in the second collection the \emph{radii} of the B_i's grow exponentially, and the neighbors are distributed geographically. Although used implicitly in several contexts, rings of neighbors have not been articulated as a general proof technique.

url: http://hdl.handle.net/1813/5678
date: 2007-04-04
creator: Lee, Huhn-Kie
viewed: 39
title: Demonstration of RTT and BDB
abstract: This document demonstrates how BDB and RTT works.

url: http://hdl.handle.net/1813/5679
date: 2007-04-04
creator: Lee, Huhn-Kie
viewed: 34
title: BioDataBase
abstract: This paper contains the concept of "Relational Taxonomy Tree (RTT)" and BioDataBase (BDB). RTT solves the following problems 1. how do we represent hierarchical entities like biological taxonomy? (section II and III in the document) 2. How do we perform Join operations across the hierarchy? (section IV) BDB solves the following problem: 3. correlate two disparate kinds of data. E.g. environmental factors (humidity, average temperature) with Gene Expression Data (section VII).

url: http://hdl.handle.net/1813/5680
date: 2007-04-04
creator: Sirer, Emin Gun;Walsh, Kevin
viewed: 41
title: Thwarting P2P Pollution Using Object Reputation
abstract: This paper describes a distributed object reputation management scheme that counteracts content pollution in peer-to-peer filesharing systems. The proposed scheme allows honest peers to assess the authenticity of online content by securely tabulating and managing endorsements from other peers. We employ a novel voter correlation scheme to weight the opinions of peers, which gives rise to favorable incentives and system dynamics. We present simulation results indicating that our system is scalable, efficient, and robust to attack.

url: http://hdl.handle.net/1813/5681
date: 2007-04-04
creator: Lee, Huhn-Kie
viewed: 37
title: Huhn-Kie's concept on Library of Life
abstract: This paper suggests the overall design of Library of Life. It also discusses what kind of services the Library of Life should provide and how the Library of Life can interact with private businesses through advertisement.

url: http://hdl.handle.net/1813/5682
date: 2007-04-04
creator: Sirer, Emin Gun;Slivkins, Aleksandrs;Wong, Bernard
viewed: 25
title: Meridian: A Lightweight Framework for Network Positioning without Virtual Coordinates
abstract: Selecting nodes based on their position in the network is a basic building block for many distributed systems. This paper describes a peer-to-peer overlay network for performing position-based node selection. Our system, Meridian, provides a lightweight, accurate and scalable framework for keeping track of location information for participating nodes. The framework consists of an overlay network structured around multi-resolution rings, query routing with direct measurements, and gossip protocols for dissemination. We show how this framework can be used to address three commonly encountered problems in large-scale distributed systems without having to compute absolute coordinates; namely, closest node discovery, central leader election, and locating nodes that satisfy target latency constraints. We show analytically that the framework is scalable with logarithmic convergence when Internet latencies are modeled as a growth-constrained metric, a low-dimensional Euclidian metric, or a metric of low doubling dimension. Large scale simulations, based

on latency measurements from 6.25 million node-pairs, and an implementation deployed on PlanetLab both show that the framework is accurate and effective

url: http://hdl.handle.net/1813/5683
date: 2007-04-04
creator: Lee, Huhn-Kie
viewed: 35
title: recognizer for species pictures
abstract: I designed an algorithm that can recognize a picture of a species. It is robust to the varying brightness or tilted angle of the pictures.

url: http://hdl.handle.net/1813/5684
date: 2007-04-04
creator: Shanmugasundaram, Jayavel;Amer-Yahia, Sihem;Botev, Chavdar
viewed: 47
title: Expressiveness and Performance of Full-Text Search Languages
abstract: We study the expressiveness and performance of full-text search languages. Our main motivation is to provide a formal basis for comparing such languages and todevelop a model for full-text search that can be tightly integrated withstructured search. We develop a formal model for full-text search based on thepositions of tokens (words) in the input text, and develop a full-text calculus(FTC) and a full-text algebra (FTA) with equivalent expressive power. Thissuggests a notion of completeness for full-text search languages and can be usedas a basis for a study of their expressiveness. We show that existing full-textlanguages are incomplete and develop {\tt COMP}, a complete full-text searchlanguage. We also identify practical subsets of {\tt COMP} that are morepowerful than existing languages, develop efficient query evaluation algorithmsfor these subsets, and study experimentally their performance.

url: http://hdl.handle.net/1813/5685
date: 2007-04-04
creator: Ramanarayanan, Ganesh;Kozen, Dexter
viewed: 42
title: Publication/Citation: A Proof-Theoretic Approach to Mathematical Knowledge Management
abstract: There are many real-life examples of formal systems that support constructions or proofs, but that do not provide direct support for remembering them so that they can be recalled and reused in the future. In this paper we examine the operations of publication (remembering a proof) and citation (recalling a proof for reuse), regarding them as forms of common subexpression elimination on proof terms. We then develop this idea from a proof theoretic perspective, describing a simple complete proof system for universal Horn equational logic using three new proof rules, publish, cite, and forget. These rules can provide a proof-theoretic infrastructure for proof reuse in any system.

url: http://hdl.handle.net/1813/5686
date: 2007-04-04
creator: Kozen, Dexter
viewed: 28
title: Coinductive Proof Principles for Stochastic Processes
abstract: We give an explicit coinduction principle for recursively-defined stochastic processes. The principle applies to any closed property, not just equality, and works even when solutions are not unique. We illustrate the use of the rule in deriving properties of a simple coin-flip process.

url: http://hdl.handle.net/1813/5687
date: 2007-04-04
creator: Myers, Andrew C.;Zheng, Lantian
viewed: 31
title: End-to-End Availability Policies and Noninterference
abstract: This paper introduces the use of static information flow analysis for the specification and enforcement of end-to-end availability policies in programs. We generalize the decentralized label model, which is about confidentiality and integrity, to also include security policies for availability. These policies characterize acceptable risks by representing them as principals. We show that in this setting, a suitable extension of noninterference corresponds to a strong, end-to-end availability guarantee. This approach provides a natural way to specify availability policies and enables existing static dependency analysis techniques to be adapted for availability. The paper presents a simple language in which fine-grained information security policies can be specified as type annotations. These annotations can include requirements for all three major security properties: confidentiality, integrity, and availability. The type system for the language provably guarantees that any well-typed program has the desired noninterference properties, ensuring confidentiality, integrity, and availability.

url: http://hdl.handle.net/1813/5688
date: 2007-04-04
creator: Shanmugasundaram, Jayavel;Gehrke, Johannes;Crainiceanu, Adina;Linga, Prakash
viewed: 85
title: Guaranteeing Correctness and Availability in P2P Range Indices
abstract: New and emerging P2P applications require sophisticated range query capability and also have strict requirements on query correctness, system availability and item availability. While there has been recent work on developing new P2P range indices, none of these indices guarantee correctness and availability. In this paper, we develop new techniques that can provably guarantee the correctness and availability of P2P range indices. We develop our techniques in the context of a general P2P indexing framework that can be instantiated with most P2P index structures from the literature. As a specific instantiation, we implement P-Ring, an existing P2P range index, and show how it can be extended to guarantee correctness and availability. We quantitatively evaluate our techniques using a real distributed implementation.

url: http://hdl.handle.net/1813/5689
date: 2007-04-04
creator: Gehrke, J.;Demers, A.;Yao, Y.;Trigoni, N.
viewed: 95
title: Multi-query optimization for sensor networks
abstract: The widespread dissemination of small-scale sensor nodes has sparked interest in a powerful new database abstraction for sensor networks: Clients "program" the sensors through queries in a high-level declarative language (such as a variant of SQL) permitting the system to perform the low-level optimizations necessary for energy-efficient query processing. In this paper we consider multi-query optimization for aggregate queries on sensor networks. We develop a set of distributed algorithms for processing multiple queries that incur minimum communication while observing the computational limitations of the sensor nodes. Our algorithms support incremental changes to the set of active queries and allow for local repairs to routes in response to node failures. A thorough experimental analysis shows that our approach results in significant energy savings, compared to previous work.

url: http://hdl.handle.net/1813/5690
date: 2007-04-04

creator: Lee, Huhn-Kie
viewed: 18
title: Life Science Server
abstract: Life Science Server (LSS) is a web server system that answers any questions in life science based on BioDataBase.

url: http://hdl.handle.net/1813/5691
date: 2007-04-04
creator: Fan Yang, Jayavel Shanmugasundaram, Mirek Riedewald, Johannes Gehrke,
viewed: 41
title: Hilda: A High-Level Language for Data-Driven Web Applications
abstract: We propose Hilda, a high-level language for developing data-driven web applications. The primary benefits of Hilda over existing de- velopment platforms are: (a) it uses a uni- fied data model for all layers of the applica- tion, (b) it is declarative, (c) it models both application queries and updates, (d) it sup- ports structured programming for web sites, (e) it enables conflict detection for concur- rent updates, and (f) it separates application logic from presentation. We also describe the implementation of a simple proof-of-concept Hilda compiler, which translates a Hilda ap- plication program into Java Servlet code.

url: http://hdl.handle.net/1813/5692
date: 2007-04-04
creator: Sandler, Mark
viewed: 28
title: On the Use of Linear Programming for Unsupervised Text Classification
abstract: We present a new algorithm for large scale unsupervised text classification. Our method views each document as a sample of fixed size from a mixture model, and uses a novel L1-norm based theoretical approach due to Kleinberg and Sandler. We show that our algorithm performs extremely well on data sets of 10^5 documents and more, and in particular out-performs Latent Semantic Indexing by a large margin. Furthermore, on some tests its prediction accuracy approaches that of {\it supervised} learning with training set of 5,000 or more documents. Unlike LSI, our algorithm produces a ``well-behaved'' projection in general, that in many cases does not require additional clustering algorithm to separate topics. We experiment with the \arxiv - a collection of scientific abstracts and the \news~dataset - a small snapshot of 20 specific newsgroups.

url: http://hdl.handle.net/1813/5693
date: 2007-04-04
creator: Sirer, Emin Gun;Liu, Hongzhou
viewed: 38
title: A Measurement Study of a Publish Subscribe System
abstract: While publish-subscribe systems have attracted much research interest in the last decade, few established benchmarks have emerged and there has been little characterization of how they are used in practice. This paper examines RSS, a newly emerging, widely used publishsubscribe system for web micronews. Based on a trace study spanning 45 days at a medium-size academic department, and periodic polling of approximately 100,000 RSS feeds, we extract feed and client characteristics for RSS. We find that the popularity of RSS feeds follows a power law distribution. 16% of RSS feeds are updated hourly and 25% do not change at all during our polling period. 64%of all updates involve less than three lines in the XML document. We also find that RSS feed update sizes are proportional to feed size. Overall, an analysis of RSS, the first widely deployed publish-subscribe system, can help inform the design of next generation pub-sub systems.

url: http://hdl.handle.net/1813/5694
date: 2007-04-04
creator: Sirer, Emin Gun;Ramasubramanian, Venugopalan
viewed: 35
title: Perils of Transitive Trust in the Domain Name System
abstract: The Domain Name System, DNS, is based on nameserver delegations, which introduce complex and subtle dependencies between names and nameservers. In this paper, we present results from a large scale survey of DNS that shows that these dependencies lead to a highly insecure naming system. We report specifically on three aspects of DNS security: the properties of the DNS trusted computing base, the extent and impact of existing vulnerabilities in the DNS infrastructure, and the ease with which attacks against DNS can be launched. The survey shows that a typical name depends on 46 servers on average, whose compromise can lead to domain hijacks, and names belonging to some countries depend on a few hundred nameservers. An attacker exploiting well-documented vulnerabilities in DNS can hijack more than 30% of the names appearing in the Yahoo and DMOZ.org directories. And certain nameservers, especially in educational institutions, control as much as 10% of the namespace.

url: http://hdl.handle.net/1813/5695
date: 2007-04-04
creator: Bala, Kavita;Ramanarayanan, Ganesh
viewed: 48
title: Constrained Graphcut Texture Synthesis
abstract: This paper describes constrained graphcut texture synthesis (CGS), a graphcut-based synthesis algorithm that creates output textures satisfying constraints. We show that constrained texture synthesis can be posed in a principled way as an optimization problem that requires balancing two measures of quality: constraint satisfaction and texture seamlessness. We then present an efficient algorithm for finding good solutions to this problem, using generalized graphcut minimization. CGS enables explicit control while preserving the speed and quality benefits of graphcut texture synthesis. This approach supports the full image analogies framework, while providing superior image quality and performance. A range of applications of CGS are demonstrated, including detail synthesis, artistic filtering by analogy, and texture-by-numbers. CGS is easily extended to handle multiple constraints on a single output, thus enabling novel applications that combine both user-specified and image-based control.

url: http://hdl.handle.net/1813/5696
date: 2007-04-04
creator: Shanmugasundaram, Jayavel;Amer-Yahia, Sihem;Botev, Chavdar
viewed: 61
title: Expressiveness and Performance of Full-Text Search Languages
abstract: We study the expressiveness and performance of full-text search languages. Our main motivation is to provide a formal basis for comparing such languages and to develop a model for full-text search that can be tightly integrated with structured search. We develop a formal model for full-text search based on the positions of tokens (words) in the input text, and develop a full-text calculus (FTC) and a full-text algebra (FTA) with equivalent expressive power. This suggests a notion of completeness for full-text search languages and can be used as a basis for a study of their expressiveness. We show that existing full-text languages are incomplete and develop {\tt COMP}, a complete full-text search language. We also identify practical subsets of {\tt COMP} that are more powerful than existing languages, develop efficient query evaluation algorithms for these subsets, and study experimentally their performance.

url: http://hdl.handle.net/1813/5697

date: 2007-04-04
creator: White, Walker;Riedewald, Mirek;Hong, Mingsheng;Gehrke, Johannes;Demers, Alan
viewed: 94
title: A General Algebra and Implementation for Monitoring Event Streams
abstract: Recently there has been considerable research on Data Stream Management Systems (DSMS) to support analysis of data that arrives rapidly in high-speed streams. Most of these systems have very expressive query languages in order to address a wide range of applications. In this paper, we take a different approach. Instead of starting with a very powerful data stream query language, we begin with a well-known class of languages -- event languages. Through the addition of several simple, but powerful language constructs (namely parameterization and aggregates), we add pieces that extend their expressiveness towards full-fledged languages for processing data streams. Our resulting contributions are a novel algebra for expressing data stream queries, and a corresponding transformation of algebra expressions into finite state automata that can be implemented very efficiently. Our language is simple and natural, and it can express surprisingly powerful data stream queries. We formally introduce the language including a formal mapping of algebra expressions to finite state automata. Furthermore, we show the efficacy of our approach via an initial performance evaluation, including a comparison with the Stanford STREAM System.

url: http://hdl.handle.net/1813/5698
date: 2007-04-04
creator: Bala, Kavita;Walter, Bruce;Arbree, Adam
viewed: 43
title: Pre-Processing Environment Maps for Dynamic Hardware Shadows
abstract: Environment maps are a popular method of reproducing complex natural lighting. However, current methods for hardware environment map shadows depend on significant pre-computation and cannot support dynamic objects. This work presents a pre-process that decomposes an environment map into two components: a set of area lights and an ambient map. Once the map is split into these components, each is rendered with an appropriate mechanism. The area lights are rendered using an existing hardware-accelerated soft-shadow algorithm; for our implementation we use penumbra wedges. The ambient region is rendered using pre-integrated irradiance mapping. Using an NVidia 6800 on a standard desktop, we demonstrate high-quality environment map shadows for dynamic scenes at interactive rates.

url: http://hdl.handle.net/1813/5699
date: 2007-04-04
creator: Bala, Kavita;Pellacini, Fabio;Hasan, Milos
viewed: 69
title: Real-time Hardware-accelerated Relighting with Approximate Indirect Illumination
abstract: Deep framebuffer relighting engines are often used to speed up lighting design in geometricallycomplex procedurally-shaded environments where they provide interactive feedback on changes to the direct illumination. This paper presents an extension to these algorithms by providing real-time feedback for one-bounce indirect illumination. This is achieved by relighting a set of cached gather samples generated from the original geometry using a Monte Carlo gathering approach. To improve performance and decrease storage, the gather samples are clustered such that the resulting data structures are efficient for evaluation on modern GPUs. The hardware-accelerated implementation of our algorithm achieves real-time performance and is scalable to environments with high geometric and material complexity while supporting arbitrary direct lighting models, including local ones, and diffuse and glossy materials.

url: http://hdl.handle.net/1813/5700
date: 2007-04-04

creator: Kozen, Dexter;Aboul-Hosn, Kamal
viewed: 84
title: Relational Semantics of Local Variable Scoping
abstract: Most previous work on the equivalence of programs in the presence of local state has involved intricate memory modeling and the notion of contextual (observable) equivalence. We show how relational semantics can be used to avoid these complications. We define a notion of local variable scoping, along with a purely compositional semantics based on binary relations, such that all contextual considerations are completely encapsulated in the semantics. We then give an axiom system for program equivalence in the presence of local state that avoids all mention of memory or context and that does not use semantic arguments. The system is complete relative to the underlying flat equational theory. We also indicate briefly how the semantics can be extended to include higher-order functions.

url: http://hdl.handle.net/1813/5701
date: 2007-04-04
creator: D'Andrea, Raffaello;Purwin, Oliver
viewed: 43
title: Continuity and Monotonicity Properties of an Optimally Controlled Double Integrator with State and Input Constraints
abstract: This paper presents minimum-time solutions for driving a double integrator to a desired state with zero final velocity. The presence of constraints on the magnitude of the control input and the velocity state is assumed. The derived solutions are piecewise constant control efforts, which have to be executed in sequence. Finally, it is shown that the required times are strictly monotone and continuous functions of the constraints.

url: http://hdl.handle.net/1813/5702
date: 2007-04-04
creator: Sharp, Alexa;Hartline, Jeff
viewed: 23
title: An Incremental Model for Combinatorial Maximization Problems
abstract: Many combinatorial optimization problems aim to select a subset of elements of maximum value subject to certain constraints. We consider an incremental version of such problems, in which some of the constraints rise over time. A solution is a sequence of feasible solutions, one for each time step, such that later solutions build on earlier solutions incrementally. We introduce a general model for such problems, and define incremental versions of maximum flow, bipartite matching, and knapsack. We find that imposing an incremental structure on a problem can drastically change its complexity. With this in mind, we give general yet simple techniques to adapt algorithms for optimization problems to their respective incremental versions, and discuss tightness of these adaptations with respect to the three aforementioned problems.

url: http://hdl.handle.net/1813/5703
date: 2007-04-04
creator: Schneider, Fred;Morrisett, Greg;Hamlen, Kevin
viewed: 31
title: Certified In-lined Reference Monitoring on .Net
abstract: MOBILE is an extension of the .NET Common Intermediate Language that permits certified In-Lined Reference Monitoring on Microsoft .NET architectures. MOBILE programs have the useful property that if they are well-typed with respect to a declared security policy, then they are guaranteed not to violate that security policy when executed. Thus, when an In-Lined Reference Monitor (IRM) is expressed in MOBILE, it can be certified by a simple type-checker to eliminate the need to trust the producer of the IRM.

MOBILE thereby permits development of arbitrarily complex IRM producers without contributing that added complexity to the trusted computing base of the system. Security policies in MOBILE are declarative, can involve potentially unbounded collections of objects allocated at runtime, and can regard finite- or infinite-length histories of security events exhibited by those objects. Our prototype implementation of MOBILE enforces properties expressed by finite-state security automata -- one automaton for each security-relevant object, and can type-check MOBILE programs in the presence of exceptions, finalizers, concurrency, and non-termination. Executing MOBILE programs requires no change to existing .NET virtual machine implementations, since MOBILE programs consist of normal managed CIL code with extra typing annotations stored in .NET attributes.

url: http://hdl.handle.net/1813/5704
date: 2007-04-04
creator: Sirer, Emin Gun;Ramasubramanian, Venugopalan;Song, Yee Jiun
viewed: 38
title: Optimal Resource Utilization in Content Distribution Networks
abstract: This paper examines replication in content distribution networks and proposes a novel mechanism for optimally resolving performance versus cost tradeoffs. The key insight behind our work is to formally and analytically capture the relationship between performance, bandwidth overhead and storage requirements for a web cache, express the system goals as a mathematical optimization problem, and solve for the optimal extent of replication that achieves the desired system goals with minimal overhead. We describe the design and implementation of a new content distribution network based on this concept, called CobWeb. CobWeb can achieve a target lookup latency while minimizing network and storage overhead, minimize access time while keeping bandwidth usage below a set limit, and alleviate “flash crowd” effects by rapidly replicating popular objects through fast and highly adaptive replica management. We outline the architecture of the CobWeb system, describe its novel optimization algorithm for intelligent resource allocation, and compare, through simulations and a physical deployment on PlanetLab, CobWeb’s informed, analysis-driven replication strategy to existing approaches based on passive caching and heuristics.

url: http://hdl.handle.net/1813/5705
date: 2007-04-04
creator: Botev, Chavdar \and Eiron, Nadav \and Fontoura, Marcus \and Li, Ning
viewed: 24
title: Static Score Bucketing in Inverted Indexes
abstract: Maintaining strict static score order of inverted lists is a heuristic used by search engines to improve the quality of query results when the entire inverted lists cannot be processed. This heuristic, however, increases the cost of index generation and requires time-consuming index build algorithms. In this paper, we study a new index organization based on static score bucketing. We show that this new technique significantly improves in index build performance while having minimal impact on the quality of search results. We also provide upper bounds on the quality degradation and verify experimentally the benefits of the proposed approach.

url: http://hdl.handle.net/1813/5706
date: 2007-04-04
creator: Sirer, Emin Gun;Peterson, Ryan;Ramasubramanian, Venugopalan
viewed: 31
title: Corona: A High Performance Publish-Subscribe System for the World Wide Web
abstract: Despite the abundance of frequently changing information, the Web lacks a publish-subscribe interface for delivering updates to clients. The use of naive polling for update detection leads to poor

performance and limits scalability, as clients do not detect updates quickly and servers face high loads imposed by active polling. This paper describes Corona, a publish-subscribe system for the Web that provides high performance and scalability through optimal resource allocation. Users register interest in web pages through existing instant messaging services. Corona monitors the subscribed web pages, detects updates efficiently by allocating polling load among cooperating peers and disseminates them quickly to the clients. A distributed optimization engine ensures that Corona achieves the best update performance without exceeding load limits on content servers. Large scale simulations and measurements from Planet-Lab deployment, described in this paper, demonstrate that Corona achieves orders of magnitude improvement in update performance at a modest cost.

url: http://hdl.handle.net/1813/5707
date: 2007-04-04
creator: Bala, Kavita;Walter, Bruce;Lee, Eugene;Velazquez-Armendariz, Edgar
viewed: 47
title: Implementing the Render Cache and the Edge-and-Point Image On Graphics Hardware
abstract: The render cache and the edge-and-point image (EPI) are techniques that permit high quality rendering at interactive rates of models illuminated with complex ray traced techniques, combining sparse sampling and discontinuities-respecting interpolation. The image reconstruction is decoupled from the samples generation process and permits the use of arbitrary shaders to gather shading samples. Although the system uses seemingly familiar graphics operations, their behavior differ in subtle and interesting ways from the regular graphics hardware use. This work presents a multi-pass rendering algorithm that brings the render cache and EPI image generation processes to programmable graphics hardware utilizing their newest capabilities. Its implementation permits substantial performance gains and leverages the CPU workload, allowing more time to be spent on the samples generation. It discusses the performance achieved, optimizations and limitations with the current generation hardware as well as possibilities for future improvements.

url: http://hdl.handle.net/1813/5708
date: 2007-04-04
creator: Ali, Nawaz
viewed: 21
title: Design, analysis, implementation and improvements in Quicksort
abstract: Table of Contents: (1) SORTING ALGORITHMS ... (2) THE QUICKSORT ... (3) PARTITIONING ... (4) PERFORMANCE OF QUICKSORT ... (5) ANALYSIS ... (6) RANDOMIZATION ... (7) SORTING ALGORITHMS (8) COMPLEXITY OF QUICK SORT ... (9) IMPROVEMENT STRATEGIES ... (10) CODE IN C

url: http://hdl.handle.net/1813/5709
date: 2007-04-04
creator: Sirer, Emin Gun
viewed: 46
title: Heuristics Considered Harmful or Using Mathematical Optimization for Resource Management in Distributed Systems
abstract: Distributed systems often pose difficult to resolve resource management problems. These problems typically involve the partitioning of a critical resource, such as bandwidth, storage, or computational elements, between competing tasks. Traditionally, such problems are resolved using custom, domain-specific heuristics. Yet heuristics are neither robust to uctuations in load characteristics nor do they enable the system designer to reason definitively about the emergent properties of the system after deployment. In this paper, we argue

for a more principled approach to resource management in distributed systems. Namely, we propose that resource allocation problems are ideally suited for mathematical optimization. We outline a gen- eral approach based on analytical modeling, optimization, and practical implementation. We describe how we have applied this technique to several diverse domains, to yield qualitative improvements in performance and achieve strong guarantees.

url: http://hdl.handle.net/1813/5710
date: 2007-04-04
creator: Constable, Robert L.;Bickford, Mark
viewed: 24
title: A Causal Logic of Events in Formalized Computational Type Theory
abstract: We provide a logic for distributed computing that has the explanatory and technical power of constructive logics of computation. Inparticular, we establish a proof technology that supports correct-by-construction programming based on the notion that concurrent processes can be extracted from proofs that specifications are achievable.

url: http://hdl.handle.net/1813/5711
date: 2007-04-04
creator: Daswani, Neil;Guha, Saikat
viewed: 41
title: An Experimental Study of the Skype Peer-to-Peer VoIP System
abstract: Despite its popularity, relatively little is known about the traffic characteristics of the Skype VoIP system and how they differ from other P2P systems. We describe an experimental study of Skype VoIP traffic conducted over a one month period, where over 30 million datapoints were collected regarding the population of online clients, the number of supernodes, and their traffic characteristics. The results indicate that although the structure of the Skype system appears to be similar to other P2P systems, particularly KaZaA, there are several significant differences in traffic. The number of active clients shows diurnal and work-week behavior, correlating with normal working hours regardless of geography. The population of supernodes in the system tends to be relatively stable; thus node churn, a significant concern in other systems, seems less problematic in Skype. The typical bandwidth load on a supernode is relatively low, even if the supernode is relaying VoIP traffic. The paper aims to aid further understanding of a signifi- cant, successful P2P VoIP system, as well as provide experimental data that may be useful for design and modeling of such systems. These results also imply that the nature of a VoIP P2P system like Skype differs fundamentally from earlier P2P systems that are oriented toward file-sharing, and music and video download applications, and deserves more attention from the research community.

url: http://hdl.handle.net/1813/5712
date: 2007-04-04
creator: Sandler, Mark;Mishra, Nina
viewed: 35
title: Privacy via Pseudorandom Sketches
abstract: Imagine a collection of individuals who each possess private data that they do not wish to share with a third party. This paper considers how individuals may represent and publish their own data so as to simultaneously preserve their privacy and to ensure that it is possible to extract large-scale statistical behavior from the original unperturbed data. Existing techniques for perturbing data are limited by the number of users required to obtain approximate answers to queries, the richness of preserved statistical behavior, the privacy guarantees given and/or the amount of data that each individual must publish. This paper introduces a new technique to describe parts of an individual's data that is based on pseudorandom sketches. The sketches

guarantee that each individual's privacy is provably maintained assuming one of the strongest definitions of privacy that we are aware of: given unlimited computational power and arbitrary partial knowledge, the attacker can not learn any additional private information from the published sketches. However, sketches from multiple users that describe a subset of attributes can be used to estimate the fraction of users that satisfy any conjunction over the full set of negated or unnegated attributes. We show that the error of approximation is independent of the number of attributes involved and only depends on the number of users available. An additional benefit is that the size of the sketch is minuscule: $\lceil \log\log O(M)\rceil $ bits, where M is the number of users. Finally, we show how sketches can be combined to answer more complex queries.

url: http://hdl.handle.net/1813/5713
date: 2007-04-04
creator: Planeta, David
viewed: 34
title: Pbit and other list sorting algorithms
abstract: Pbit, besides its simplicity, is definitely the fastest list sorting algorithm. It considerably surpasses all already known methods. Among many advantages, it is stable, linear and be made to run in place. I will compare Pbit with algorithm described by Donald E. Knuth in the third volume of ''The Art of Computer Programming" and other (QuickerSort, MergeSort) list sorting algorithms.

url: http://hdl.handle.net/1813/5714
date: 2007-04-04
creator: Constable, Robert L.;Allen, Stuart F.
viewed: 31
title: Enabling Large Scale Coherency Among Mathematical Texts
abstract: Mathematical and program-code text is unique because significant portions of it can be anchored to counterparts in formal logical theories that are implemented by computer systems. These systems check formal proofs for correctness and trace logical dependencies among assertions. When elements of expository text, such as definitions and theorems, are formally linked to their implemented counterparts, we call the texts semantically anchored. Such texts exhibit considerable depth and authority. It is possible to leverage substantial investments made by governments, research laboratories, corporations, and universities in creating large collections of computerchecked and interactively-generated formal mathematics, making this research investment, these collections, accessible to an extended community of authors, researchers, students and teachers involved with mathematics. We advocate extending common authoring tools (text editors as opposed to formal proof development tools) so that they can easily produce semantically anchored documents suitable for dissemination along with the formal mathematics to which they are anchored; some texts would be newly authored, while others would be static textbased resources improved by anchoring. These tools will enable authors to create these documents by drawing on a large already existing and growing collection of formal material. We expect that anchored documents will enable interconnected collections where the computers support exact common reference among concepts and thus greatly facilitate collaborative contributions to online collections and provide large-scale coherency among mathematical texts.

url: http://hdl.handle.net/1813/5715
date: 2007-04-04
creator: Constable, Robert;Eaton, Richard;Kleinberg, Jon;Lorigo, Lori
viewed: 45
title: A Graph-Based Approach towards Discerning Inherent Structures in a Digital Library of Formal Mathematics
abstract: As the amount of online formal mathematical content grows, for example through active efforts such

as the Mathweb [21], MOWGLI [4], Formal Digital Library, or FDL [1], and others, it becomes increasingly valuable to find automated means to manage this data and capture semantics such as relatedness and significance. We apply graph-based approaches, such as HITS, or Hyperlink-Induced Topic Search, [11] used for World Wide Web document search and analysis, to formal mathematical data collections. The nodes of the graphs we analyze are theorems and definitions, and the links are logical dependencies. By exploiting this link structure, we show how one may extract organizational and relatedness information from a collection of digital formal math. We discuss the value of the information we can extract, yielding potential applications in math search tools, theorem proving, and education.

url: http://hdl.handle.net/1813/5716
date: 2007-04-04
creator: Schneider, Fred B.;Pucella, Riccardo
viewed: 31
title: Independence From Obfuscation: A Semantic Framework for Diversity
abstract: A set of replicas is diverse to the extent that all implement the same functionality but differ in their implementation details. Diverse replicas are less prone to having vulnerabilities in common, because attacks typically depend on memory layout and/or instruction-sequence specifics. Recent work advocates using mechanical means, such as program rewriting, to create such diversity. A correspondence between the specific transformations being employed and the attacks they defend against is often provided, but little has been said about the overall effectiveness of diversity per se in defending against attacks. With this broader goal in mind, we here give a precise characterization of attacks, applicable to viewing diversity as a defense, and also show how mechanically-generated diversity compares to a well-understood defense, strong typing.

url: http://hdl.handle.net/1813/5717
date: 2007-04-04
creator: Hartline, Jeff
viewed: 25
title: Optimal Shortcuts for Balanced Search Trees
abstract: We present an alternative to tree rebalancing for improving the expected search cost in weighted binary search trees. This alternative is based on the insertion of shortcut links between nodes in the search tree. We propose several shortcut models and give polynomial time algorithms to find the best shortcuts for two of these models.

url: http://hdl.handle.net/1813/5718
date: 2007-04-04
creator: John E. Hopcroft, Andre Allavena
viewed: 19
title: Phase transitions and other phenomena in graphs grown with preferential attachment
abstract: We study a model of grown graph where a vertex is added at each time step, then an edge is added with probability δ. Callaway et al. showed that when both end vertices of the edge are chosen uniformly at random, the critical probability of edges δ_c to get a component which grows linearly with the number of vertices (a giant component) was \sfrac 1/8, smaller than in a comparable static graph. We derive a formula giving δ_c as a function of the initial self-attractiveness of vertices in a growth model where one end of the edge is chosen with preferential attachment. This number decreases even more as the self-attractiveness increases. For a self-attractiveness of one (value generally accepted for the web graph), it takes less than one edge for every twelve vertices to get a component whose size grows linearly with the number of vertices. This explains why graphs with more edges, such as the web-graph, or connectivity graphs of peer-to-peer networks, are so well connected and so well resilient to the deletion

of edges. We also show how to derive a formula giving the size of this giant component as function of the number of edges and the initial attractiveness.

url: http://hdl.handle.net/1813/5719
date: 2007-04-04
creator: Allavena, Andre
viewed: 26
title: Some Results on the SmallWorld Model
abstract: Jon Kleinberg published simulations exhibiting an interesting asymmetric behaviour in networks close to being small-world. We prove this behaviour and fully characterise the phenomena. Newman et al. had a slightly different model, with hierarchies modelling the distance between nodes. Their simulations show that two hierarchies is the optimum. We analyse the concept of hierarchies in the Kleinberg model, better suited to computer networks, and we prove that in fact one hierarchy is the optimum.

url: http://hdl.handle.net/1813/5720
date: 2007-04-04
creator: Yona, Golan;Shanmugasundaram, Jayavel;Guo, Lin
viewed: 31
title: Topology Search over Biological Databases
abstract: We introduce the notion of a data topology and the problem of topology search over databases. A data topology summarizes the set of all possible relationships that connect a given set of entities. Topology search enables users to search for data topologies that relate entities in a large database, and to effectively summarize and rank these relationships. Using topology search over a biological database, users can ask, for example, {\em how} transcription factor proteins are related to DNAs in humans. However, detecting topologies in large databases is a difficult problem because entities can be connected in multiple ways. In this paper, we formalize the notion of data topologies, develop efficient algorithms for computing data topologies based on user queries, and evaluate our algorithms using a real biological database.

url: http://hdl.handle.net/1813/5721
date: 2007-04-04
creator: Chong, Stephen;Clarkson, Michael R.;O'Neill, Kevin R.
viewed: 48
title: Information-Flow Security for Interactive Programs
abstract: Interactive programs allow users to engage in input and output throughout execution. The ubiquity of such programs motivates the development of models for reasoning about their information-flow security, yet no such models seem to exist for imperative programming languages. Further, existing language-based security conditions founded on noninteractive models permit insecure information flows in interactive imperative programs. This paper formulates new strategy-based information-flow security conditions for a simple imperative programming language that includes input and output operators. The semantics of the language enables a fine-grained approach to the resolution of nondeterministic choices. The security conditions leverage this approach to prohibit refinement attacks while still permitting observable nondeterminism. Extending the language with probabilistic choice yields a corresponding definition of probabilistic noninterference. A soundness theorem demonstrates the feasibility of statically enforcing the security conditions via a simple type system. These results constitute a step toward understanding and enforcing information-flow security in real-world programming languages, which include similar input and output operators.

url: http://hdl.handle.net/1813/5722
date: 2007-04-04

creator: David, Planeta
viewed: 49
title: PTrie: Priority Queue based on multilevel prefix tree
abstract: Tree structures are very often used data structures. Among ordered types of trees there are many variants whose basic operations such as insert, delete, search, delete-min are characterized by logarithmic time complexity. In the article I am going to present the structure whose time complexity for each of the above operations is O(M/K + K), where M is the size of data type and K is constant properly matching the size of data type. Properly matched K will make the structure function as a very effective Priority Queue. The structure size linearly depends on the number and size of elements. PTrie is a clever combination of the idea of prefix tree -- Trie, structure of logarithmic time complexity for insert and delete operations, doubly linked list and queues.

url: http://hdl.handle.net/1813/5723
date: 2007-04-04
creator: Moczydlowski, Wojciech
viewed: 33
title: Normalization of IZF with Replacement
abstract: IZF is a well investigated impredicative constructive version of Zermelo-Fraenkel set theory. Using set terms, we axiomatize IZF with Replacement, which we call IZF_R, along with its intensional counterpart IZF_R^-. We define a typed lambda calculus corresponding to proofs in IZF_R^- according to the Curry-Howard isomorphism principle. Using realizability for IZF_R^-, we show weak normalization of the calculus by employing a reduction-preserving erasure map from lambda terms to realizers. We use normalization to prove disjunction, numerical existence, set existence and term existence properties. An inner extensional model is used to show the properties for full, extensional IZF_R.

url: http://hdl.handle.net/1813/5724
date: 2007-04-04
creator: Sirer, Emin Gun;So, Kelvin
viewed: 57
title: Latency- and Bandwidth-Minimizing Optimal Failure Detectors
abstract: Failure detectors are fundamental building blocks in distributed systems. Multi-node failure detectors, where the detector is tasked with monitoring other nodes, play a critical role in overlay networks and peer-to-peer systems. In such networks, failures need to be detected quickly and with low overhead. Achieving these properties simultaneously poses a difficult tradeoff between detection latency and resource consumption. In this paper, we examine this central tradeoff, formalize it as an optimization problem and analytically derive the optimal closed form formulas for multi-node failure detectors. We provide two variants of the optimal solution for optimality metrics appropriate for two different deployment scenarios. The latency-minimizing failure detector (LM-OFD) achieves the lowest average failure detection latency given a fixed bandwidth constraint for system maintenance. The bandwidth-minimizing failure detector (BM-OFD) will meet a desired detection latency target with the least amount of bandwidth consumed. We evaluate our optimal results with node lifetimes chosen from bimodal and power-law distributions, as well as real-world trace data from PlanetLab hosts that spans five months. Compared to standard failure detectors in wide use, our approach reduces failure detection latencies by 40% on average for the same bandwidth consumption, or conversely, reduce the amount of bandwidth consumed by 30% for the same failure detection latency.

url: http://hdl.handle.net/1813/5725
date: 2007-04-04
creator: Francis, Paul;Ballani, Hitesh

viewed: 43
title: Complexity Oblivious Network Management
abstract: Networks are hard to manage and in spite of all the so called holistic management packages, things are getting worse. We argue that this is an outcome of two fundamental flaws in the existing architecture: the management plane depends on the data plane and the complexity of the ever-evolving data plane encumbers the management plane. Consequently, addressing these flaws can make the network amenable to management. In this paper, we present Complexity Oblivious Network Management (CONMan), a network architecture in which the management plane does not depend on the data plane and all data plane protocols expose a generic management interface. This restricts the operational complexity of protocols to their implementation and allows the management plane to achieve high level policies in a structured fashion. Our preliminary experience with building the CONMan interface of a couple of protocols and using them for real world management tasks indicates the architecture's potential to alleviate the management troubles of the Internet.

url: http://hdl.handle.net/1813/5726
date: 2007-04-04
creator: Francis, Paul;Yoshida, Kaoru;Venkataraman, Vidhyashankar
viewed: 55
title: Chunkyspread: Heterogeneous Unstructured End System Multicast
abstract: In order to maximize throughput in end-system multicast, it is necessary to have fine-grained control over the transmit load of each participating member. This both avoids bottlenecks where members are overloaded, and allows heterogeneous members to contribute as much transmit capacity as they are able or willing to. In this paper, we describe and simulate an unstructured endsystem multicast protocol called Chunkyspread that provides members with fine-grained control over their transmit load, scales well, has relatively low latencies, and can tolerate high membership churn. Chunkyspread is designed as a flexible framework that easily incorporates different constraints and optimizations. For instance, it is straightforward to add tit-for-tat or path disjointness as constraints to the system. This paper demonstrates the performance of Chunkyspread through extensive simulations, and provides partial validation of these simulations on Emulab. It also provides detailed comparisons with Splitstream, a structured heterogeneous end-system multicast protocol. The simulations show that Chunkyspread provides far better control over transmit load than Splitstream, while exhibiting comparable or better latency and responsiveness to churn.

url: http://hdl.handle.net/1813/5727
date: 2007-04-04
creator: Francis, Paul;Ratnasamy, Sylvia;Ermolinskiy, Andrey;Ballani, Hitesh
viewed: 47
title: An Experiment in Deploying Next Generation Network Protocols
abstract: This paper presents IP(dmux) - a network-layer infrastructure that serves as a general-purpose deployment vehicle for next-generation network protocols. For each new network protocol, IP(dmux) provides a network-level access path between any end-user and the (approximately) closest router supporting the new protocol. IP(dmux) thus ensures that even partial deployments of new protocols are easily accessible by the global Internet user population. We present the design and implemention of IP(dmux) which we then use to experiment with three next-generation IP architectures - IPv6, FRM (a new protocol for global network-layer multicast) and i3 (a rendezvous-based network architecture). Our experiences suggest new networklayer architectures can easily leverage IP(dmux) to aid their deployment. Moreover, our evaluation through simulation, measurement and wide-area deployment indicates that even small-sized IP(dmux) deployments can yield reasonable endto- end performance for partially deployed next generation architectures.

url: http://hdl.handle.net/1813/5728

date: 2007-04-04
creator: Francis, Paul;Ballani, Hitesh
viewed: 89
title: Understanding IP Anycast
abstract: In this paper we present the first detailed analysis of IP anycast as used in the anycasting of the root-servers. The main results of our study are: The anycasting of an IP prefix does not have any unfavorable interactions with the routing system. Hence, IP anycast offers very good affinity2 - this alleviates concerns regarding running connection oriented services on top of anycast. IP Anycast, by itself, does not offer proximity in terms of metrics such as latency. IP Anycast's backwards compatibility derives from the fact that it is transparent to existing routing protocols, but this transparency also implies that in many cases inter-domain routing, which was designed with unicast path-selection in mind, chooses anycast locations which are not close to the source. We also present deployment schemes 1the problems include scalability by the number of anycast groups, difficulty of deployment etc.; these have restricted the use of IP anycast to critical infrastructure services 2tendency of subsequent packets of a connection to be delivered to the same target that might allow anycast to achieve good latency based proximity

url: http://hdl.handle.net/1813/5729
date: 2007-04-04
creator: Aboul-Hosn, Kamal
viewed: 100
title: An Axiomatization of Arrays for Kleene Algebra with Tests
abstract: The formal analysis of programs with arrays is a notoriously difficult problem due largely to aliasing considerations. In this paper we augment the rules of Kleene algebra with tests (KAT) with rules for the equational manipulation of arrays in the style of schematic KAT. These rules capture and make explicit the essence of subscript aliasing, where two array accesses can be to the same element. We prove the soundness of our rules, as well as illustrate their usefulness with several examples, including a complete proof of the correctness of heapsort.

url: http://hdl.handle.net/1813/5730
date: 2007-04-04
creator: Allen, Stuart F.
viewed: 82
title: An Abstract Semantics for Atoms in Nuprl
abstract: We provide a supervaluating semantics for treating Atoms abstractly in Computational Type Theory, specifically for Nuprl logics. It supports a principled explanation for desirable gaps in provability without positing novel kinds of entities, nor relying in any way upon constructivity of the logic. Beyond that, though, we justify a rule that allows inference by renaming Atom values, and explore the impact of introducing this new rule upon notational definition as used in the logics.

url: http://hdl.handle.net/1813/5731
date: 2007-04-04
creator: Demers, Alan;Gehrke, Johannes;Riedewald, Mirek;White, Walker
viewed: 38
title: What's "Next"?
abstract: Event processing systems have wide applications ranging from monitoring RSS feeds to managing events from RFID readers, and there exists much work on them in the literature. Many competing temporal models for event systems have been proposed, with no consensus on which approach is best. In this paper we determine the important properties for such temporal models. Our approach is to define a very general

temporal model capable of representing time in all of the major event systems. We introduce axioms motivated by the time stamp ordering relation and the semantics of the successor operator, which is present in all event systems. Only two of our axioms are controversial; the remaining axioms are satisfied by all event systems. We consider the temporal models obtained using our full set of axioms, and the models that result when one or the other of our controversial axioms is weakened. In one case we see that there is no acceptable temporal model. In the other two cases, we show that the resulting temporal model is effectively unique up to isomorphism, leaving us with only two different models. Finally, we argue that one of the two models is better than the other when both naturalness of semantics and efficiency of implementation are considered.

url: http://hdl.handle.net/1813/5732
date: 2007-04-04
creator: Sharp, Alexa;Hartline, Jeff
viewed: 21
title: An Incremental Model for Combinatorial Minimization
abstract: Traditional optimization algorithms are concerned with static input, static constraints, and attempt to produce static output of optimal value. Recent literature has strayed from this conventional approach to deal with more realistic situations in which the input changes over time. Incremental optimization is a new framework for handling this type of dynamic behavior. We consider a general model for producing incremental versions of traditional covering problems along with several natural incremental metrics. Using this model, we demonstrate how to convert conventional algorithms into incremental algorithms with only a constant factor loss in approximation power. We introduce incremental versions of min cut, edge cover, and (k, r)-center and present some hardness results. Lastly, we discuss how the incremental model can help us more fully understand online problems and their corresponding algorithms.

url: http://hdl.handle.net/1813/5733
date: 2007-04-04
creator: Slivkins, Aleksandrs
viewed: 43
title: Network Distance Estimation with Guarantees for All Node Pairs
abstract: An active line of research in the networking community studies the distance matrix defined by the node-to-node latencies in the Internet and, in particular, provides a number of quite successful distributed approaches that approximately reconstruct these distances from observations. In such algorithms it is feasible to measure distances among only a linear or near-linear number of node pairs; the rest of the distances are simply not available. The most common framework for Internet measurements of this type is a beacon-based approach: one chooses randomly a constant number of nodes ('beacons') in the network, each node measures its distance to all beacons, and one then has access to only these measurements for the remainder of the algorithm. To obtain theoretical insight into these recent Internet measurement studies, [Kleinberg et al. FOCS'04] formulated a concrete distance reconstruction problem, termed "triangulation", where distances from a given node to beacons form a short node label, and the unobserved distances are inferred from these labels using triangle inequality. While several significant results have been obtained in this framework, all these results include a notion of slack: they provide no guarantees for a small fraction of node pairs. Essentially, for any given positive ϵ and δ, one can reconstruct all but an ϵ-fraction of distances with multiplicative error at most $1+\delta$, using only a constant number of beacons. In this paper we obtain triangulation-style guarantees \emph{for all node pairs}: we reconstruct all distances with multiplicative error at most $1+\delta$, with only a poly-logarithmic load on each participating node. Our guarantees are for growth-constrained metrics, a well-studied family of metrics which have been proposed as a reasonable abstraction of Internet latencies.

url: http://hdl.handle.net/1813/5734
date: 2007-04-04
creator: Sirer, Emin Gun;Stoyanov, Ivan;Wong, Bernard
viewed: 85
title: Octant: A Comprehensive Framework for the Geolocalization of Internet Hosts
abstract: This paper outlines a novel, comprehensive framework for geolocalization, that is, determining the physical location of Internet hosts based on network measurements. The core insight behind this framework is to pose the geolocalization problem formally as one of error-minimizing constraint satisfaction, to create a system of constraints by deriving them aggressively from network measurements, and to solve the system using cheap and accurate geometric methods. The framework is general and accommodates both positive and negative constraints, that is, constraints on where the node can or cannot be, respectively. It can reason in the presence of uncertainty, enabling it to gracefully cope with aggressively derived constraints that may contain errors. Since the solution space is represented geometrically as a region bounded by Bezier curves, the framework yields an accurate set of all points where the target may be located. Preliminary results on PlanetLab show promise; the framework can localize the median node to within 22 mi., a factor of three better than previous approaches, with little error.

url: http://hdl.handle.net/1813/5735
date: 2007-04-04
creator: Nikolaev, Evgeni
viewed: 58
title: Selection and Analysis of Minimal Sets of Enzyme Levels and Regulatory Structures for Optimization of Microbial Overproduction Using Large-Scale Kinetic Models of Cellular Systems
abstract: We introduce a hybrid deterministic/stochastic optimization modeling framework to identify minimal sets of enzyme levels and enzyme regulatory structures to meet significant overproduction requirements using large-scale kinetic models of microbial metabolism and essential protein machinery. Specifically, a simulated annealing algorithm is used to navigate through the discrete space of enzyme levels and regulatory structures, while a sequential quadratic programming method is utilized to identify optimal enzyme levels and regulatory kinetic parameters. The framework is demonstrated on a large-scale and chemically-detailed kinetic model of central metabolism in Escherichia coli (wild-type strain W3110) for the optimization of the glucose uptake through the phosphotransferase system (PTS) and serine biosynthesis. Computational results show that by optimally modulating enzyme levels and carefully altering enzyme regulatory properties, a stable 8-fold increase in the PTS uptake rate and a stable 22-fold increase in serine biosynthesis can be achieved. Importantly, substantial improvements in the targeted fluxes can be predicted by manipulating only small subsets of enzyme levels and regulatory structures. For example, the modulation of only three enzyme levels leads to a flux increase, which is almost 50% of the best predictions, and the manipulation of only six enzyme levels already leads to a flux increase of 80% of the best predictions. Remarkably, by optimally modulating 10 enzyme levels, the total central metabolism's enzyme overexpression capability is reached and any further increase in the targeted fluxes can be only possible if the pathway regulation is additionally altered, though at the expense of the loss of the pathway's steady state stability properties (i.e., no steady state can exist or oscillatory regimes may be encountered). The developed framework has also demonstrated a strong synergism between the redesign of control architectures for tightly regulated reaction steps (e.g., phosphofructokinase) and the overexpression of those enzymes which lack any type of regulatory properties (e.g., glyceraldehyde-3-phosphate dehydrogenase). Although the nonlinear optimization predictions are found in a good agreement with Metabolic Control Analysis (MCA) and large control coefficients can be indicative of the corresponding "rate limiting" enzymes and critical feedback regulatory parameters, the non-linear stable optimization predictions could not be found from the MCA alone. The proposed optimization framework

thus provides a new versatile modeling strategy and computational tool for systematic optimal elucidation of minimal sets of controlling enzymes and their critical regulatory properties with broad implication in biotechnological studies.

url: http://hdl.handle.net/1813/5736
date: 2007-04-04
creator: White, Walker;Kot, Lucja
viewed: 28
title: Characterization of XML Functional Dependencies and their Interaction with DTDs
abstract: With the rise of XML as a standard model of data exchange, XML functional dependencies (XFDs) have become important to areas such as key analysis, document normalization, and data integrity. XFDs are more complicated than relational functional dependencies because the set of XFDs satisfied by an XML document depends not only on the document values, but also the tree structure and corresponding DTD. In particular, constraints imposed by DTDs may alter the implications from a base set of XFDs, and may even be inconsistent with a set of XFDs. In this paper we examine the interaction between XFDs and DTDs. We present a sound and complete axiomatization for XFDs, both alone and in the presence of certain classes of DTDs. We show that these DTD classes form an axiomatic hierarchy, with the axioms at each level a proper superset of the previous. Furthermore, we show that consistency checking with respect to a set of XFDs is feasible for these same classes.

url: http://hdl.handle.net/1813/5737
date: 2007-04-04
creator: Myers, Andrew C.;Zheng, Lantian
viewed: 87
title: Making Distributed Computation Trustworthy by Construction
abstract: Trustworthy computing systems must provide data confidentiality and data integrity, and must be available. This paper shows that these security properties can be provided by construction, by compiling high-level, security-typed source code into explicitly distributed, security-typed target code. This code transformation provably preserves the confidentiality, integrity, and availability properties of the source. A key technical contribution is the new target language, which describes distributed computation. In this language, any well-typed program satisfies noninterference properties that ensure confidentiality and integrity. Further, the language supports the distribution and replication of code and data using quorum replication, which enables simultaneous enforcement of integrity and availability. A novel timestamp scheme handles out-of-order accesses by concurrent distributed threads without creating covert channels.

url: http://hdl.handle.net/1813/5738
date: 2007-04-04
creator: Slivkins, Aleksandrs
viewed: 19
title: Distance Estimation and Object Location via Rings of Neighbors
abstract: We consider four problems on distance estimation and object location which share the common flavor of capturing global information via informative node labels: low-stretch routing schemes, distance labeling, searchable small worlds, and triangulation-based distance estimation. Focusing on metrics of low doubling dimension, we approach these problems with a common technique called "rings of neighbors", which refers to a sparse distributed data structure that underlies all our constructions. Apart from improving the previously known bounds for these problems, our contributions include extending Kleinberg's small world model to doubling metrics, and a short proof of the main result in [Chan et al., SODA 2005]. Doubling dimension is a notion of dimensionality for general metrics that has recently become a useful algorithmic

concept in the theoretical computer science literature.

url: http://hdl.handle.net/1813/5739
date: 2007-04-04
creator: Williamson, David;Sharma, Yogeshwer
viewed: 29
title: Stackelberg thresholds in network routing games or The value of altruism
abstract: We study the problem of determining the minimum amount of flow required to be centrally controlled in a Stackelberg routing game in order to improve the social cost of a Nash equilibrium. We consider the special case of routing on a parallel link graph with linear delays and give a closed form expression for the above quantity.

url: http://hdl.handle.net/1813/5740
date: 2007-04-04
creator: Planeta, David
viewed: 30
title: Linear Time Algorithms Based on Multilevel Prefix Tree for Finding Shortest Path with Positive Weights and Minimum Spanning Tree in a Networks
abstract: In this paper I present general outlook on questions relevant to the basic graph algorithms; Finding the Shortest Path with Positive Weights and Minimum Spanning Tree. I will show so far known solution set of basic graph problems and present my own. My solutions to graph problems are characterized by their linear worst-case time complexity. It should be noticed that the algorithms which compute the Shortest Path and Minimum Spanning Tree problems not only analyze the weight of arcs (which is the main and often the only criterion of solution hitherto known algorithms) but also in case of identical path weights they select this path which walks through as few vertices as possible. I have presented algorithms which use priority queue based on multilevel prefix tree -- PTrie. PTrie is a clever combination of the idea of prefix tree -- Trie, the structure of logarithmic time complexity for insert and remove operations, doubly linked list and queues. In C++ I will implement linear worst-case time algorithm computing the Single-Destination Shortest-Paths problem and I will explain its usage.

url: http://hdl.handle.net/1813/5741
date: 2007-04-04
creator: Slivkins, Aleksandrs Aleksandrs Slivkins;Kleinberg, Jon;Gupta, Anupam;Dhamdhere, Kedar;Chan, T-H. Hubert
viewed: 34
title: Metric Embeddings with Relaxed Guarantees
abstract: We consider the problem of embedding finite metrics with "slack": we seek to produce embeddings with small dimension and distortion while allowing a (small) constant fraction of all distances to be arbitrarily distorted. This definition is motivated by recent research in the networking community, which achieved striking empirical success at embedding Internet latencies with low distortion into low-dimensional Euclidean space, provided that some small slack is allowed. Answering an open question of [Kleinberg, Slivkins, and Wexler, IEEE FOCS 2004], we show that provable guarantees of this type can in fact be achieved in general: any finite metric can be embedded, with constant slack and constant distortion, into constant-dimensional Euclidean space. We then show that there exist stronger embeddings into L1 which exhibit "gracefully degrading" distortion: these is a single embedding into L1 that achieves distortion at most O(log 1/epsilon) on all but at most an epsilon-fraction of distances, *simultaneously* for all epsilon greater than 0. We extend this with distortion O(log 1/epsilon)^{1/p} to maps into general Lp, p greater than or equal to 1 for several classes of metrics, including those with bounded doubling dimension and those arising from the shortest-

path metric of a graph with an excluded minor. Finally, we show that many of our constructions are tight, and give a general technique to obtain lower bounds for epsilon-slack embeddings from lower bounds for low-distortion embeddings.

url: http://hdl.handle.net/1813/5742
date: 2007-04-04
creator: Niculescu-Mizil, Alexandru;Munson, Art;Caruana, Rich
viewed: 37
title: Getting the Most Out of Ensemble Selection
abstract: We investigate four previously unexplored aspects of ensemble selection, a procedure for building ensembles of classifiers. First we test whether adjusting model predictions to put them on a canonical scale makes the ensembles more effective. Second, we explore the performance of ensemble selection when different amounts of data are available for ensemble hillclimbing. Third, we quantify the benefit of ensemble selection's ability to optimize to arbitrary metrics. Fourth, we study the performance impact of pruning the number of models available for ensemble selection. Based on our results we present improved ensemble selection methods that double the benefit of the original method.

url: http://hdl.handle.net/1813/5743
date: 2007-04-04
creator: Ginsparg, Paul;Warner, Simeon;Gehrke, Johannes;Sorokina, Daria
viewed: 24
title: Plagiarism Detection in arXiv
abstract: We describe a large-scale application of methods for finding plagiarism and self-plagiarism in research document collections. The methods are applied to a collection of 284,834 documents collected by arXiv.org over a 14 year period, covering a few different research disciplines. The methodology efficiently detects a variety of problematic author behaviors, and heuristics are developed to reduce the number of false positives. The methods are also efficient enough to implement as a real-time submission screen for a collection many times larger.

url: http://hdl.handle.net/1813/5744
date: 2007-04-04
creator: Caruana, Rich;Munson, Art
viewed: 33
title: Cluster Ensembles for Network Anomaly Detection
abstract: Cluster ensembles aim to find better, more natural clusterings by combining multiple clusterings. We apply ensemble clustering to anomaly detection, hypothesizing that multiple views of the data will improve the detection of attacks. Each clustering rates how anomalous a point is; ratings are combined by averaging or taking either the minimum, the maximum, or median score. The evaluation shows that taking the median prediction from the cluster ensemble results in better performance than single clusterings. Surprisingly, averaging the individual predictions a) leads to worse performance than that of individual clusterings, and b) performs identically to taking the minimum prediction from the ensemble. This counter-intuitive result stems from asymmetric prediction distributions.

url: http://hdl.handle.net/1813/5745
date: 2007-04-04
creator: Rugina, Radu;Cherem, Sigmund
viewed: 89
title: Maintaining Structural Invariants in Shape Analysis with Local Reasoning

abstract: This paper presents a novel shape analysis algorithm with local reasoning that is designed to analyze heap structures with structural invariants, such as doubly-linked lists. The algorithm abstracts and analyzes one single heap cell at a time. In order to maintain the structural invariants, the analysis uses a local heap abstraction that models the sub-heap consisting of one cell and its immediate neighbors. The proposed algorithm can successfully analyze standard doubly-linked list manipulations.

url: http://hdl.handle.net/1813/5746
date: 2007-04-04
creator: Smith, Casey;Nguyen, Nam;Elhawary, Mohamed;Caruana, Rich
viewed: 32
title: Meta Clustering
abstract: Clustering is ill-defined. Unlike supervised learning where labels lead to crisp performance criteria such as accuracy and squared error, clustering quality depends on how the clusters will be used. Devising clustering criteria that capture what users need is difficult. Most clustering algorithms search for one optimal clustering based on a pre-specified clustering criterion. Once that clustering has been determined, no further clusterings are examined. Our approach differs in that we search for many alternate reasonable clusterings of the data, and then allow users to select the clustering(s) that best fit their needs. Any reasonable partitioning of the data is potentially useful for some purpose, regardless of whether or not it is optimal according to a specific clustering criterion. Our approach first finds a variety of reasonable clusterings. It then clusters this diverse set of clusterings so that users must only examine a small number of qualitatively different clusterings. In this paper, we present methods for automatically generating a diverse set of alternate clusterings, as well as methods for grouping clusterings into meta clusters. We evaluate meta clustering on four test problems, and then apply meta clustering to two case studies. Surprisingly, clusterings that would be of most interest to users often are not very compact clusterings.

url: http://hdl.handle.net/1813/5747
date: 2007-04-04
creator: Halpern, Joseph;Gehrke, Johannes;Machanavajjhala, Ashwin;Kifer, Daniel;Martin, David
viewed: 114
title: Worst-Case Background Knowledge in Privacy
abstract: Recent work has shown the necessity of considering an attacker's background knowledge when reasoning about privacy in data publishing. However, in practice, the data publisher does not know what background knowledge the attacker possesses. Thus, it is important to consider the worst-case. In this paper, we initiate a formal study of worst-case background knowledge. We propose a language that can express any background knowledge about the data. We provide a polynomial time algorithm to measure the amount of disclosure of sensitive information in the worst case, given that the attacker has at most k pieces of information in this language. We also provide a method to efficiently sanitize the data so that the amount of disclosure in the worst case is less than a specified threshold.

url: http://hdl.handle.net/1813/5748
date: 2007-04-04
creator: Moczydlowski, Wojciech
viewed: 25
title: A Normalizing Intuitionistic Set Theory with Inaccessible Sets
abstract: We propose a set theory strong enough to interpret powerful type theories underlying proof assistants such as LEGO and also possibly Coq, which at the same time enables program extraction from constructive proofs. For this purpose, we axiomatize impredicative constructive version of Zermelo-Fraenkel set theory IZF with Replacement and ω-many inaccessibles, which we call IZF_{R\omega}. Our axiomatization

of IZF_{R\omega} utilizes set terms, an inductive definition of inaccessible sets and mutually recursive nature of equality and membership relations. It allows us to define a weakly-normalizing typed lambda calculus \ lambda Z_\omega corresponding to proofs in IZF_{R\omega} according to the Curry-Howard isomorphism principle. We use realizability to prove the normalization theorem, which provides basis for extracting programs from IZF_{R\omega} proofs.

url: http://hdl.handle.net/1813/5749
date: 2007-04-04
creator: Sharp, Alexa
viewed: 30
title: Birthdays, Broadcasts, and Boolean Algebras: Probabilistic Boolean Algebras and Applications
abstract: In the area of extremal finite set theory there are many combinatorial results concerning the selection of m k-element sets. This type of set selection can also be viewed as a boolean algebra. In this paper we consider a probabilistic construction of this boolean algebra, concentrating on the structure and properties such an algebra may form, particularly the structure of the algebra's atoms. The results are then applied to a generalization of the popular birthday problem, where the event of interest is now whether all selected sets have a unique element; we find an upper bound on the probability of this event. We also extend the definition of the generalized birthday problem to model content protection protocols. While these protocols are widely used in digital media rights management, they are insufficiently analyzed due to a lack of such an underlying model. We focus on the event that revoking the rights of multiple pirate users inadvertently causes the rights of other, authorized users to be unjustly revoked; we give an exact formula for the probability of this event.

url: http://hdl.handle.net/1813/5750
date: 2007-04-04
creator: Yona, Golan;Shanmugasundaram, Jayavel;Guo, Lin
viewed: 32
title: Topology Search over Biological Databases Topology Search over Biological Databases
abstract: We introduce the notion of a data topology and the problem of topology search over databases. A data topology summarizes the set of all possible relationships that connect a given set of entities. Topology search enables users to search for data topologies that relate entities in a large database, and to effectively summarize and rank these relationships. Using topology search over a biological database, users can ask, for example, {\em how} transcription factor proteins are related to DNAs in humans. However, detecting topologies in large databases is a difficult problem because entities can be connected in multiple ways. In this paper, we formalize the notion of data topologies, develop efficient algorithms for computing data topologies based on user queries, and evaluate our algorithms using a real biological database.

url: http://hdl.handle.net/1813/5751
date: 2007-04-04
creator: Reddy, Chandan;Chiang, Hsiao-Dong
viewed: 49
title: TRUST-TECH based Neural Network Training
abstract: Supervised learning using artificial neural networks has numerous applications in various domains of science and engineering. Efficient training mechanisms in a neural network play a vital role in deciding the network architecture and the accuracy of the classifier. Most popular training algorithms tend to be greedy and hence get stuck at the nearest local minimum of the error surface. To overcome this problem, some global methods (like multiple restarts, genetic algorithms, simulated annealing etc.) for efficient training make use of stochastic approaches in combination with local methods to obtain an effective set of training parameters.

Due to the stochastic nature and lack of effective fine tuning capability, these algorithms often fail to obtain an optimal set of training parameters. In this paper, a new method to improve the subspace parameter search capability of training algorithms is proposed. This new method takes advantage of TRUST-TECH (TRansformation Under STability-reTaining Equilibrium CHaracterization) to compute neighborhood local minimum of the error surface. The proposed approach obtains multiple local optimal solutions surrounding the current local optimal solution in a systematic manner. Empirical results on different machine learning datasets indicate that the proposed algorithm outperforms current algorithms available in the literature.

url: http://hdl.handle.net/1813/5752
date: 2007-04-04
creator: Rugina, Radu;Orlovich, Maksim
viewed: 46
title: Memory Leak Analysis by Contradiction
abstract: We present a novel leak detection algorithm. To prove the absence of a memory leak, the algorithm assumes its presence and runs a backward heap analysis to disprove this assumption. We have implemented this approach in a memory leak analysis tool and used it to analyze several routines that manipulate linked lists and trees. Because of the reverse nature of the algorithm, the analysis can locally reason about the absence of memory leaks. We have also used the tool as a scalable, but unsound leak detector for C programs. The tool has found several bugs in larger programs from the SPEC2000 suite.

url: http://hdl.handle.net/1813/5753
date: 2007-04-04
creator: Francis, Paul
viewed: 37
title: Firebreak: An IP Perimeter Defense Architecture
abstract: After many years of research, the Distributed Denial of Service (DDoS) problem remains essentially unsolved, both in industry and in research. Industry solutions rely primarily on beefing up the bandwidth near the attack target, and/or on intercepting traffic at proxies while keeping the target IP address secret. The former approach is expensive, and the latter amounts to "security through obscurity". Existing research solutions, on the other hand, have so far proven economically infeasible. We propose an architecture, called the firebreak, based on IP-level indirection. With firebreak, target IP addresses are simply unreachable from ISP customer networks and endhosts. Rather, IP packets are addressed to proxies deployed near the edge using IP anycast, and from there are tunneled using the target IP addresses. This use of IP indirection, as well as the use of IP anycast and tunneling to deploy firebreak, is the main research contribution of firebreak. This paper describes the firebreak architecture, discusses its pros and cons, and suggests directions for future work

url: http://hdl.handle.net/1813/5754
date: 2007-04-04
creator: Moczydlowski, Wojciech;Constable, Robert
viewed: 116
title: Extracting the Resolution Algorithm from a Completeness Proof for the Propositional Calculus
abstract: We prove constructively that for any propositional formula ϕ in Conjunctive Normal Form, we can either find a satisfying assignment of true and false to its variables, or a refutation of ϕ showing that it is unsatisfiable. This refutation is a resolution proof of $\lnot \phi$. From the formalization of our proof in Coq, we extract Robinson's famous resolution algorithm as a Haskell program correct by construction. The account is an example of the genre of highly readable formalized mathematics.

url: http://hdl.handle.net/1813/5755

date: 2007-04-04
creator: Dolev, Danny;Birman, Ken;Ostrowski, Krzysztof
viewed: 34
title: Properties Framework and Typed Endpoints for Scalable Group Communication
abstract: Group communication is a powerful tool that simplifies the development of dependable systems, but widespread adoption of the paradigm has been limited. The main problem is that existing systems lack important forms of scalability and clean OS embeddings that can sustain high performance. QuickSilver is a new platform designed to enable casual use of groups on a massive scale. Our approach relies on a new way of constructing hierarchical, scalable protocols. Groups are accessed via typed communication endpoints; an underlying properties framework promotes flexibility and modularity.

url: http://hdl.handle.net/1813/5756
date: 2007-04-04
creator: Phanishayee, Amar;Birman, Ken;Ostrowski, Krzysztof
viewed: 55
title: QuickSilver Scalable Multicast
abstract: Reliable multicast is useful for replication and in support of publish-subscribe notification. However, many of the most interesting applications give rise to huge numbers of multicast groups with heavily overlapping sets of receivers, large groups, or high rates of dynamism. Existing multicast systems scale poorly in one or more of these respects. This paper describes QuickSilver Scalable Multicast (QSM), a platform exhibiting significantly improved scalability. Key advances involve new ways of handling time and scheduling, adaptive response to observed traffic patterns, and better handling of disturbances.

url: http://hdl.handle.net/1813/5757
date: 2007-04-04
creator: Phanishayee, Amar;Birman, Ken;Ostrowski, Krzysztof
viewed: 36
title: The Power of Indirection: Achieving Multicast Scalability by Mapping Groups to Regional Underlays
abstract: Reliable multicast is a powerful primitive, useful for data replication, event notification (publish-subscribe), fault tolerance and other purposes. Yet many of the most interesting applications give rise to huge numbers of heavily overlapping groups, some of which may be large. Existing multicast systems scale scale poorly in one or both respects. We propose the QuickSilver Scalable Multicast protocol (QSM), a novel solution that delivers performance almost independent of the number of groups and introduces newmechanisms that scale well in the number of nodes with minimal performance and delay penalties when loss occurs. Key to the solution is a level of indirection: a mapping of groups to regions of group overlap in which communication associated with different protocols can be merged. The core of QSM is a new regional multicast protocol that offers scalability and performance benefits over a wide range of region sizes.

url: http://hdl.handle.net/1813/5758
date: 2007-04-04
creator: Schneider, Fred;Sirer, Emin Gun;Kennedy, Oliver;Reynolds, Patrick
viewed: 47
title: Securing BGP Using External Security Monitors
abstract: Security modifications to legacy network protocols are expensive and disruptive. This paper outlines an approach, based on external security monitors, for securing legacy protocols by deploying additional hosts that locally monitor the inputs and outputs of each host executing the protocol, check the behavior of the host against a safety specification, and communicate using an overlay to alert other hosts about invalid behavior and to initiate remedial actions. Trusted computing hardware provides the basis for trust in external security

monitors. This paper applies this approach to secure the Border Gateway Protocol, yielding an external security monitor called N-BGP. N-BGP can accurately monitor a BGP router using commodity trusted computing hardware. Deploying N-BGP at a random 10% of BGP routers is sufficient to guarantee the security of 80% of Internet routes where both endpoints are monitored by N-BGP. Overall, external security monitors secure the routing infrastructure using trusted computing hardware and construct a security plane for BGP without having to modify the large base of installed routers and servers.

url: http://hdl.handle.net/1813/5759
date: 2007-04-04
creator: Francis, Paul;Guha, Saikat
viewed: 89
title: Identity Trail: Covert Surveillance Using DNS
abstract: The Domain Name System (DNS) was originally designed with the assumption that the DNS will return the same answer to any given query regardless of who may have issued the query, and that all data in the DNS is thus visible. Such an assumption can no longer be justified for private Internet hosts, particularly mobile laptops and PDAs. IP addresses in the DNS reveal a host's geographic location and corporate affiliation to anyone that is interested without the host's knowledge or consent. This paper identifies an attack that allows anyone on the Internet to covertly monitor mobile devices to construct detailed profiles including user identity, daily commute patterns, and travel itineraries. We identify a growing number of users vulnerable to this attack (two million and climbing), and covertly monitor over one hundred thousand of them. We demonstrate the feasibility and severity of such an attack in today's Internet. We further propose shortterm and long-term defenses for the attack.

url: http://hdl.handle.net/1813/5760
date: 2007-04-04
creator: Chiang, Hsiao-Dong;Reddy, Chandan
viewed: 34
title: Stability Region based Methods for Learning and Discovery
abstract: Many problems that arise in machine learning and data mining domains deal with nonlinearity and quite often demand users to obtain global optimal solutions rather than local optimal ones. Several algorithms had been proposed in the optimization literature and inherited by the machine learning community. Popularly known as the {\it initialization problem}, the ideal set of parameters required will significantly depend on the initial values given by the user. In this paper, we propose stability region based methods for systematically exploring the subspace of the parameters to obtain the neighborhood local optimal solutions. The proposed algorithm takes advantage of TRUST-TECH (TRansformation Under STability-reTaining Equilibria CHaracterization) to compute neighborhood local optimal solutions on the nonlinear surface in a systematic manner using stability regions. Our method explores the dynamic and geometric characteristics of stability boundaries of a nonlinear dynamical system corresponding to the nonlinear function of interest. Basically, our method coalesces the advantages of the traditional local optimizers with that of the dynamic and geometric characteristics of the stability regions of the corresponding nonlinear dynamical system of the log-likelihood function. Two phases namely, the local phase and the stability region phase, are repeated alternatively in the parameter space to achieve improvements in the quality of the solutions. The local phase obtains the local maximum of the nonlinear function and the stability region phase helps to escape out of the local maximum by moving towards the neighboring stability regions. The stability region based algorithms are applied to three important machine learning problems in: (1) Unsupervised learning - model-based clustering, (2) Pattern discovery - motif finding problem and (3) Supervised learning - training artificial neural networks. Our algorithms were tested on both synthetic and real datasets and the advantages of using this stability region based framework are clearly manifested. This framework not only reduces the sensitivity

to initialization, but also allows the flexibility for the practitioners to use various global and local methods that work well for a particular problem of interest.

url: http://hdl.handle.net/1813/5761
date: 2007-04-04
creator: Worthington, James
viewed: 41
title: Automatic Proof Generation in Kleene Algebra with Tests
abstract: Kleene algebra (KA) is the algebra of regular events. Familiar examples of Kleene algebras include regular sets, relational algebras, and trace algebras. A Kleene algebra with tests (KAT) is a Kleene algebra with an embedded Boolean subalgebra. The addition of tests allows one to encode while programs as KAT terms, thus the equational theory of KAT can express (propositional) program equivalence. More complicated statements about programs can be expressed in the Hoare theory of KAT, which suffices to encode Propositional Hoare Logic. In this paper, we prove the following results. First, there is a PSPACE transducer which takes equations of Kleene Algebra as input and outputs Hilbert-style proofs of them in an equational implication calculus. Second, we give a feasible reduction from the equational theory of KAT to the equational theory of KA. Combined with the fact that the Hoare theory of KAT reduces efficiently to the equational theory of KAT, this yields an algorithm capable of generating proofs of a large class of statements about programs.

url: http://hdl.handle.net/1813/5762
date: 2007-04-04
creator: Sharp, Alexa
viewed: 44
title: Distance Coloring
abstract: Given a graph G=(V,E), a (d,k)-coloring is an assignment of a color from {1, 2, ..., k} to each vertex of V such that any two vertices within distance d of each other are assigned different colors. We determine the complexity of the (d,k)-coloring problem for all d and k, and enumerate some interesting properties of (d,k)-colorable graphs. Our main result is the discovery of a dichotomy between polynomial and NP-hard instances; for fixed d greater than or equal to 2, the distance coloring problem is polynomial time for k less than or equal to 3d/2 and NP-hard for k greater than 3d/2.

url: http://hdl.handle.net/1813/5763
date: 2007-04-04
creator: Fan Yang, Nitin Gupta, Nicholas Gerner, Xin Qi, Alan Demers, Johannes
viewed: 58
title: A Unified Platform for Data Driven Web Applictions with Automatic Client-Server Partitioning
abstract: Data-driven web applications are structured into three tiers with different programming models at each tier. This division forces developers to manually partition application functionality across the tiers, resulting in complex logic, suboptimal partitioning, and expensive re-partitioning of applications. In this paper, we introduce a unified platform for automatic partitioning of data-driven web applications. Our approach is based on Hilda, a high-level declarative programming language with a unified data and programming model for all the layers of the application. Based on run-time properties of the application, Hilda's run time system automatically partitions the application between the tiers to improve response time while adhering to memory or processing constraints at the clients. We evaluate our methodology with traces from a real application and with TPC-W, and our results show that automatic partitioning outperforms manual partitioning without the associated development overhead.

url: http://hdl.handle.net/1813/5764
date: 2007-04-04
creator: Fan Yang, Nitin Gupta, Nicholas Gerner, Xin Qi, Alan Demers, Johannes
viewed: 61
title: A Unified Platform for Data Driven Web Applictions with Automatic Client-Server Partitioning
abstract: Data-driven web applications are usually structured in three tiers with different programming models at each tier. This division forces developers to manually partition application functionality across the tiers, resulting in complex logic, suboptimal partitioning, and expensive re-partitioning of applications. In this paper, we introduce a unified platform for automatic partitioning of data-driven web applications. Our approach is based on Hilda, a high-level declarative programming language with a unified data and programming model for all the layers of the application. Based on run-time properties of the application, Hilda's run time system automatically partitions the application between the tiers to improve response time while adhering to memory or processing constraints at the clients. We evaluate our methodology with traces from a real application and with TPC-W, and our results show that automatic partitioning outperforms manual partitioning without the associated development overhead.

url: http://hdl.handle.net/1813/5765
date: 2007-04-04
creator: Zabih, Ramin;Raj, Ashish;Zhu, Jie
viewed: 114
title: EM-Style Geo-Cuts Segmentation for MRI Brain Images
abstract: Segmentation of MRI brain images has great clinical and academic importance. The overlap of MR intensities of different tissue types and the vast amount of thin structures in brain images make segmentation of MRI brain images difficult. In this paper, we present an EM-style geo-cuts-based segmentation method to over come these challenges. We classify the brain images into three tissue types: white matter, gray matter, and CSF. We iteratively classify the voxels and calculate the intensity profile. We use region bias and automatic seed setting combined with intensity profile induced Riemannian metrics for the classification of voxels. We then use this classification to re-estimate the intensity profile. Experimentally, our method gives very good performance on both synthetic images with ground truth segmentation and real images with the segmentation of white matter and CSF improved over the widely used EMS method.

url: http://hdl.handle.net/1813/5766
date: 2007-04-04
creator: Schneider, Fred B.;Myers, Andrew C.;Clarkson, Michael R.
viewed: 144
title: Quantifying Information Flow with Beliefs
abstract: To reason about information flow, a new model is developed that describes how attacker beliefs change due to the attacker's observation of the execution of a probabilistic (or deterministic) program. The model enables compositional reasoning about information flow from attacks involving sequences of interactions. The model also supports a new metric for quantitative information flow that measures accuracy of an attacker's beliefs. Applying this new metric reveals inadequacies of traditional information flow metrics, which are based on reduction of uncertainty. However, the new metric is sufficiently general that it can be instantiated to measure either accuracy or uncertainty. The new metric can also be used to reason about misinformation; deterministic programs are shown to be incapable of producing misinformation. Additionally, programs in which nondeterministic choices are made by insiders, who collude with attackers, can be analyzed.

url: http://hdl.handle.net/1813/5767
date: 2007-04-04

creator: Rabkin, Ari
viewed: 150
title: Walnut: using NUTSS to harden services against DDOS attacks
abstract: Protecting the bottleneck link of an internet services against denial of service attacks is a difficult problem. The NUTSS architecture can be used to protect the bottleneck link for private services whose authentication can be replicated, provided that a NAT can be installed at the upstream end of this link. This paper analyzes the proposed defense and argues that it has a low run-time cost and offers substantial security benefits.

url: http://hdl.handle.net/1813/5768
date: 2007-04-04
creator: Shanmugasundaram, Jayavel;Yang, Fan;Chettiah, Muthiah;Bhaskar, Anand;Botev, Chavdar;Guo, Lin;Shao, Feng
viewed: 142
title: Efficient Keyword Search over Virtual XML Views
abstract: Emerging applications such as personalized portals, enterprise search and web integration systems often require keyword search over semi-structured views. However, traditional information retrieval techniques are likely to be expensive in this context because they rely on the assumption that the set of documents being searched is materialized. In this paper, we present a system architecture and algorithm that can efficiently evaluate keyword search queries over virtual (unmaterialized) XML views. An interesting aspect of our approach is that it exploits indices present on the base data and thereby avoids materializing large parts of the view that are not relevant to the query results. Another feature of the algorithm is that by solely using indices, we can still score the results for queries over the virtual view, and the resulting scores and rank order are the same as if the view was materialized. Our performance evaluation using the INEX data set in the Quark open-source XML database system indicates that the proposed approach is scalable and efficient.

url: http://hdl.handle.net/1813/5769
date: 2007-04-04
creator: Zheng, Xin;Zheng, Lantian;Vikram, K.;Qi, Xin;Myers, Andrew C.;Liu, Jed;Chong, Stephen
viewed: 161
title: Secure web applications via automatic partitioning
abstract: Web applications are now critical infrastructure. To improve the user interface, some application functionality is typically implemented as client-side JavaScript code. Currently there are no good methods for deciding when it is secure to move code and data to the client side. Swift is a new, principled approach to building web applications that are secure by construction. Application code is written as Java-like code annotated with information flow policies. This code is automatically partitioned between JavaScript code running in the browser, and Java code running on the server. Code and data are placed on the client side where possible. Security-critical code is placed on the server and user interface code is placed on the client. Code placement is constrained by high-level, declarative information flow policies that strongly enforce the confidentiality and integrity of server-side information. Web applications are hard to build because code and data needs to be partitioned to make them responsive. They are also hard to build because code and data need to be partitioned for security. Because of the connection (and tension) between the two problems, Swift addresses both at once, automatically partitioning application code while also providing assurance that the resulting placement is secure and efficient.

url: http://hdl.handle.net/1813/5770
date: 2007-04-05

creator: Barrett, Tracy Christianne
viewed: 77
title: Transnational Webs: Overseas Chinese Economic and Political Networks in Colonial Vietnam, 1870-1945
abstract: This dissertation is a study in ethnicity and transnational networks with the primary focus on the Chinese in Indochina, including Cochinchina, Cambodia, and Tonkin, which were under French colonial rule. It is the product of research undertaken at Hanoi's Vietnamese National Archives #1, the Vietnamese National Library in Hanoi, Saigon's Vietnamese National Archives #2, the Centre des Archives d'Outre-Mer in Aix-en-Provence, London's Public Record Office, and the Australian National Library and National Archives in Canberra. Access to these archives has allowed me to place overseas Chinese networks within the contexts of both Chinese and Southeast Asian history. As a result, this work has theoretical implications for transnational studies of borders inside and outside of Asia.
This dissertation is the first transregional study of institutions organized by the overseas Chinese population of Indochina during the French period. These Chinese formed their original organizations in China, and then reached across the China-Indochina border, expanding across Indochina. In China, native-place ties inherited from their fathers bound them together, and after they reached Indochina, they established bases, most often in Saigon-Cholon, and then expanded into other cities and towns where their networks competed for commercial gain and political influence. Narratives of the lives, crimes, and political and economic ventures of scores of overseas Chinese living and working in Cochinchina, Tonkin, and Cambodia provide the backbone for my arguments. At the time, all of these places were under French colonial rule, and Chinese networks negotiated the pathways and pitfalls of French colonial law to achieve their own agendas and maintain multidirectional ties, not only with all of their branches in Indochina but with their native places in China as well. By concentrating on the points where Chinese, Vietnamese, and French interests intersected, I show how they cooperated and came into conflict with each other. Ultimately, I conclude that even while the French held official authority in the colonies of Indochina, Chinese transnational networks exercised unofficial control over decision-making, not only in commerce but also in the wider arenas of politics, law, and society as they pertained to local Chinese communities.

url: http://hdl.handle.net/1813/5771
date: 2007-04-06
creator: Barazangi, Muawia
viewed: 151
title: Geologic and Strategic Comments on Oil Resources in the Arabian Gulf Region
abstract: This audio recording is in Arabic.Peak oil production in the Middle East's Arabian/Persian Gulf region and worldwide could be delayed if major multinational and national oil companies would invest more heavily in drilling and extraction technologies and push to explore new sites.
Barazangi argued that the "exploration story" in the Middle East is not yet complete. Two-thirds of the world's proven recoverable oil reserves exist in the Arabian Gulf, and there are more oil fields to be discovered through offshore and deep-water drilling, as well as more oil to be extracted from existing fields.
Barazangi stressed the fact that only seven countries worldwide (Saudi Arabia, Iran, Iraq, Kuwait, United Arab Emirates, Venezuela, and Russia) contain 80 percent of the world's proven recoverable oil reserves. Five of those are notably in the Arabian Gulf region and share Islamic cultures. He argued that in order to better understand oil issues in the Gulf, the world must understand the Arab and Persian people, and Islam's history and culture.

url: http://hdl.handle.net/1813/5772
date: 2007-04-06
creator: Ahlquist, Daniel B.

viewed: 110
title: Rationalizing Responsibility: Weber's Theory of Rationality and the Corporate Social Responsibility Debate
abstract: The corporate social responsibility (CSR) debate arose out of the recognition that corporations today hold tremendous power, and that the direct and indirect implications of their actions are far-reaching, affecting a wide array of stakeholders in both positive and negative ways. Corporate decision-makers are confronted daily with a complex set of often conflicting demands, including economic, ethical, legal, personal and professional demands. They are forced to weigh these competing demands in their decision-making processes, ultimately deciding which demands will influence their corporations? actions. Understanding the rationality employed by corporate decision-makers and business scholars is important in the study of CSR because it allows us to gain insight into how they interpret the constellation of demands placed upon them and how they orient their actions ? and their corporations? actions ? accordingly. I approach this analysis of the CSR discourse with two primary research questions. First, what patterns exist in the arguments put forth in the CSR literature, and can these patterns be classified into theoretical categories of CSR? Second, what rationalities underlie the predominant arguments (theories) in the CSR literature, and how do these rationalities inform the CSR debate? Upon coding the CSR literature according to four points of paradigmatic contention between adherents to different arguments for or against CSR, three endogenous theoretical frameworks began to emerge: corporate libertarian theory, enlightened self-interest theory, and moral theory. While most critics and advocates of CSR in the mainstream discourse point to one or more of the dozens of empirical studies on the CSR-firm financial performance relationship to support their arguments, I suggest that many of the arguments put forth in the CSR discourse are not predicated on empirical evidence, but rather on an underlying normative orientation and rationality. Through this qualitative analysis of the CSR discourse ? both the academic and nonacademic discourse ? the conflicting rationalities employed by participants in the CSR discourse become apparent. In the face of economic globalization, characterized by transnational capital flows, highly mobile corporations, and increasing power of corporations in relation to the state, corporations have become some of the most powerful actors in the world today. Despite the fact that their agency is constrained by the demands of the market system, their actions greatly affect our lives, our world, and our future. The need for a moral discourse on the role and responsibilities of business corporations in society today is pressing. In addition to seeking to understand the rationalities underpinning the predominant arguments for and against CSR, this research seeks to contribute to this growing moral discourse.

url: http://hdl.handle.net/1813/5773
date: 2007-04-09
creator: Windstam, Pia Sofia T
viewed: 92
title: Influence of fatty acids and sugars released by germinating seeds on plant species specific control of Pythium ultimum by Enterobacter cloacae
abstract: Pythium ultimum is a devastating pathogen of seeds and seedlings. Germination of pathogen sporangia can be elicited by unsaturated long chain fatty acids that are released by germinating seeds. Sporangial activation and germination are critical for initiating Pythium disease development. Pythium infection can be prevented by applying the bacterium Enterobacter cloacae onto seeds and expression of bacterial fatty acid transport and degradation have been found to be important traits for this control. However, the bacterium is capable of protecting only certain seeds such as cotton and cucumber whereas other seeds, such as corn and pea succumb to Pythium infection. It has been postulated that differences in sugar released by seeds may explain this differential protection since sugars are able to repress fatty acid metabolism in E. cloacae. Corn and pea seeds are documented as seeds that release high amounts of simple sugars that can repress fatty acid uptake and catabolism. Experiments focused on the temporal release of corn and cucumber

seed exudates and their induction of sporangial activation, germination, host colonization and the impact E. cloacae had on these pathogen responses while concomitant release of exudate sugars and fatty acids was also analyzed. E. cloacae is able to interrupt sporangial activation induced by cucumber seeds, but not in the corn spermosphere. This explains the differential control by the bacterium, since activation interference directly resulted in suppressed seed colonization. Both corn and cucumber seeds released unsaturated fatty acids as early as 15 min after sowing although quantities from corn exceeded that of cucumber. More importantly, corn seeds released much higher concentrations of simple sugars than cucumber already within 15 min. Quantities detected in corn seed exudate are large enough to completely shut down fatty acid degradation of E. cloacae. This provided the first evidence that interference with sporangial activation is the cause for plant protection by E. cloacae and seeds not protected by E. cloacae are incapable of interfering with sporangial activation. The bacterium does not interfere with sporangial activation because non protected seeds release sugars at such quantities that bacterial fatty acid degradation is repressed.

url: http://hdl.handle.net/1813/5774
date: 2007-04-09
creator: Morrisett, Greg;Crary, Karl;Walker, David
viewed: 85
title: Typed Memory Management in a Calculus of Capabilities
abstract: Region-based memory management is an alternative to standard tracing garbage collection that makes potentially dangerous operations such as memory deallocation explicit but verifiably safe. In this article, we present a new compiler intermediate language, called the Capability Calculus, that supports region-based memory management and enjoys a provably safe type system. Unlike previous region-based type systems, region lifetimes need not be lexically scoped and yet the language may be checked for safety without complex analyses. Therefore, our type system may be deployed in settings such as extensible operating systems where both the performance and safety of untrusted code is important. The central novelty of the language is the use of static capabilities to specify the permissibility of various operations, such as memory access and deallocation. In order to ensure capabilities are relinquished properly, the type system tracks aliasing information using a form of bounded quantification. Moreover, unlike previous work on region-based type systems, the proof of soundness of our type system is relatively simple, employing only standard syntactic techniques. In order to show our language may be used in practice, we show how to translate a variant of Tofte and Talpin's high-level type-and-effects system for region-based memory management into our language. When combined with known region inference algorithms, this translation provides a way to compile source-level languages to the Capability Calculus.

url: http://hdl.handle.net/1813/5775
date: 2007-04-09
creator: Pingali, Keshav;Menon, Vijay;Mateev, Nikolay
viewed: 28
title: Fractal Symbolic Analysis for Program Transformations (*new file*)
abstract: Restructuring compilers use dependence analysis to prove that the meaning of a program is not changed by a transformation. A well-known limitation of dependence analysis is that it examines only the memory locations read and written by a statement, and does not assume any particular interpretation for the operations in that statement. Exploiting the semantics of these operations enables a wider set of transformations to be used, and is critical for optimizing important codes such as LU factorization with pivoting. Symbolic execution of programs enables the exploitation of such semantic properties, but it is intractable for all but the simplest programs. In this paper, we propose a new form of symbolic analysis for use in restructuring compilers. Fractal symbolic analysis compares a program and its transformed version by repeatedly simplifying these programs until symbolic analysis becomes tractable, ensuring that equality

of simplified programs is sufficient to guarantee equality of the original programs. We present a prototype implementation of fractal symbolic analysis, and show how it can be used to optimize the cache performance of LU factorization with pivoting.

url: http://hdl.handle.net/1813/5776
date: 2007-04-09
creator: Pingali, Keshav;Mateev, Nikolay;Ahmed, Nawaaz
viewed: 28
title: Tiling Imperfectly-nested Loop Nests (REVISED)
abstract: Tiling is one of the more important transformations for enhancing locality of reference in programs. Tiling of perfectly-nested loop nests (which are loop nests in which all assignment statements are contained in the innermost loop) is well understood. In practice, most loop nests are imperfectly-nested, so existing compilers heuristically try to find a sequence of transformations that convert such loop nests into perfectly-nested ones but not always succeed. In this paper, we propose a novel approach to tiling imperfectly-nested loop nests. The key idea is to embed the iteration space of every statement in the imperfectly-nested loop nest into a special space called the product space. The set of possible embeddings is constrained so that the resulting product space can be legally tiled. From this set we choose embeddings that enhance data reuse. We evaluate the effectiveness of this approach for dense numerical linear algebra benchmarks, relaxation codes, and the tomcatv code from the SPEC benchmarks. No other single approach in the literature can tile all these codes automatically.

url: http://hdl.handle.net/1813/5777
date: 2007-04-09
creator: Morrisett, Greg;Grossman, Dan
viewed: 74
title: Scalable Certification of Native Code: Experience from Compiling toTALx86
abstract: Certifying compilation allows a compiler to produce annotations that prove that target code abides by a specified safety policy. An independent verifier can check the code without needing to trust the compiler. For such a system to be generally useful, the safety policy should be expressive enough to allow different compilers to effectively produce certifiable code. In this work, we use our experience in writing a certifying compiler to suggest general design principles that should allow concise yet expressive certificates. As an extended example, we present our compiler's translation of the control flow of Popcorn, a high-level language with function pointers and exception handlers, to TALx86, a typed assembly language with registers, a stack, memory, and code blocks. This example motivates techniques for controlling certificate size and verification time. We quantify the effectiveness of techniques for reducing the overhead of certifying compilation by measuring the effects their use has on a real Popcorn application, the compiler itself. The selective use of these techniques, which include common-subexpression elimination of types, higher-order type abbreviations, and selective re-verification, can change certificate size and verification time by well over an order of magnitude. We consider this report to be the first quantitative study on the practicality of certifying a real program using a type system not specifically designed for the compiler or source language.

url: http://hdl.handle.net/1813/5778
date: 2007-04-09
creator: Freimer, Robert
viewed: 42
title: Investigations in Geometric Subdivisions: Linear Shattering andCartographic Map Coloring
abstract: > We consider three computational geometry problems: shattering, coloring > cartographic maps and Bruce's suntan lotion problem. > > A subdivision ${\cal S}\subseteq\Re^d$ {\em shatters} a set of n >

objects if each object is contained within the closure of its own cell > of ${\cal S}$. We consider the problem of shattering polyhedra with > N total vertices using an arrangement of hyperplanes. We show that > finding a minimum shattering of points in $\Re^2$ is \NP-Complete. A > restricted version using axes-parallel hyperplanes is also > \NP-Complete. The actual number of shattering hyperplanes required > varies between $O(n^{1/d})$ and $n-1$. We present algorithms that > produce locally optimal solutions with at most $n-1$ shattering > hyperplanes. For $\Re^2$, we achieve $O(n^2\log{n}+N^2)$ time > complexity. We have implemented a simplified version. For > $\Re^d,d\ge3$, we have an $O(N^d(n+\log{N}))$ time algorithm. We give > an $O(N^4)$ time approximation algorithm which guarantees a solution > within a factor of $1+\ ln{n}$ of optimal for $\Re^2$. Detecting > whether a set of line segments is shatterable is shown to be > \3SUM-Hard. > > We consider cartographic map coloring for use in Geographical > Information Systems. The published proofs of the famous four-color > theorem yield impractical polynomial-time algorithms. Instead, we > implemented Thomassen's linear-time five-coloring algorithm. Political > maps often require generalizations to the standard four-coloring > problem. We allow each country to have m disjoint pieces, which is > Heawood's m-pire problem. We also count node adjacency between > countries; such adjacency graphs are known as map graphs. If k > regions meet at a point, we conjecture for $k\ge5$ that > $\ lfloor\frac{3}{2}k\rfloor$ colors suffice. By combining m-pires with > node adjacency and islands, we can model actual GIS instances. We > implemented Br{\'e}laz's $Dsatur$ heuristic, since no specific algorithm > exists for coloring our resulting {\em cartographic graphs}. > > Given convex polygon \P, let \D1, \D2\ be disks centered on \P's > boundary with radii r_1 and r_2, chosen so that > $\P\subseteq\D1\cup\D2$ and r_1+r_2 is minimized. Bruce's Suntan > Lotion problem asks for the disks' locations and sizes. We describe the > optimal cover for a triangle when $r_2=0$ and generalize the solution to > convex polygons; the minimum covering disk can be found in linear time. > We show the best one-disk solution is always optimal; no superior > two-disk solution exits. >

url: http://hdl.handle.net/1813/5779
date: 2007-04-09
creator: Schneider, Fred B;Erlingsson, Ulfar
viewed: 37
title: IRM Enforcement of Java Stack Inspection
abstract: Two implementations are given for Java's stack-inspection access-control policy. Each implementation is obtained by generating an inlined reference monitor (IRM) for a different formulation of the policy. Performance of the implementations is evaluated, and one is found to be competitive with Java's less-flexible, JVM-resident implementation. The exercise illustrates the power of the IRM approach for enforcing security policies.

url: http://hdl.handle.net/1813/5780
date: 2007-04-09
creator: Morrisett, Greg;Walker, David
viewed: 42
title: Alias Types for Recursive Data Structures (Extended Version)
abstract: Linear type systems permit programmers to deallocate or explicitly recycle memory, but they are severly restricted by the fact that they admit no aliasing. This paper describes a pseudo-linear type system that allows a degree of aliasing and memory reuse as well as the ability to define complex recursive data structures. Our type system can encode conventional linear data structures such as linear lists and trees as well as more sophisticated data structures including cyclic and doubly-linked lists and trees. In the latter cases, our type system is expressive enough to represent pointer aliasing and yet safely permit destructive operations such as object deallocation. We demonstrate the flexibility of our type system by encoding two common compiler optimizations: destination-passing style and Deutsch-Schorr-Waite or ``link-reversal''

traversal algorithms.

url: http://hdl.handle.net/1813/5781
date: 2007-04-09
creator: Stodghill, Paul;Pingali, Keshav;Mateev, Nikolay;Ahmed, Nawaaz
viewed: 25
title: Compiling Imperfectly-nested Sparse Matrix Codes with Dependences
abstract: We present compiler technology for generating sparse matrix code from (i) dense matrix code and (ii) a description of the indexing structure of the sparse matrices. This technology embeds statement instances into a Cartesian product of statement iteration and data spaces, and produces efficient sparse code by identifying common enumerations for multiple references to sparse matrices. This approach works for imperfectly-nested codes with dependences, and produces sparse code competitive with hand-written library code.

url: http://hdl.handle.net/1813/5782
date: 2007-04-09
creator: Wicker, Stephen;Li, Li;Halpern, Joseph Y.;Haas, Zygmunt
viewed: 46
title: A Decision-Theoretic Approach to Resource Allocation in WirelessMultimedia Networks
abstract: The allocation of scarce spectral resources to support as many user applications as possible while maintaining reasonable quality of service is a fundamental problem in wireless communication. We argue that the problem is best formulated in terms of decision theory. We propose a scheme that takes decision-theoretic concerns (like preferences) into account and discuss the difficulties and subtleties involved in applying standard techniques from the theory of Markov Decision Processes (MDPs) in constructing an algorithm that is decision-theoretically optimal. As an example of the proposed framework, we construct such an algorithm under some simplifying assumptions. Additionally, we present analysis and simulation results that show that our algorithm meets its design goals. Finally, we investigate how far from optimal one well-known heuristic is. The main contribution of our results is in providing insight and guidance for the design of near-optimal admission-control policies.

url: http://hdl.handle.net/1813/5783
date: 2007-04-09
creator: Seshadri, Praveen;Gehrke, Johannes;Bonnet, Philippe;Mayr, Tobias
viewed: 44
title: Query Processing with Heterogeneous Resources
abstract: In emerging systems, CPUs and memory are integrated into active disks, controllers, and network interconnects. Query processing on these new multiprocessor systems must consider the heterogeneity of resources among the components. This leads to the more general problem of how to deal with performance heterogeneity in parallel database systems. We study database query processing techniques that increase the leverage of heterogeneous resources. We show that the traditional algorithms used in shared-nothing parallel databases fail to utilize non-uniform resources. Uniform resource usage across non-uniform components leads to resource bottlenecks. We describe a class of new execution techniques that balance the usage of system resources using non-uniform intra-operator parallelism. We show that these techniques improve performance on heterogeneous architectures by allowing trade-offs between the various resources. Traditional techniques are subsumed as a special case for symmetric architectures. We show a formal model that maps out the new execution space of alternative processing techniques. A simplified cost model allows analytic performance evaluation of the alternative techniques. The proposed new execution paradigm is an extension of the classical dataflow paradigm.

url: http://hdl.handle.net/1813/5784
date: 2007-04-09
creator: Dolev, Danny;Birman, Kenneth P.;Rodeh, Ohad
viewed: 21
title: A Study of Group Rekeying
abstract: In this paper we study the key management problem, in the context of Group Communication Systems (GCS). GCSs are mid-sized systems scaling up to 100 members. We present a side-by-side comparison of three ways of managing keys, studying bandwidth and latency.

url: http://hdl.handle.net/1813/5785
date: 2007-04-09
creator: P., Birman Kenneth;Hopkinson, Kenneth M.;Thorp, Jim S.;Coury, Denis V.
viewed: 45
title: Agent Technology Applied to Adaptive Relay Setting for Multi-TerminalLines
abstract: Abstract: This paper discusses the adaptation of the settings of distance relays for multi-terminal lines employing agents. Agents are software processes capable of searching for information in networks, interacting with pieces of equipment and performing tasks on behalf of their owners (relays). Results illustrating the performance of the adaptive method proposed compared to conventional fixed settings are presented. It is shown that the digital relays and agents acting within a communication structure (also called middleware) can alter adaptive settings to ensure correct performance over a wide variety of operation conditions, without the need of an additional communication link. The proposed relaying scheme can also be utilized for first zone clearing over the entire line.

url: http://hdl.handle.net/1813/5786
date: 2007-04-09
creator: bergmark, donna
viewed: 25
title: Link Accessibility in Electronic Journal Articles
abstract: D-Lib is an electronic journal which has been available since 1995. Many of the articles in D-Lib contain references that are accompanied by URLs. Of interest is how valid these URLs are after some time goes by. An analysis of all the references within D-Lib articles shows that 85% of the 5 1/2 years of references remain accessible. However, by plotting the % accessible against date of the article, it is clear that link rot increases with age.

url: http://hdl.handle.net/1813/5787
date: 2007-04-09
creator: Birman, Kenneth P.;van Renesse, Robbert;Gupta, Indranil
viewed: 30
title: A Probabilistically Correct Leader Election Protocol for Large Groups
abstract: This paper presents a scalable leader election protocol for large process groups with a weak membership requirement. The underlying network is assumed to be unreliable but characterized by probabilistic failure rates of processes and message deliveries. The protocol trades correctness for scale, that is, it provides very good probabilistic guarantees on correct termination in the sense of the classical specification of the election problem, and of generating a constant number of messages, both independent of group size. After formally specifying the probabilistic properties, we describe the protocol in detail. Our subsequent mathematical analysis provides probabilistic bounds on the complexity of the protocol. Finally, the results of simulation show that the performance of the protocol is satisfactory.

url: http://hdl.handle.net/1813/5788
date: 2007-04-09
creator: Zippel, Richard;Trachtenberg, Ari;Minsky, Yaron
viewed: 22
title: Set Reconciliation with Nearly Optimal Communication Complexity
abstract: We consider a fundamental problem that arises in the context of gossip protocols. Specifically, we consider the problem of efficiently reconciling two similar sets held by different hosts while minimizing the communication complexity. We provide two surprisingly simple and efficient protocols that exhibit tractable computational complexity and nearly optimal communication complexity. These protocols can be adapted to work over a broadcast channel, allowing many clients to reconcile with one host based on a broadcasted signal.\note{We keep on bouncing back and forth on whether the ``a"s are necessary. I like it better without, but it's not a big deal.} Thus, an arbitrary number of clients each of whose data differs from that of the host by no more than N bits can be reconciled by a single broadcast of $O(N)$ bits, independent of the the number of clients and independent of the size of the data sets.

url: http://hdl.handle.net/1813/5789
date: 2007-04-09
creator: Pingali, Keshav;Menon, Vijay;Mateev, Nikolay
viewed: 30
title: Left-looking to Right-looking and vice versa: An Application of FractalSymbolic Analysis to Linear Algebra Code Restructuring
abstract: We have recently developed a new program analysis strategy called fractal symbolic analysis that addresses some of limitations of techniques such as dependence analysis. In this paper, we show how fractal symbolic analysis can be used to convert between left-looking and right-looking versions of three kernels of central importance in computational science: Cholesky factorization, LU factorization with pivoting, and triangular solve.

url: http://hdl.handle.net/1813/5790
date: 2007-04-09
creator: Srinivasan, Keshav;Qiu, Lili;Zhang, Yin
viewed: 44
title: Speeding Up Short Data Transfers: Theory, Architectural Support, andSimulation Results
abstract: Today's Internet traffic is dominated by short Web data transfers. Such a workload is well known to interact poorly with the TCP protocol. TCP uses the slow start procedure to probe the network for bandwidth both at connection start up and upon restart after an idle period. This usually requires several roundtrips and is inefficient when the duration of a transfer is short. In this paper, we propose a new technique, which we call TCP/SPAND, to speed up short data transfers. In TCP/SPAND, network performance information is shared among many co-located hosts to estimate each connection's fair share of the network resources. Based on such estimation and the transfer size, the TCP sender determines the optimal initial congestion window size. Instead of doing slow start, it uses a pacing scheme to smoothly send out the packets in its initial congestion window. We use extensive simulations to evaluate the performance of the resulting system. Our results show that TCP/SPAND significantly reduces latency for short transfers even in presence of multiple heavily congested bottlenecks. Meanwhile, the performance benefit does not come at the expense of degrading the performance of connections using the standard TCP. That is, TCP/SPAND is TCP friendly.

url: http://hdl.handle.net/1813/5791
date: 2007-04-09

creator: Brickley, Dan;Hunter, Jane;Lagoze, Carl
viewed: 37
title: An Event-Aware Model for Metadata Interoperability
abstract: We describe the ABC modeling work of the Harmony Project. The ABC model provides a foundation for understanding interoperability of individual metadata modules as described in the Warwick Framework and for developing mechanisms to translate among them. Of particular interest in this model is an event, which facilitates understanding of the lifecycle of resources and the association of metadata descriptions with points in this lifecycle.

url: http://hdl.handle.net/1813/5792
date: 2007-04-09
creator: Lagoze, Carl
viewed: 67
title: Accommodating Simplicity and Complexity in Metadata: Lessons from theDublin Core Experience
abstract: The Dublin Core Metadata Element Set (DCMES) grew out of a recognized need for improved resource discovery of web resources. Initial work on the DCMES focused on the requirement of simplicity: "ordinary" users should be able to formulate descriptive records based on a relatively simple schema (fifteen free-text elements). Over the years there has been a movement within the Dublin Core community to use the DCMES for more complex and specialized resource description tasks and, correspondingly, develop mechanisms for incorporating such complexity within the basic element set. This work has generally been called qualified Dublin Core. We examine the notion of accommodating complexity in a simple metadata model and argue that the dual requirements are incompatible. We discuss the role of events and processes in more expressive metadata and how simple resource-centric models, such as DCMES, are not equipped to express these semantics

url: http://hdl.handle.net/1813/5793
date: 2007-04-09
creator: Qiu, Lili;Zhang, Yin
viewed: 88
title: Understanding the End-to-End Performance Impact of RED in aHeterogeneous Environment
abstract: Random Early Detection (RED) is the recommended active queue management scheme for rapid deployment throughout the Internet. As a result, there have been considerable research efforts in studying the performance of RED. However, previous studies have often focused on relatively homogeneous environment. The effects of RED in a heterogeneous environment are not thoroughly understood. In this paper, we use extensive simulations to explore the interaction between RED and various types of heterogeneity, as well as the impact of such interaction on the user-perceived end-to-end performance. Our results show that overall RED improves performance at least for the types of heterogeneity we have considered.

url: http://hdl.handle.net/1813/5794
date: 2007-04-09
creator: Huttenlocher, Daniel;Boykov, Yuri
viewed: 27
title: A Graph Based Algorithm for Bayesian Object Recognition
abstract: We introduce an approach to feature-based object recognition, using maximum a posteriori (MAP) estimation under a Markov random field (MRF) model. Our approach assumes that both the location of the model and a configuration of matching features are not directly observable and have to be estimated. We consider a wide class of priors that explicitly model dependencies between individual features of an object. These priors capture phenomena such as the fact that unmatched features due to partial occlusion are generally

spatially correlated rather than independent. Our algorithm uses an efficient graph cut technique to resolve technical difficulties introduced by dependencies between the features. The method allows hierarchical search space pruning to find the location of the model. A special case of our framework yields a particularly efficient approximation method. We call this special case {\em spatially coherent matching} (SCM). The SCM method operates directly on the image feature map, rather than relying on the graph-based methods used in the general framework. Interestingly, in the extreme case of completely independent features our general Bayesian framework reduces to Hausdorff matching. We present some Monte Carlo experiments showing that models accounting for dependencies between the features can yield substantial improvements over Hausdorff matching for cluttered scenes and partially occluded objects.

url: http://hdl.handle.net/1813/5795
date: 2007-04-09
creator: Subash, Suri;Varghese, George;Qiu, Lili
viewed: 93
title: Fast Firewall Implementations for Software-based Routers
abstract: Routers must perform packet classification at high speeds to efficiently implement functions such as firewalls. The classification can be based on an arbitrary number of prefix and range fields in the packet header. The classification required for firewalls is beyond the capabilities offered by standard Operating System classifiers such as BPF~\cite{MJ93}, DPF~\cite{EK96}, PathFinder~\cite{BGS94} and others. In fact, there are theoretical results that show the general firewall lassification problem has poor worst case cost: for searching over N arbitrary filters using k packet fields, either the worst-case search time is $\Omega((\log N)^{k-1})$ or the worst-case storage is $O(N^{k})$. In this paper, we re-examine two basic mechanisms that have been dismissed in the literature as being too inefficient: backtracking search and set pruning trees. We find using real databases that the time for backtracking search is much better than the worst case bound; instead of $\Omega((logN)^{k-1})$, the search time is only roughly twice the optimal search time\footnote{\scriptsize The height of the multiplane trie is regarded as optimal search time throughout the paper, unless otherwise specified.}. Similarly, we find that set pruning trees (using a DAG optimization) have much better storage costs than the worst case bound; it has memory requirements similar to the RFC scheme of Gupta and McKeown~\cite{GM99}. We also propose several new techniques to further improve the two basic mechanisms. Our major ideas are a novel compression algorithm, the ability to trade smoothly between backtracking and set pruning, and algorithms to effectively make use of hardware if hardware is available. We quantify the performance gain of each technique using real databases. We show that on real firewall databases our schemes, with the accompanying optimizations, are close to optimal in time and storage.

url: http://hdl.handle.net/1813/5796
date: 2007-04-09
creator: Voelker, M. Geoffrey;Padmanabhan, N. Venkata,;Qiu, Lili
viewed: 46
title: On the Placement of Web Server Replicas
abstract: Recently there has been an increasing deployment of content distribution networks (CDNs) that offer hosting services to Web content providers. CDNs deploy a set of servers distributed throughout the Internet and replicate provider content across these servers for better performance and availability than centralized provider servers. Existing work on CDNs has primarily focused on techniques for efficiently redirecting user requests to appropriate CDN servers to reduce request latency an d balance load. However, little attention has been given to the development of placement strategies for Web server replicas to further improve CDN performance. In this paper, we explore the problem of Web server replica placement in detail. We develop several placement algorithms that use workload information, such as client latency and request rates, to make informed placement decisions. We then evaluate the placement algorithms using both synthetic and

real network topologies, and real Web server traces, and show that the placement of Web replicas is crucial to CDN performance. We also address a number of practical issues when using these algorithms, such as their sensitivity to imperfect knowledge about client workload and network topology, the stability of the input data, methods for obtaining the input, and the scalability of the algorithms.

url: http://hdl.handle.net/1813/5797
date: 2007-04-09
creator: Lagoze, Carl;Dushay, Naomi
viewed: 45
title: Modeling Decisions for Digital Content
abstract: The organization of digital information poses unique challenges not only due to rapidly evolving data formats and software, but also because digital content may be dynamic, distributed, or executable. Managers of digital information need flexible, extensible architectures that facilitate maintainability as well as accessibility and long-term utility of content. However, the flexibility of these architectures presents difficult organizational, or modeling, decisions. To explore these modeling decisions and their consequences, we introduce four dimensions of digital content modeling: aggregation, interfaces, transformations and indirection. We discuss these dimensions individually and also examine their interaction; in essence, this paper examines general design patterns for digital content modeling. As new and powerful architecture evolve, it is vital that information mangers understand and consider these design decisions.

url: http://hdl.handle.net/1813/5798
date: 2007-04-09
creator: Stodghill, Paul;Pingali, Keshav;Mateev, Nikolay
viewed: 34
title: The Bernoulli Generic Matrix Library
abstract: We have implemented the Bernoulli generic programming system for sparse matrix computations. What distinguishes it from existing generic sparse matrix libraries is that we use (i) a high-level matrix abstraction for writing generic matrix programs, (ii) a low-level matrix abstraction for describing the indexing structure and properties of sparse matrices formats, and (iii) restructuring compiler technology to transform the high-level generic programs into concrete implementations that efficiently access sparse matrices using the low-level abstraction. This paper describes the Bernoulli Generic Matrix Library (BGML). The BGML is the C++ implementation of these high-level and low-level abstractions. Within our system, it serves as the ``glue'' between user's sparse matrix format implementations and the restructuring sparse compiler. In this paper, we present the interfaces of the BGML and give examples of their use. Because of its role, it is critical that the BGML not impose much of an overhead on the compiler generated code. We discuss the implementation techniques that we had to use to get the most performance from the BGML. We also discuss the difficulties that we encountered in using available C++ compilers on the BGML.

url: http://hdl.handle.net/1813/5799
date: 2007-04-09
creator: Kopylov, Alexei
viewed: 25
title: Dependent Intersection: A New Way of Defining Records in Type Theory
abstract: Record types are an important tool for programming and dependent record types are proven to be very useful for program specification and verification. Unfortunately all known embedding of the dependent record type in the type theory had some imperfections. In this paper we present a new type constructor, dependent intersection that allows us to define records that combine the most advantages of previously known approaches, while avoiding most of their disadvantages.

url: http://hdl.handle.net/1813/5800
date: 2007-04-09
creator: Myers, Andrew C.;Zdancewic, Steve
viewed: 33
title: Confidentiality and Integrity with Untrusted Hosts: Technical Report
abstract: Several security-typed languages have recently been proposed to enforce security properties such as confidentiality or integrity by type checking. We propose a new security-typed language, SPL@, that addresses two important limitations of previous approaches. First, existing languages assume that the underlying execution platform is trusted; this assumption does not scale to distributed computation in which a variety of differently trusted hosts are available to execute programs. Our new approach, secure program partitioning, translates programs written assuming complete trust in a single executing host into programs that execute using a collection of variously trusted hosts to perform computation. As the trust configuration of a distributed system evolves, this translation can be performed as necessary for security. Second, many common program transformations do not work in existing security-typed languages; although they produce equivalent programs, these programs are rejected because of apparent information flows. SPL@ uses a novel mechanism based on ordered linear continuations to permit a richer class of program transformations, including secure program partitioning. This report is the technical companion to [ZM00]. It contains expanded discussion and extensive proofs of both the soundness and noninterference theorems mentioned in Section 3.3 of that work.

url: http://hdl.handle.net/1813/5801
date: 2007-04-09
creator: Ahmed, Nawaaz
viewed: 31
title: Locality Enhancement Of Imperfectly-nested Loop Nests
abstract: Most numerical applications using arrays require extensive program transformation in order to perform well on current machine architectures with deep memory hierarchies. These transformations ensure that an execution of the application exploits data-locality and uses the caches more effectively. The problem of exploiting data-locality is well understood only for a small class of applications -- for programs in which all statements are present in the innermost loop of a loop-nest (called perfectly-nested loops). For such programs, statement instances can be mapped to an integer lattice (called the iteration space), and important transformations can be modelled as unimodular transformations of the iteration space. This framework has permitted the systematic application of transformations like loop-permutation, skewing and tiling in order to enhance locality in perfectly-nested loops. In dealing with programs that do not fall into this category, current compilers resort to ad-hoc techniques to find the right sequence of transformations. For some important benchmarks, no technique is known that will discover the right sequence of transformations. In my thesis, I propose a technique that extends the framework for perfectly-nested loops to general programs. The key idea is to embed the iteration space of every statement in the program into a special iteration space called the product space. The product space can be viewed as a perfectly-nested loop nest, so this embedding generalizes techniques like code sinking and loop fusion that are used in ad hoc ways in current compilers to produce perfectly-nested loops from imperfectly-nested ones. In contrast to these ad hoc techniques however, embeddings are chosen carefully to enhance locality. The product space is then transformed further using unimodular transformations, after which fully permutable loops are tiled, and code is generated. Code can also be generated to emulate block-recursive versions of the original program. I demonstrate the effectiveness of this approach for dense numerical linear algebra benchmarks, relaxation codes, and the tomcatv code from the SPECfp95 benchmark suite.

url: http://hdl.handle.net/1813/5802
date: 2007-04-09
creator: Aaron, Eric
viewed: 95
title: Tactic-Based Modeling of Cognitive Inference on Logically StructuredNotation
abstract: Computational (algorithmic) models of high-level cognitive inference tasks such as logical inference, mathematical inference, and decision making can have both theoretical and practical impact. They can improve our theoretical understanding of how people think and also provide practical direction for applications such as automated reasoning systems, systems attuned to user-interaction in decision-critical environments, and computer-aided education. To support those benefits, cognitive models need to be detailed, compositional, based in well-understood mathematics, and, to whatever extent possible, descriptively accurate. We introduce a new, interdisciplinary approach that could be used to develop cognitive models of high-level inference with these properties. Two significant aspects of this approach are tactics and eyetracking methods. Tactics are used to express high-level inferences in fully formalized mathematics for automated theorem proving systems; eyetracking methods provide insight into real-time and microcognitive information processing by permitting analysis of the visual attention of people performing cognitive tasks. Combining tactics and eyetracking methods with traditional techniques from applied logic, artificial intelligence, and cognitive science can result in more deeply detailed and accurate cognitive models. We demonstrate the feasibility of this new approach to modeling by describing its application to a calculational logic system that supports schematic reasoning via metalinguistic operations (such as textual substitution) without resorting to higher-order logic. We discuss several computational, psychological, and pedagogical insights that resulted from this approach, and we present a detailed, tactic-based model of calculational logic inference. Specific results include: an explanation of calculational logic as a formalized metalogic; a tactic-based implementation of calculational logic inference; some pedagogical observations on the teaching of calculational logic; and experimental results that demonstrate that eyetracking methods can provide insight into theorem proving that could not be achieved by studies of written work alone.

url: http://hdl.handle.net/1813/5803
date: 2007-04-09
creator: Zippel, Richard;Trachtenberg, Ari;Minsky, Yaron
viewed: 23
title: Set Reconciliation with Nearly Optimal Communication Complexity
abstract: We consider the problem of efficiently reconciling two similar sets held by different hosts while minimizing the communication complexity. This type of problem arises naturally from gossip protocols used for the distribution of information. We describe an aproach to set reconciliation based on the encoding of sets as polynomials. The resulting protocols exhibit tractable computational complexity and nearly optimal communication complexity. Also, these protocols can be adapted to work over a broadcast channel, allowing many clients to reconcile with one host based on a single broadcast, even if each client is missing a different subset.

url: http://hdl.handle.net/1813/5804
date: 2007-04-09
creator: Birman, Ken;Xiao, Zhen
viewed: 95
title: A Randomized Error Recovery Algorithm for Reliable Multicast
abstract: An efficient error recovery algorithm is essential for reliable multicast in large groups. Tree-based protocols (RMTP, TMTP, LBRRM) group receivers into local regions and select a repair server for performing error recovery in each region. Hence a single server bears the entire responsibility of error

recovery for a region. In addition, the deployment of repair servers requires topological information of the underlying multicast tree, which is generally not available at the transport layer. This paper presents RRMP, a randomized reliable multicast protocol which improves the robustness of tree-based protocols by diffusing the responsibility of error recovery among all members in a group. The protocol works well within the existing IP multicast framework and does not require additional support from routers. Both analysis and simulation results show that the performance penalty due to randomization is low and can be tuned according to application requirements.

url: http://hdl.handle.net/1813/5805
date: 2007-04-09
creator: Birman, Ken;Xiao, Zhen
viewed: 39
title: Optimizing Buffer Management for Reliable Multicast
abstract: Reliable multicast delivery requires that a multicast message be received by all members in a group. Hence certain or all members need to buffer messages for possible retransmissions. Designing an efficient buffer management algorithm is challenging in large multicast groups where no member has complete group membership information and the delivery latency to different members could differ by orders of magnitude. We propose an innovative two-phase buffering algorithm, which explicitly addresses variations in delivery latency seen in large multicast groups. The algorithm effectively reduces buffer requirements by adaptively allocating buffer space to messages most needed in the system and by spreading the load of buffering among all members in the group. Simulation results demonstrate that the algorithm has good performance.

url: http://hdl.handle.net/1813/5806
date: 2007-04-09
creator: La Porta, T.;Li, L.;Ramjee, R.
viewed: 42
title: IP Paging Service for Mobile Hosts
abstract: In wireless networks, mobile hosts must update the network with their current location in order to get packets delivered to them. Paging facilitates efficient power management at the mobile host by allowing the host to update the network less frequently at the cost of providing the network with only approximate location information. The network determines the exact location of a mobile host through paging before delivering packets destined to the mobile host. In current circuit-switched wireless networks, paging is implemented as a special purpose functionality in a centralized component inside the network. Given the emergence of different packet-switched wireless networks, we propose a novel router service called IP paging. This enables one common IP-based infrastructure to support different wireless interfaces such as CDMA, GPRS, Wireless LAN, etc. In this paper, we present the design, implementation, and detailed performance evaluation, using measurements and simulation, of three IP-based paging protocols for mobile hosts.

url: http://hdl.handle.net/1813/5808
date: 2007-04-09
creator: Lagoze, Carl;Arms, William;Bergmark, Donna
viewed: 33
title: An Architecture for Reference Linking
abstract: The Digital Library Research Group at Cornell has Reference Linking as one of its projects. Typical projects within in the group take an object-oriented approach to handling digital information. To support reference linking, therefore, we designed a scheme whereby reference linking information is extracted from archives by {\em surrogate} objects and then presented to client applications or users by means of a well-defined API. This paper describes that architecture, the API, and how the API might be supported in the

Dienst protocol.

url: http://hdl.handle.net/1813/5809
date: 2007-04-09
creator: Bergmark, Donna
viewed: 30
title: Automatic Extraction of Reference Linking Information from OnlineDocuments
abstract: The Web, with its explosive growth, is becoming an efficient resource for up-to-date information for the scientific researcher. Informal online archives are repositories for technical reports. Proceedings are more and more commonly published on the Web. The collection of online journals is growing. Indeed, a good number of online journals are "born digital". Many researchers simply put their papers up on their own web site. The large volume of online material makes it quite desirable to be able to access cited documents immediately from the citing paper. Implementing this direct access is called "reference linking". Some reference linking services exist today. A number of commercial publishers, recognizing the significant value-added nature of reference linking, have banded together to form the CrossRef organization. The CrossRef publishers share their metadata, which enables them to interlink their journals. This metadata is not, however, available without a fee to organizations or individuals outside of CrossRef. The vast majority of online scholarly literature is accompanied by little or no metadata. Since it is desirable to link up this literature as well, the problem of automatically reference linking online scholarly literature in the absence of metadata and author intervention is a problem very much worth considering. This paper explores this problem in detail, and presents some algorithms for extracting metadata from online texts and linking full-text documents together. The extent to which reference linking of the online literature can be done automatically is therefore the main topic of this paper.

url: http://hdl.handle.net/1813/5810
date: 2007-04-09
creator: Dolev, Danny;Birman, Kenneth;Rodeh, Ohad
viewed: 19
title: The Architecture and Performance of Security Protocols in the EnsembleGroup Communication System
abstract: Ensemble is a Group Communication System built at Cornell and the Hebrew universities. It allows processes to create process groups within which scalable reliable fifo-ordered multicast and point-to-point communication are supported. The system also supports other communication properties, such as causal and total multicast ordering, flow control, etc. This paper describes the security protocols and infrastructure of Ensemble. Applications using Ensemble with the extensions described here benefit from strong security properties. Under the assumption that trusted processes will not be corrupted, all communication is secured from tampering by outsiders. Our work extends previous work performed in the Horus system (Ensemble's predecessor) by adding support for multiple partitions, efficient rekeying, and application defined security policies. Unlike Horus, which used its own security infrastructure with non-standard key distribution and timing services, Ensemble's security mechanism is based on off-the shelf authentication systems, such as PGP and Kerberos. We extend previous results on group rekeying, with a novel protocol that makes use of diamond-like data structures. Our Diamond protocol allows the removal of untrusted members within milliseconds.

url: http://hdl.handle.net/1813/5811
date: 2007-04-09
creator: Dolev, Danny;Birman, Kenneth;Rodeh, Ohad
viewed: 36

title: Using AVL Trees for Fault Tolerant Group Key Management
abstract: In this paper we describe an efficient algorithm for the management of group-keys for Group Communication Systems. Our algorithm is based on the notion of key-graphs, previously used for managing keys in large IP-multicast groups. The standard protocol requires a centralized key-server that has knowledge of the full key-graph. Our protocol does not delegate this role to any one process. Rather, members enlist in a collaborative effort to create the group key-graph. The key-graph contains n keys, of which each member learns log_2n. We show how to balance the key-graph, a result that is applicable to the centralized protocol. We also show how to optimize our distributed protocol and provide a performance study of its capabilities.

url: http://hdl.handle.net/1813/5812
date: 2007-04-09
creator: Jim, Trevor;Hornof, Luke;Morrisett, Greg;Grossman, Dan;Smith, Frederick
viewed: 21
title: Compiling for Runtime Code Generation (Extended Version)
abstract: Cyclone is a programming language that provides explicit support for dynamic specialization based on runtime code generation. To generate specialized code quickly, our Cyclone compiler uses a template based strategy in which pre-compiled code fragments are stitched together at runtime. To achieve good performance, the pre-compiled fragments must be optimized. This paper describes a principled approach to achieving such optimizations. In particular, we generalize standard flow-graph intermediate representations to support templates, define a formal mapping from (a subset of) Cyclone to this representation, and describe a data-flow analysis framework that supports standard optimizations. This extended version contains two mappings to the intermediate representation, a less formal one that emphasizes the novelties of our translation strategy and a purely functional one that is better suited to formal reasoning.

url: http://hdl.handle.net/1813/5813
date: 2007-04-09
creator: Harper, Robert;Morrisett, Greg;Schneider, Fred
viewed: 87
title: A Language-Based Approach to Security
abstract: Language-based security leverages program analysis and program rewriting to enforce security policies. The approach promises efficient enforcement of fine-grained access control policies and depends on a trusted computing base of only modest size. This paper surveys progress and prospects for the area, giving overviews of in-lined reference monitors, certifying compilers, and advances in type theory.

url: http://hdl.handle.net/1813/5814
date: 2007-04-09
creator: Kozen, Dexter
viewed: 82
title: Myhill-Nerode Relations on Automatic Systems and the Completeness of Kleene Algebra
abstract: It is well known that finite square matrices over a Kleene algebra again form a Kleene algebra. This is also true for infinite matrices under suitable restrictions. One can use this fact to solve certain infinite systems of inequalities over a Kleene algebra. Automatic systems are a special class of infinite systems that can be viewed as infinite-state automata. Automatic systems can be collapsed using Myhill-Nerode relations in much the same way that finite automata can. The Brzozowski derivative on an algebra of polynomials over a Kleene algebra gives rise to a triangular automatic system that can be solved using these methods. This provides an alternative method for proving the completeness of Kleene algebra.

url: http://hdl.handle.net/1813/5815

date: 2007-04-09
creator: Ozkasap, Oznur
viewed: 80
title: Scalability, Throughput Stability and Efficient Buffering in ReliableMulticast Protocols
abstract: This study investigates the issues of scalability, throughput stability and efficient buffering in reliable multicast protocols. The focus is on a new class of scalable reliable multicast protoco, PBcast that is based on an epidemic loss recovery mechanism. The protocol offers scalability, throughput stability and a bimodal delivery guarantee as the key features. A theoretical analysis study for the protocol is already available.

url: http://hdl.handle.net/1813/5816
date: 2007-04-09
creator: van Renesse, Robbert;Schneider, Fred B.;Zhou, Lidong
viewed: 24
title: COCA: A Secure Distributed On-line Certification Authority
abstract: COCA is a fault-tolerant and secure on-line certification authority that has been built and deployed both in a local area network and in the Internet. Replication is used to achieve availability; proactive recovery with threshold cryptography is used for digitally signing certificates in a way that defends against mobile adversaries which attack, compromise, and control one replica for a limited period of time before moving on to another. Relatively weak assumptions characterize environments in which COCA's protocols will execute correctly. No assumption is made about execution speed and message delivery delays; channels are expected to exhibit only intermittent reliability; and with 3t+1 COCA servers up to t may be faulty or compromised. The result is a system with inherent defenses to certain denial of service attacks because, by their very nature, weak assumptions are difficult for attackers to invalidate. In addition, traditional techniques, including request authorization, resource management based on segregation and scheduling different classes of requests, as well as caching results of expensive cryptographic operations further reduce COCA's vulnerability to denial of service attacks. Results from experiments in a local area network and the Internet allow a quantitative evaluation of the various means COCA employs to resist denial of service attacks.

url: http://hdl.handle.net/1813/5817
date: 2007-04-09
creator: Schneider, Fred B.;Fred B. Schneider Stoller, Scott D;Stoller, Scott D.
viewed: 20
title: Automated Analysis of Fault-Tolerance in Distributed Systems
abstract: A method for automated analysis of fault-tolerance of distributed systems is presented. It is based on a stream model of computation augmented with approximation constructs, and this facilitates efficient analysis. Analyses of a protocol for fault-tolerant moving agents and a reliable broadcast protocol ilustrate the method.

url: http://hdl.handle.net/1813/5818
date: 2007-04-09
creator: Tiuryn, Jerzy;Kozen, Dexter
viewed: 31
title: Intuitionistic Linear Logic and Partial Correctness
abstract: We formulate a Gentzen-style sequent calculus for partial correctness that subsumes propositional Hoare Logic. The system is a noncommutative Intuitionistic Linear Logic. We prove soundness and completeness over relational and trace-based models. As a corollary we obtain a complete sequent calculus for inclusion and equivalence of regular expressions.

url: http://hdl.handle.net/1813/5819
date: 2007-04-09
creator: Xiao, Zhen
viewed: 37
title: Efficient Error Recovery For Reliable Multicast
abstract: Multicast is an efficient mechanism for distributing data from one sender to multiple receivers. Many applications need a reliable multicast service which is not provided by the existing IP multicast protocol. Providing such a service on a large scale requires efficient algorithms for error recovery. This dissertation presents a randomized reliable multicast protocol called RRMP which has demonstrably achieved several good properties. The protocol eliminates message implosion by diffusing the responsibility of error recovery among all members in the group and improves the robustness of the system against process failures. It provides good local recovery by dynamically organizing members into an error recovery hierarchy according to their geographic locations. It optimizes buffer management through an innovative two-phase buffering algorithm that explicitly addresses the variances in delivery latency for large multicast groups. The algorithm reduces buffer requirements by adaptively allocating buffer space to messages most needed in the system and by spreading the load of buffering among all members in the group. The key idea of RRMP is to use randomization as a powerful technique to achieve high robustness and efficiency in reliable multicast communications. The RRMP protocol works well within the existing IP multicast framework and does not require additional support from network routers. Both analysis and experimental results show that the performance penalty due to randomization is low and can be tuned according to application requirements.

url: http://hdl.handle.net/1813/5820
date: 2007-04-09
creator: Barzilay, Eli
viewed: 104
title: Quotation and Reflection in Nuprl and Scheme
abstract: Relationships between the concepts of proof systems and programming languages are known. Some are well demonstrated in systems like Coq and Nuprl, but other aspects have not been fully implemented, such as reflection. I believe that the true context in which such ideas are becoming useful is when they are implemented, this ``implementation as understanding'' principle is the reason some parts of the following text contain code pieces. This should take the form of a logical environment with reflection mechanisms, Nuprl is a good choice since it is used for connecting logic and programming languages. Therefore, the first step towards creating such an implementation should be taken: pinpointing what should be done, and how. This paper is an attempt to do this.

url: http://hdl.handle.net/1813/5821
date: 2007-04-09
creator: Kozen, Dexter
viewed: 21
title: Automata on Guarded Strings and Applications
abstract: Guarded strings are like ordinary strings over a finite alphabet P, except that atoms of the free Boolean algebra on a set of atomic tests B alternate with the symbols of P. The regular sets of guarded strings play the same role in Kleene algebra with tests as the regular sets of ordinary strings do in Kleene algebra. In this paper we develop the elementary theory of finite automata on guarded strings, a generalization of the theory of finite automata on ordinary strings. We give several basic constructions, including determinization, state minimization, and an analog of Kleene's theorem. We then use these results to verify a conjecture on the complexity of a complete Gentzen-style sequent calculus for \partial correctness. We also show that a basic result of the theory of Boolean decision diagrams (BDDs), namely that minimal ordered BDDs are unique,

is a special case of the Myhill-Nerode theorem for a class of automata on guarded strings.

url: http://hdl.handle.net/1813/5822
date: 2007-04-09
creator: Gupta, Indranil
viewed: 31
title: Minimal CDMA Recoding Strategies in Power-Controlled Ad-Hoc WirelessNetworks
abstract: The problem of Code Division Multiple Access (CDMA) code assignment to eliminate primary and hidden collisions in multihop packet radio networks has been widely researched in the past. However, very little work has been done on the very realistic *distributed, dynamic* version of the transmitter-oriented code assignment (TOCA) problem in an ad-hoc network where mobiles use CDMA technology. None of the existing dynamic TOCA CDMA algorithms in literature are efficient, in terms of maximum code index assigned in the network, or number of times a mobile has to change its code. We present a set of local and distributed *recoding* strategies for the TOCA CDMA problem in an ad-hoc network where mobiles can arbitrarily 1) connect and disconnect, 2) move about, and 3) increase or decrease their transmission power - all these may need some mobiles to be recoded, to avoid new collisions. Our strategies, unlike those proposed earlier in literature, guarantee *minimal recoding*, that is, given a current network-wide code assignment and one of the above events, our strategies change the codes of the minimum number of mobiles needed to eliminate all collisions. Minimal recoding can be very important in reducing the effect of frequent code changes on the performance and criticality of distributed applications. Further, among all possible minimal recoding strategies in a class, most of our strategies are also (provably) *optimal* in terms of the maximum code index assigned in the network. Performance results that evaluate our dynamic minimal strategies are also presented.

url: http://hdl.handle.net/1813/5823
date: 2007-04-09
creator: Lagoze, Carl;Bergmark, Donna
viewed: 40
title: Reference Linking the Web's Scholarly Papers
abstract: Along with the explosive growth of the Web has come a great increase in on-line scholarly literature. Thus the Web is becoming an efficient source of up-to-date information for the scientific researcher, and more and more researchers are turning to their computers to keep current on results in their field. Not only is Web retrieval usually faster than a walk to the library, but the information obtained from the Web is potentially more current than what appears in printed publications. The increasing proportion of on-line scholarly literature makes it possible to implement functionality desirable to all researchers -- the ability to access cited documents immediately from the citing paper. Implementing this direct access is called "`reference linking". While many authors insert explicit links into their papers to support reference linking, it is by no means a universal practice. The approach taken by the Digital Library Research Group at Cornell employs "value-added surrogates" to enhance the reference-linking behavior of Web documents. Given the URL of an on-line paper, a surrogate object is constructed for that paper. The surrogate fetches the content of the document and parsesit to automatically extract reference linking data. Applications can then use the surrogate to access this reference linking data, encoded in XML, via a well-defined Java API. We use this API to reference link the D-Lib magazine, an on-line journal of technical papers relating to digital library research. Currently we are (automatically) extractingreference linking information from the papers in this journal with 80% accuracy.

url: http://hdl.handle.net/1813/5824
date: 2007-04-09

creator: Birman, Kenneth;Ramasubramanian, Venugopalan;Chandra, Ranveer
viewed: 40
title: Anonymous Gossip: Improving Multicast Reliability in Mobile Ad-HocNetworks
abstract: In recent years, a number of applications of ad-hoc networks have been proposed. Many of them are based on the availability of a robust and reliable multicast protocol. In this paper, we address the issue of reliability and propose a scalable method to improve packet delivery of multicast routing protocols and decrease the variation in the number of packets received by different nodes. The proposed protocol works in two phases. In the first phase, any suitable protocol is used to multicast a message to the group, while in the second concurrent phase, the gossip protocol tries to recover lost messages. Our proposed gossip protocol is called Anonymous Gossip(AG) since nodes need not know the other group members for gossip to be successful. This is extremely desirable for mobile nodes, that have limited resources, and where the knowledge of group membership is difficult to obtain. As a first step, anonymous gossip is implemented over MAODV without much overhead and its performance is studied. Simulations show that the packet delivery of MAODV is significantly improved and the variation in number of packets delivered is decreased.

url: http://hdl.handle.net/1813/5825
date: 2007-04-09
creator: Zabih, Ramin;Kolmogorov, Vladimir
viewed: 44
title: Computing Visual Correspondence with Occlusions via Graph Cuts
abstract: Several new algorithms for visual correspondence based on graph cuts have recently been developed. While these methods give very strong results in practice, they do not handle occlusions properly. Specifically, they treat the two input images asymmetrically, and they do not ensure that a pixel corresponds to at most one pixel in the other image. In this paper, we present two new methods which properly address occlusions, while preserving the advantages of graph cut algorithms. We give experimental results for stereo as well as motion, which demonstrate that our methods perform well both at detecting occlusions and computing disparities.

url: http://hdl.handle.net/1813/5826
date: 2007-04-09
creator: van Renesse, Robbert;Kreitz, Christoph;Bickford, Mark
viewed: 25
title: Formally Verifying Hybrid Protocols with the Nuprl Logical ProgrammingEnvironment
abstract: We describe a generic switching protocol for the construction of hybrid protocols and prove it correct with the Nuprl proof development system. We introduce the concept of meta-properties to characterize communication properties that can be preserved by switching and identify switching invariants that an implementation of the switching protocol must satisfy in order to work correctly. Our work shows how a theorem prover with a rich specification language can contribute to the design and implementation of verifiably correct adaptive protocols and that it can have a large impact when being engaged at the earliest stages of the design.

url: http://hdl.handle.net/1813/5827
date: 2007-04-09
creator: Zhou, Lidong
viewed: 28
title: Towards Fault-Tolerant and Secure On-line Services
abstract: Integrating fault tolerance and security is crucial for building trustworthy on-line services. Such integration is studied in this dissertation through the design and implementation of COCA (Cornell On-

line Certification Authority), a fault-tolerant and secure on-line certification authority. COCA maintains a service private key to sign the responses it sends to clients, and achieves availability using replicated servers that employ threshold cryptography and store shares of the service private key. Periodic share refreshing, coupled with periodic recovery of server states, defends against so-called mobile adversaries which move from one server to another. COCA is designed for a weak system model: no assumptions are made about server speed or message delay, and communications are assumed to employ links that are intermittent. The result is a service with reduced vulnerability to attacks because, by their nature, weaker assumptions are more difficult for adversaries to invalidate. COCA further employs an array of defense mechanisms specific to denial of service attacks. COCA runs both on a local area network and on the Internet. Performance measurements of COCA under simulated denial of service attacks demonstrate the effectiveness of COCA's defenses.

url: http://hdl.handle.net/1813/5828
date: 2007-04-09
creator: Botticelli, Peter;Lagoze, Carl;Cheney, James
viewed: 40
title: Toward a Theory of Information Preservation
abstract: Digital preservation is a pressing challenge to the library community. In this paper, we describe the initial results of our efforts towards understanding digital (as well as traditional) preservation problems from first principles. Our approach is to use the language of mathematics to formalize the concepts that are relevant to preservation. Our theory of _preservation spaces_ draws upon ideas from logic and programming language semantics to describe the relationship between concrete objects and their information contents. We also draw on game theory to show how objects change over time as a result of uncontrollable environment effects and directed preservation actions. In the second half of this paper, we show how to use the mathematics of universal algebra as a language for objects whose information content depends on many components. We use this language to describe both migration and emulation strategies for digital preservation.

url: http://hdl.handle.net/1813/5829
date: 2007-04-09
creator: Lagoze, Carl;bergmark, Donna
viewed: 34
title: An Architecture for Automatic Reference Linking (Extended Version)
abstract: Along with the explosive growth of the Web has come a great increase in on-line scholarly literature. More and moNot only is Web retrieval usually faster than a walk to the library, but the information obtained from the Web is generally more current than what appears in printed publications. The increasing proportion of on-line scholarly literature makes it possible to implement functionality desirable to all researchers -- the ability to access cited documents immediately from the citing paper. Implementing this direct access is called "reference linking". While many authors insert explicit hyperlinks into their papers to support reference linking, it is by no means a universal practice. The approach taken by the Digital Library Research Group at Cornell employs "value-added surrogates" as a generalizable mechanism for providing reference-linking behavior in Web documents. Given the URL of an on-line document, a surrogate object is constructed for that paper, which then processes document's content to extract reference linking data. The surrogate then exposes the reference linking data through a well-defined API, permitting the construction of reference linking services by external clients. We present two examples of the many possible reference linking applications buildable on this API. We also describe a metric that measures the API's performance; currently we are (automatically) extracting reference linking information from HTML papers with more than 80

url: http://hdl.handle.net/1813/5830
date: 2007-04-09

creator: Ando, Rie
viewed: 24
title: The Document Representation Problem: An Analysis of LSI and IterativeResidual Rescaling
abstract: Important text analysis problems in information retrieval and natural language processing, such as document clustering and automatic text summarization, require accurate measurement of inter-document similarity. The goal of this work is to find methods for automatically creating document representations in which inter-document similarity measurements correspond to human judgment. We present a new model for the task of creating document representations. From this model, we derive a new analysis of Latent Semantic Indexing (LSI), which is one of the successful approaches that has been studied extensively. In particular, we show a precise relationship between LSI's performance and the uniformity of the underlying distribution of documents over topics. As a consequence, we propose a novel alternative method called Iterative Residual Rescaling (IRR), that, crucially, compensates for distributional non-uniformity. Experiments over a variety of practically-encountered settings and with several evaluation metrics validate our theoretical prediction and confirm the effectiveness of IRR in comparison to LSI. We also propose several extensions including a new document sampling method to scale IRR up to large document collections. Comparison with random sampling provides further empirical evidence that performance can be improved by counteracting non-uniformity. Finally, we present a system for multi-document summarization based on IRR, which demonstrates that IRR can be immediately useful in applications. We show that IRR works as a framework to find a tightly connected (and therefore interpretable) set of coherent texts, and effectively present them to the user.

url: http://hdl.handle.net/1813/5831
date: 2007-04-09
creator: Kozen, Dexter;Angus, Allegra
viewed: 92
title: Kleene Algebra with Tests and Program Schematology
abstract: The theory of flowchart schemes has a rich history going back to Ianov (1960); see Manna (1974) for an elementary exposition. A central question in the theory of program schemes is scheme equivalence. Manna presents several examples of equivalence proofs that work by simplifying the schemes using various combinatorial transformation rules. In this paper we present a purely algebraic approach to this problem using Kleene algebra with tests (KAT). Instead of transforming schemes directly using combinatorial graph manipulation, we regard them as a certain kind of automaton on abstract traces. We prove a generalization of Kleene's theorem and use it to construct equivalent expressions in the language of KAT. We can then give a purely equational proof of the equivalence of the resulting expressions. We prove soundness of the method and give a detailed example of its use.

url: http://hdl.handle.net/1813/5832
date: 2007-04-09
creator: Stillerman, Matt;Kozen, Dexter
viewed: 92
title: Eager Class Initialization for Java
abstract: We describe a static analysis method on Java bytecode to determine class initialization dependencies. This method can be used for eager class loading and initialization. It catches many initialization circularities that are missed by the standard lazy implementation. Except for contrived examples, the computed initialization order gives the same results as standard lazy initialization.

url: http://hdl.handle.net/1813/5833
date: 2007-04-09

creator: Myers, Andrew;Nystrom, Nathaniel;Zheng, Lantian;Zdancewic, Steve
viewed: 53
title: Secure Program Partitioning
abstract: This paper presents secure program partitioning, a language-based technique for protecting confidential data during computation in distributed systems containing mutually untrusted hosts. Confidentiality and integrity policies can be expressed by annotating programs with security types that constrain information flow; these programs can then be partitioned automatically to run securely on heterogeneously trusted hosts. The resulting communicating subprograms collectively implement the original program, yet the system as a whole satisfies the security requirements of participating principals without requiring a universally trusted host machine. The experience in applying this methodology and the performance of the resulting distributed code suggest that this is a promising way to obtain secure distributed computation. This Technical Report is an expanded version of the published paper ``Untrusted Hosts and Confidentiality: Secure Program Partitioning.'' The main difference between the two is Appendix A, which contains a correctness proof for the control-transfer protocols described in Section 5.

url: http://hdl.handle.net/1813/5834
date: 2007-04-09
creator: Roughgarden, Tim
viewed: 19
title: The Price of Anarchy with Polynomial Edge Latency
abstract: We consider the problem of routing traffic to optimize the performance of a congested network. We are given a network, a rate of traffic between each pair of nodes, and a latency function for each edge specifying the time needed to traverse the edge given its congestion; the objective is to route traffic such that the sum of all travel times---the total latency---is minimized. In many settings, it is not possible to implement an optimal assignment of routes. In the absence of regulation by some central authority, we assume that each network user routes its traffic on the minimum-latency path available to it, given the network congestion caused by the other users. In general such a ``selfishly motivated'' assignment of traffic to paths will not minimize the total latency; hence, this lack of regulation carries the cost of decreased network performance. In this paper, we prove that if the latency of each edge is a polynomial function of degree at most p of the edge congestion, then the total latency of the routes chosen by selfish network users is at most $[1 - p \cdot (p+1)^{-(p+1)/p}]^{-1} = \Theta(\frac{p}{\ln p})$ times the minimum possible total latency. A simple example shows that this result is best possible for all values of p.

url: http://hdl.handle.net/1813/5835
date: 2007-04-09
creator: Li, Li;Halpern, Joseph Y.;Haas, Zygmunt
viewed: 43
title: Gossip-Based Ad Hoc Routing
abstract: Many ad hoc routing protocols are based on(some variant of) flooding. Despite various optimizations, many routing messages are propagated unnecessarily. We propose a gossiping-based approach to reduce the overhead of the routing protocols. In large networks, Gossiping exhibits bimodal behavior in sufficiently large networks: in some executions, the gossip dies out quickly and hardly any node gets the message; in the remaining executions, a substantial fraction of the nodes gets the message. The fraction of executions in which most nodes gets the message depends on the gossiping probability and the topology of the network. In the networks we have considered, using gossiping probability between 0.6 and 0.8 suffices to ensure that almost every node gets the message in almost every execution. For large networks, this simple gossiping protocol uses up to 35% fewer messages than flooding, with improved performance. Gossiping can also be combined with various optimizations of flooding to yield further benefits. Simulations show that adding

gossiping to AODV results in significant performance improvement, even in networks as small as 150 nodes only. We expect that the improvement should be even more significant in larger networks.

url: http://hdl.handle.net/1813/5836
date: 2007-04-09
creator: Pingali, Keshav;Bilardi, Gianfranco;Ezick, James
viewed: 38
title: Efficient Computation of Interprocedural Control Dependence
abstract: Control dependence information is useful for a wide range of software maintenance and testing tasks. For example, program slicers use it to determine statements and predicates that might affect the value of a particular variable at a particular program location. In the intraprocedural context an optimal algorithm is known for computing control dependence which unfortunately relies critically on the underlying intraprocedural postdominance relation being tree-structured. Hence, this algorithm is not directly applicable to the interprocedural case where the transitive reduction of the postdominance relation can be a directed acyclic graph (DAG), with nodes having multiple immediate dominators. In this paper we present two efficient, conceptually simple algorithms for computing the interprocedural postdominance relation that can be used to compute interprocedural control dependence. For an interprocedural control flow graph $G=(V,E)$, our reachability based algorithm takes time and space $O(|V|^2 + |V||E|)$. Unlike other algorithms, it does not perform confluence operations on whole bit-vectors and can be tuned to concentrate on the interprocedural rather than intraprocedural relations in a program thus allowing it to scale better to larger programs.

url: http://hdl.handle.net/1813/5837
date: 2007-04-09
creator: Fung, Ian Yee Yan;Kim, T. W. Danny;Barr, Rimon;Sirer, Emin Gun
viewed: 27
title: Automatic Code Placement Alternatives for Ad-Hoc And Sensor Networks
abstract: Developing applications for ad-hoc and sensor networks poses significant challenges. Many interesting applications in these domains entail collaboration between components distributed throughout an ad-hoc network. Defining these components, optimally placing them on nodes in the ad-hoc network and relocating them in response to changes is a fundamental problem faced by such applications. Manual approaches to code and data migration are not only platform-dependent and error-prone, but also needlessly complicate application development. Further, locally optimal decisions made by applications that share the same network can lead to globally unstable and energy inefficient behavior. In this paper we describe the design and implementation of a distributed operating system for ad-hoc and sensor networks whose goal is to enable power-aware, adaptive, and easy-to-develop ad-hoc networking applications. Our system achieves this goal by providing a single system image of a unified Java virtual machine to applications over an ad-hoc collection of heterogeneous nodes. It automatically and transparently partitions applications into components and dynamically finds a placement of these components on nodes within the ad-hoc network to reduce energy consumption and increase system longevity. This paper outlines the design of our system and evaluates two practical, power-aware, online algorithms for object placement that form the core of our system. We demonstrate that our algorithms can increase system longevity by a factor of four to five by effectively distributing energy consumption, and are suitable for use in an energy efficient operating system in which applications are distributed automatically and transparently.

url: http://hdl.handle.net/1813/5838
date: 2007-04-09
creator: Schneider, Fred B.;Minsky, Yaron M.
viewed: 25

title: Tolerating Malicious Gossip
abstract: A new class of gossip protocols is presented to diffuse updates securely. The protocols rely on annotating updates with the path along which they travel. To avoid a combinatorial explosion in the number of such annotated updates, rules are employed to choose which updates to keep. Different sets of rules lead to different protocols. Results of simulated executions of a collection of such protocols are described---the protocols would appear to be practical, even in large networks.

url: http://hdl.handle.net/1813/5839
date: 2007-04-09
creator: Grossman, Dan
viewed: 18
title: Existential Types for Imperative Languages: Technical Results
abstract: This technical report contains the full type-safety proof for the language presented in the paper \ emph{Existential Types for Imperative Languages}, originally submitted for publication in October 2001. Because this report should be read only after the paper, effectively as an appendix, we do not repeat the motivation, examples, and informal presentation contained there. Also refer to the paper for related work and a bibliography. We do repeat the figures and definitions so that this report comprises a self-contained proof.

url: http://hdl.handle.net/1813/5840
date: 2007-04-09
creator: Cheney, James;Wang, Yanling;Hicks, Michael;Jim, Trevor;Morrisett, Greg,;Grossman, Dan
viewed: 84
title: Cyclone User's Manual, Version 0.1.3
abstract: The current version of this manual should be available at http://www.cs.cornell.edu/projects/cyclone/ and http://www.research.att.com/projects/cyclone/. The version here describes Cyclone Version 0.1.3, although minor changes may have occurred before the release.

url: http://hdl.handle.net/1813/5841
date: 2007-04-09
creator: Cheney, James;Wang, Yanling;Hicks, Mike;Jim, Trevor;Morrisett, Greg,;Grossman, Dan
viewed: 24
title: Formal Type Soundness for Cyclone's Region System
abstract: Cyclone is a polymorphic, type-safe programming language derived from C\@. The primary design goals of Cyclone are to let programmers control data representations and memory management without sacrificing type-safety. In this paper, we focus on the region-based memory management of Cyclone and its static typing discipline. The design incorporates several advancements, including support for region subtyping and a coherent integration with stack allocation and a garbage collector. To support separate compilation, Cyclone requires programmers to write some explicit region annotations, but uses a combination of default annotations, local type inference, and a novel treatment of region effects to reduce this burden. As a result, we integrate C idioms in a region-based framework. In our experience, porting legacy C to Cyclone has required altering about 8\% of the code; of the changes, only 6\% (of the 8\%) were region annotations. This technical report is really two documents in one: The first part is a paper submitted for publication in November, 2001. The second part is the full formal language and type-safety proof mentioned briefly in the first part. If you have already read a version of, ``Region-Based Memory Management in Cyclone'', then you should proceed directly to Section 9.

url: http://hdl.handle.net/1813/5842
date: 2007-04-09

creator: Zabih, Ramin;Kolmogorov, Vladimir
viewed: 39
title: What Energy Functions can be Minimized via Graph Cuts?
abstract: Many problems in computer vision can be naturally phrased in terms of energy minimization. In the last few years researchers have developed a powerful class of energy minimization methods based on graph cuts. These techniques construct a specialized graph, such that the minimum cut on the graph also minimizes the energy. The minimum cut in turn is efficiently computed by max flow algorithms. Such methods have been successfully applied to a number of important vision problems, including image restoration, motion, stereo, voxel occupancy and medical imaging. However, each graph construction to date has been highly specific for a particular energy function. In this paper we address a much broader problem, by characterizing the class of energy functions that can be minimized by graph cuts, and by giving a general-purpose construction that minimizes any energy function in this class. Our results generalize several previous vision algorithms based on graph cuts, and also show how to minimize an interesting new class of energy functions.

url: http://hdl.handle.net/1813/5843
date: 2007-04-09
creator: Jacobsen, Kjetil;Sudmann, Nils P.;Schneider, Fred B.;van Renesse, Robbert;Lauvset, Kare J.;Johansen, Dag
viewed: 104
title: A TACOMA Retrospective
abstract: For seven years, the TACOMA project has investigated the design and implementation of software support for mobile agents. A series of prototypes has been developed, with experiences in distributed applications driving the effort. This paper describes the evolution of these TACOMA prototypes, what primitives each supports, and how the primitives are used in building distributed applications.

url: http://hdl.handle.net/1813/5844
date: 2007-04-09
creator: Glew, Neal
viewed: 18
title: A Theory of Second-Order Trees
abstract: This report describes a theory of second-order trees, that is, finite and infinite trees where nodes of the tree can bind variables that appear further down in the tree. Such trees can be used to provide a natural and intuitive interpretation for type systems with equirecursive types and binding constructs like universal and existential quantifiers. The report defines the set of binding trees, and a subset of these called regular binding trees. These are similar to the usual notion of regular trees, but generalized to take into account the binding structure. Then the report shows how to interpret a second-order type system with recursive quantifiers as binding trees, and gives a sound and complete axiomatisation of when two types map to the same tree. Finally the report gives a finite representation for trees called tree automata, and gives a construction for deciding when two automata map to the same tree. To tie everything together, the report defines a mapping from types to automata, thus giving a decision procedure for when two types map to the same tree.

url: http://hdl.handle.net/1813/5845
date: 2007-04-09
creator: Kozen, Dexter
viewed: 17
title: On Two Letters versus Three
abstract: If A is a context-free language over a two-letter alphabet, then the set of all words obtained by sorting

words in A and the set of all permutations of words in A are context-free. This is false over alphabets of three or more letters. Thus these problems illustrate a difference in behavior between two- and three-letter alphabets.

url: http://hdl.handle.net/1813/5846
date: 2007-04-09
creator: Sirer, Emin Gun;Ramasubramanian, Venugopalan
viewed: 92
title: TAF: A Temporal Adaptation Framework for Hybrid Routing in Mobile AdHoc Networks
abstract: A central challenge in ad hoc networks is the design of routing protocols that can adapt their behavior to frequent and rapid changes at the network level. Choosing between reactive, proactive, or hybrid routing regimes and selecting appropriate configuration parameters for a chosen protocol are difficult tasks. This paper introduces a framework, called TAF, for seamlessly adapting between proactive and reactive routing protocols. This general framework enables a proactive and reactive protocol to coexist on the same network, provides a low-overhead mechanism by which these two routing strategies can be combined at fine grain and proposes an analytical model for automatically adjusting protocol parameters. Combined, this mechanism and model enable a protocol within our framework to find a near-optimal mix of proactive and reactive routing strategies for the mobility rate and traffic patterns observed on the network. We examine the application of this temporal adaptation framework to the construction of three specialized ad hoc rout- ing protocols. These protocols minimize packet overhead, achieve a targeted loss rate, and minimize routing latency using the TAF framework. In all three cases, hybrid protocols based on the TAF framework perform as well as or better than a proactive (TORA) and a reactive (AODV) protocol.

url: http://hdl.handle.net/1813/5847
date: 2007-04-09
creator: Kleinberg, Jon
viewed: 87
title: Bursty and Hierarchical Structure in Streams
abstract: A fundamental problem in text data mining is to extract meaningful structure from document streams that arrive continuously over time. E-mail and news articles are two natural examples of such streams, each characterized by topics that appear, grow in intensity for a period of time, and then fade away. The published literature in a particular research field can be seen to exhibit similar phenomena over a much longer time scale. Underlying much of the text mining work in this area is the following intuitive premise --- that the appearance of a topic in a document stream is signaled by a ``burst of activity,'' with certain features rising sharply in frequency as the topic emerges. The goal of the present work is to develop a formal approach for modeling such ``bursts,'' in such a way that they can be robustly and efficiently identified, and can provide an organizational framework for analyzing the underlying content. The approach is based on modeling the stream using an infinite-state automaton, in which bursts appear naturally as state transitions; in some ways, it can be viewed as drawing an analogy with models from queueing theory for bursty network traffic. The resulting algorithms are highly efficient, and yield a nested representation of the set of bursts that imposes a hierarchical structure on the overall stream. Experiments with e-mail and research paper archives suggest that the resulting structures have a natural meaning in terms of the content that gave rise to them.

url: http://hdl.handle.net/1813/5848
date: 2007-04-09
creator: Kozen, Dexter;Barth, Adam
viewed: 24
title: Equational Verification of Cache Blocking in LU Decomposition using Kleene Algebra with Tests

abstract: In a recent paper of Mateev et al. (2001), a new technique for program analysis called fractal symbolic analysis was introduced and applied to verify the correctness of a series of source-level transformations for cache blocking in LU decomposition with partial pivoting. It was argued in that paper that traditional techniques are inadequate because the transformations break definition-use dependencies. We show how the task can be accomplished purely equationally using Kleene algebra with tests.

url: http://hdl.handle.net/1813/5849
date: 2007-04-09
creator: Nogin, Aleksey
viewed: 90
title: Quotient Types --- a Modular Approach
abstract: In this paper we introduce a new approach to defining quotient types in type theory. We suggest replacing the existing monolithic rule set by a modular set of rules for a specially chosen set of primitive operations. This modular formalization of quotient types turns out to be very powerful and free of many limitations of the traditional monolithic formalization. To illustrate the advantages of the new formalization, we show how the type of collections (that is known to be very hard to formalize using traditional quotient types) can be naturally formalized using the new primitives. We also show how modularity allows us to reuse one of the new primitives to simplify and enhance the rules for the set types.

url: http://hdl.handle.net/1813/5850
date: 2007-04-09
creator: Kozen, Dexter
viewed: 23
title: Computational Inductive Definability
abstract: It is shown that over any countable first-order structure, IND programs with dictionaries accept exactly the Pi-1-1 relations. This extends a result of Harel and Kozen (1984) relating IND and Pi-1-1 over countable structures with some coding power, and provides a computational analog of a result of Barwise, Gandy, and Moschovakis (1971) relating the Pi-1-1 relations on a countable structure to a certain family of inductively definable relations on the hereditarily finite sets over that structure.

url: http://hdl.handle.net/1813/5851
date: 2007-04-09
creator: Pal, Martin;Slivkins, Aleksandrs
viewed: 45
title: On Fixed-Parameter Tractability of Some Routing Problems
abstract: Disjoint Paths is the problem of finding paths between given pairs of terminals in a graph such that no vertices are shared between paths. We analyze fixed-parameter tractability of several new Disjoint Paths-like routing problems motivated by congestion control in computer networks. In one model we are interested in finding paths between k pairs of terminals such that the first edge of each path is not shared with any other path. We prove that this problem is fixed-parameter tractable on directed graphs, in contrast to Disjoint Paths that are known to be NP-hard even for $k=2$. We improve our algorithm for two special cases: when the graph is acyclic and when all sources lie in distinct nodes. We consider extensions: a second-node-disjoint analog and a slightly generalized version of SAT. Another model, bottleneck-edge-disjoint paths, is a generalization of Disjoint Paths. For directed acyclic graphs, we show that bottleneck-edge-disjoint paths is $W[1]$-hard and hence unlikely to be fixed-parameter tractable. We give an algorithm that runs in time $n^{O(k)}$. These two results easily extend to Unsplittable Flows.

url: http://hdl.handle.net/1813/5852

date: 2007-04-09
creator: Kozen, Dexter;Stillerman, Matt;Adelstein, Frank
viewed: 80
title: Malicious Code Detection for Open Firmware
abstract: Malicious boot firmware is a largely unrecognized but significant security risk to our global information infrastructure. Since boot firmware executes before the operating system is loaded, it can easily circumvent any operating system-based security mechanism. Boot firmware programs are typically written by third-party device manufacturers and may come from various suppliers of unknown origin. In this paper we describe an approach to this problem based on load-time verification of onboard device drivers against a standard security policy designed to limit access to system resources. We also describe our ongoing effort to construct a prototype of this technique for Open Firmware boot platforms.

url: http://hdl.handle.net/1813/5853
date: 2007-04-09
creator: van Renesse, Robbert;Schneider, Fred B.;Zhou, Lidong
viewed: 30
title: APSS: Proactive Secret Sharing in Asynchronous Systems
abstract: APSS, a proactive secret sharing (PSS) protocol for asynchronous systems, is derived and proved correct. A PSS protocol enables a set of secret shares to be periodically refreshed with a new, independent set, thereby thwarting so-called mobile adversary attacks. APSS tolerates certain attacks that PSS protocols for synchronous systems cannot, because protocols for asynchronous systems are inherently less vulnerable to denial of service attacks, which slow processor execution or impede message delivery and thus violate the defining assumptions of a synchronous system.

url: http://hdl.handle.net/1813/5854
date: 2007-04-09
creator: Myers, Andrew C.;Liu, Jed
viewed: 95
title: JMatch: Java plus Pattern Matching
abstract: The JMatch language extends Java with \emph{iterable abstract pattern matching}, pattern matching that is compatible with the data abstraction features of Java and makes iteration abstractions convenient. JMatch has ML-style deep pattern matching, but patterns can be abstract; they are not tied to algebraic data constructors. A single JMatch method may be used in several modes; modes may share a single implementation as a boolean formula. Modal abstraction simplifies specification and implementation of abstract data types. This paper describes the JMatch language and its implementation. (updated April 20, 2005).

url: http://hdl.handle.net/1813/5855
date: 2007-04-09
creator: Kozen, Dexter;Hardin, Chris
viewed: 22
title: On the Elimination of Hypotheses in Kleene Algebra with Tests
abstract: The validity problem for certain universal Horn formulas of Kleene algebra with tests (KAT) can be efficiently reduced to the equational theory. This reduction is known as elimination of hypotheses. Hypotheses are used to describe the interaction of atomic programs and tests and are an essential component of practical program verification with KAT. The ability to eliminate hypotheses of a certain form means that the Horn theory with premises of that form remains decidable in PSPACE. It was known (Cohen 1994, Kozen and Smith 1996, Kozen 1997) how to eliminate hypotheses of the form q=0. In this paper we show how to eliminate hypotheses of the form cp=c for atomic p. Hypotheses of this form are useful in

eliminating redundant code and arise quite often in the verification of compiler optimizations (Kozen and Patron 2000).

url: http://hdl.handle.net/1813/5856
date: 2007-04-09
creator: Benzinger, Ralph
viewed: 25
title: Automated Computational Complexity Analysis
abstract: Program synthesis is the machine-assisted construction of provably correct programs from formal high-level specifications. Automated synthesis tools appeared soon after the introduction of theorem provers in the 1960s and, owing to a revived interest in the field during the 1990s, have now matured to a state in which they are routinely used in projects outside of research laboratories. Despite this success, however, program synthesis remains challenged by broadening demands for program quality, as for the next generation of synthesis tools the main focus shifts from program correctness to program efficiency. This thesis introduces our approach to automated computational complexity analysis and certification of higher-order functional programs as a means to resource-conscious program synthesis. First, we develop a general framework for expressing higher-order computational complexity of functional programs. Our compositional calculus is based on complexity annotations of an open-ended operational semantics and defines the complexity of a function as the cost of reducing the function term applied to a symbolic argument. Higher-type arguments are assigned a canonical computational skeleton whose decomposition exposes their internal structure. Second, we present algorithms that automatically generate and solve parameterized higher-type recurrence equations expressing the complexity of recursive functions. The recurrence generator uses symbolic evaluation to derive equations for primitive and general recursive terms. The recurrence solver reduces these equations to systems of unparameterized first-order recurrence equations that can be solved by conventional methods. A collection of simplification heuristics eliminates intractable functions by approximation. Third, we formalize our calculus and automate the construction of formal proofs that assert the correctness of the symbolic evaluation result. Proofs use a basic term reflection mechanism to reason intensionally about term evaluation at the meta-level. The Automated Complexity Analysis System implementation demonstrates the viability of our approach. The system uses the Nuprl proof development system and the Mathematica computer algebra system to compute the time complexity of Nuprl proof extracts. It has been able to identify automatically infeasible synthesized code whose manual discovery had taken many days previously.

url: http://hdl.handle.net/1813/5857
date: 2007-04-09
creator: Kozen, Dexter
viewed: 83
title: Halting and Equivalence of Schemes over Recursive Theories
abstract: Let S be a fixed first-order signature. In this note we consider the following decision problems. (i) Given a recursive ground theory T over S, a program scheme p over S, and input values specified by ground terms t1,...,tn, does p halt on input t1,...,tn in all models of T? (ii) Given a recursive ground theory T over S and two program schemes p and q over S, are p and q equivalent in all models of T? When T is empty, these two problems are the classical halting and equivalence problems for program schemes, respectively. We show that problem (i) is r.e.-complete and problem (ii) is Pi-0-2-complete. Both these problems remain hard for their respective complexity classes even if T is empty and S is restricted to contain only a single constant, a single unary function symbol, and a single monadic predicate. It follows from (ii) that there can exist no relatively complete deductive system for scheme equivalence.

url: http://hdl.handle.net/1813/5858
date: 2007-04-09
creator: Kozen, Dexter
viewed: 21
title: Some Results in Dynamic Model Theory
abstract: First-order structures over a fixed signature S give rise to a family of trace-based and relational Kleene algebras with tests defined in terms of Tarskian frames. A Tarskian frame is a Kripke frame whose states are valuations of program variables and whose atomic actions are state changes effected by variable assignments x := e, where e is an S-term. The Kleene algebras with tests that arise in this way play a role in dynamic model theory akin to the role played by Lindenbaum algebras in classical first-order model theory. Given a first-order theory T over S, we exhibit a Kripke frame U whose trace algebra Tr U is universal for the equational theory of Tarskian trace algebras over S satisfying T, although U itself is not Tarskian in general. The corresponding relation algebra Rel U is not universal for the equational theory of relation algebras of Tarskian frames, but it is so modulo observational equivalence.

url: http://hdl.handle.net/1813/5859
date: 2007-04-09
creator: Myers, Andrew C.;Clarkson, Michael R.;Nystrom, Nathaniel
viewed: 30
title: Polyglot: An Extensible Compiler Framework for Java
abstract: Polyglot is an extensible compiler framework that supports the easy creation of compilers for languages similar to Java, while avoiding code duplication. The Polyglot framework is useful for domain-specific languages, exploration of language design, and for simplified versions of Java for pedagogical use. We have used Polyglot to implement several major and minor modifications to Java; the cost of implementing language extensions scales well with the degree to which the language differs from Java. This paper focuses on the design choices in Polyglot that are important for making the framework usable and highly extensible. Polyglot source code is available.

url: http://hdl.handle.net/1813/5860
date: 2007-04-09
creator: Likhodedov, Anton;Goldenberg, Ann;Artigas, Pedro;Caruana, Rich
viewed: 24
title: Meta Clustering
abstract: Most clustering methods search for one optimal partitioning of the data. Often it is better to search for many different clusterings of the data and present the user with a means of efficiently navigating between them. We present two algorithms for generating many alternate clusterings: Sample-and-Merge and Component Reweighting. We then use clustering at a meta level to organize these different base-level clusterings. This {\em MetaClustering} partitions the base-level clusterings into groups of similar clusterings. We demonstrate MetaClustering on a synthetic data set, and on a real protein data set. The results show that the algorithms are effective at generating qualitatively different clusterings, and at organizing these clusterings so that similar ones are grouped together.

url: http://hdl.handle.net/1813/5861
date: 2007-04-09
creator: Allen, Stuart
viewed: 82
title: Abstract Identifiers and Textual Reference
abstract: Here are three proposals concerning the structure and maintenance of formal, inter-referential,

digitally stored texts: (1) include abstract atomic identifiers in texts, (2) identify these identifiers with references to text objects, and (3) keep among the texts records of computationally substantiated claims about those texts. We use ``formal'' in a narrow sense approximating computer-checkable. We are informed by informal symbolic practices used in mathematical text and program source text, which we hope to enhance and exploit explicitly; the basic management problem is how to alter texts {\em rather} {\em freely} without ruining the bases for claims depending upon them, which becomes an issue of accounting for various dependencies between texts. We are {\em not} here proposing the use of abstract structured text; nonetheless, experience using it in Nuprl4 has led us to appreciate the benefits of distinguishing abstract form from concrete presentation, and also has shown us the cognitive and practical {\em un}importance of just which identifiers occur in abstract structured texts when texts are mediated by a system that realizes concrete presentation. Abstract treatment of identifiers involves concrete realization during communications between ``text servers'' and their clients. The benefit of treating identifiers abstractly is a radical avoidance of name collision, even at runtime, and is important for claims about texts that are based upon program execution. The notion of text collections and equivalence of text collections modulo change of identifiers is made precise by the second proposal. The complete identification of abstract identifiers with reference values is discussed, addressing the issues of dangling pointers, the association of ordinary symbolic identifiers with meaningful defining texts, the ``flatness'' of the pointer space, and the perhaps counterintuitive collapse of two abstract name spaces into one. The notion of ``certification system'' is introduced as a formalization of generic computationally defined claims about texts, emphasizing the diversity of clients who may not agree on a common ``logic''. The notion of a certificate whose computational meaning, in the context of the texts it refers to, is completely specified (although perhaps non-deterministic), and the notion of a certificate further being deterministic, are introduced and elaborated with regard to their epistemic value. What it means to give certificate texts the force of factual records, and mechanisms to accomplish this, are discussed. Scenarios for practically exploiting identifier abstractness and fully deterministic certificates are considered, involving the combination of partially independently developed texts and the experimental modification of texts in a collection. The importance of implementing multiple certification systems is articulated.

url: http://hdl.handle.net/1813/5862
date: 2007-04-09
creator: Slivkins, Aleksandrs;Sandler, Mark;Kleinberg, Jon
viewed: 45
title: Network Failure Detection and Graph Connectivity
abstract: We consider a model for monitoring the connectivity of a network subject to node or edge failures. In particular, we are concerned with detecting \emph{$(\vareps, k)$-failures}: events in which an adversary deletes up to k network elements (nodes or edges), after which there are two sets of nodes A and B, each at least an $\vareps$ fraction of the network, that are disconnected from one another. We say that a set D of nodes is an $(\vareps, k)$-detection set if, for any $(\vareps, k)$-failure of the network, some two nodes in D are no longer able to communicate; in this way, D ``witnesses'' any such failure. Recent results show that for any graph G, there is an $(\vareps, k)$-detection set of size bounded by a polynomial in k and $\vareps$, independent of the size of G. In this paper, we expose some relationships between bounds on detection sets and the edge-connectivity λ and node-connectivity κ of the underlying graph. Specifically, we show that detection set bounds can be made considerably stronger when parametrized by these connectivity values. We show that for an adversary that can delete λ edges, there is always an $(\vareps, \lambda)$-detection set of size at most $\freps$, and an $(\vareps, \lambda)$-detection set of minimum size can be computed in polynomial time. A crucial point is that this bound is independent not just of the size of G but also of the value of λ. Our bounds extend to adversaries that can delete up to $k \lambda$ edges for $k > 1$. We also show an analogous bound of $O(\frac{1}{\vareps})$ on the size of detection sets for adversaries that can delete κ nodes. Our algorithm for $(\

vareps, \lambda)$-edge failures is based on the cactus representation of all minimum edge-cuts of a graph; for node failures, we develop a novel approach for working with the much more complex set of all minimum node-cuts of a graph.

url: http://hdl.handle.net/1813/5863
date: 2007-04-09
creator: Thomas F. Coleman, Yuying Li, Maria-Cristina Patron
viewed: 21
title: Discrete Hedging Under Piecewise Linear Risk-Minimization
abstract: In an incomplete market it is usually impossible to eliminate the intrinsic risk of an option. In this case, quadratic-risk minimization is often used to determine a hedging strategy. However, it may be more natural to use piecewise linear risk-minimization. We investigate hedging strategies using piecewise linear risk-minimization. We illustrate that this criterion for risk-minimization may lead to smaller expected total hedging cost and significantly different, possibly more desirable, hedging strategies from those of quadratic risk-minimization. The distributions of the total hedging cost and risk show that hedging strategies obtained by piecewise linear risk-minimization have a larger probability of small cost and risk, though they also have a very small probability of larger cost and risk. Comparative numerical results are provided. We also prove that the value processes of these hedging strategies satisfy put-call parity.

url: http://hdl.handle.net/1813/5864
date: 2007-04-09
creator: Shank, H.;Hartmanis, Juris
viewed: 23
title: On the Recognition of Primes by Automata
abstract: A study of the problem of recognizing the set of primes by automata is presented. A simple algebraic condition is derived which shows that neither the set of primes nor any infinite subset of primes can be accepted by a pushdown or finite automaton. In view of this result an interesting open problem is to determine the "weakest" automaton which can accept the set of primes. It is shown that the linearly bounded automaton can accept the set of primes, and it is conjectured that no automaton whose memory grows less rapidly can recognize the set of primes. One of the results shows that if this conjecture is true, it cannot be proved by the use of arguments about the distribution of primes, as described by the Prime Number Theorem. Some relations are established between two classical conjectures in number theory and the minimal rate of memory growth of automata which can recognize the set of primes.

url: http://hdl.handle.net/1813/5865
date: 2007-04-09
creator: Wegner, Peter
viewed: 21
title: Translation Networks and Function Composition
abstract: Translation Networks and Function Composition

url: http://hdl.handle.net/1813/5866
date: 2007-04-09
creator: Salton, Gerard
viewed: 28
title: A Comparison Between Manual and Automatic Indexing Methods
abstract: The effectiveness of conventional document indexing is compared with that achievable by fully-automatic text processing methods. Evaluation results are given for a comparison between the MEDLARS

search system used at the National Library of Medicine, and the experimental SMART system, and conclusions are reached concerning the design of future automatic information systems.

url: http://hdl.handle.net/1813/5867
date: 2007-04-09
creator: Salton, Gerard
viewed: 30
title: The Use of Standardized Documentary Data in AutomaticInformation Dissemination
abstract: It is likely that future operating information retrieval systems may be based on automatic information analysis methods instead of manual indexing, and on search procedures which allow the user to interact with the system during the search process. The effectiveness of the required analysis and search operations depends to some extent on the availability in machine readable form of standardized information concerning the make-up and content of each stored document. An author-prepared standard manuscript documentation unit, furnished with each manuscript, may simplify the information retrieval and dissemination operations, and improve their effectiveness. The design of such a documentation unit is covered and its use is explained for indexing, classification, vocabulary normalization, searching, and retrieval.

url: http://hdl.handle.net/1813/5868
date: 2007-04-09
creator: Wegner, Peter
viewed: 19
title: The Representation and Transformation of Functions
abstract: A new approach to the study of programming languages is developed, which emphasized the sequence of information structures generated by a program during its execution. In section 1 a class of models called information structure models is developed for characterizing computations as sequences of transformations of information structures. The notion of binding time is introduced and different binding strategies for programming languages are considered. Section 2 considers the representation of functions by symbol tables and analyzes a number of examples of such functions, such as assemblers and macro systems. Section 3 introduces a very simple programming language for funcitn evaluation known as the lambda calculus, and considers information structure models for alternative evaluation strategies in the lambda calculus. Section 4 shows that ALGOL computations can be specified as information structure models with the same basic characteristics as lambda calculus computations but with a richer set of primitives, and indicates how languages such as PL/I can be characterized as information structure models.

url: http://hdl.handle.net/1813/5869
date: 2007-04-09
creator: Wegner, Peter
viewed: 17
title: Concepts and Structures in Programming Languages
abstract: These notes develop a set of concepts for describing program structures which arise in programming languages. These concepts are then used to discuss FORTRAN, ALGOL, macro languages, languages with definitional facilities, SNOBOL4, and LISP from a unifying point of view. The central concept is that of an information structure model. Emphasis is placed on the sequence of information structures generated by programs of a programming language during their execution. Section 1 considers program representation, interpretation, and compilation. Section 2 introduces the concept of an information structure model for characterizing classes of computations. Sections 3 and 4 show that computers and programming languages are examples of information structure models. Sections 5 and 6 respectively consider the information structures associated with FORTRAN and ALGOL programs during their execution. Section 7 shows how syntax and

semantics may be specified for information structure models and introduces the notion of an interpreter-interpreter. Section 8 develops information structure models for macro languages. Section 9 introduces the concept of binding time and discusses declarations and definitional facilities in programming languages. Sections 10 and 11 consider information structure models for SNOBOL4 and LISP. Computer science may be defined as the study of representation and transformation of information structures. The present approach is concerned with the representation of programs as information structures and with the transformations of these structures during execution, and directly reflects the above definition of computer science.

url: http://hdl.handle.net/1813/5870
date: 2007-04-09
creator: Morgan, Howard L.
viewed: 18
title: DPL: A Language for Instruction in Concepts Basic to Data Processing and Management Information Systems
abstract: DPL: A Language for Instruction in Concepts Basic to Data Processing and Management Information Systems

url: http://hdl.handle.net/1813/5871
date: 2007-04-09
creator: Sweet, Roland A.
viewed: 30
title: A Recursive Relation for the Determinant of a Pentadiagonal Matrix
abstract: A recursive relation is developed for the determinant of a pentadiagonal matrix S which satisfies $s_{i,j} \neq 0$ for $|i-j|=1$. When S is symmetric, one has a six-term recursive relation. An example is given to illustrate its use in the computation of eigenvalues.

url: http://hdl.handle.net/1813/5872
date: 2007-04-09
creator: Hopcroft, John E.
viewed: 22
title: On the Equivalence and Containment Problems for Context-Free Languages
abstract: Let G and G_{0} be context-free grammars. Necessary and sufficient conditions on G_{0} are obtained for the decidability of $L(G_{0}) \subseteq L(G)$. It is also shown that it is undecidable for which $G_{0},L(G) \subseteq L($G_{0})$ is decidable. Furthermore, given that $L(G) \subseteq L($G_{0})$ is decidable for a fixed G_{0}, there is no effective procedure to determine the algorithm which decides $L(G) \subseteq L($G_{0})$. If $L(G_{0})$ is a regular set, $L(G)=L(G_{0})$ is decidable if and only if $L(G_{0})$ is bounded. However, there exist non-regular, unbounded $L(G_{0})$ for which $L(G) = L(G_{0})$ is decidable.

url: http://hdl.handle.net/1813/5873
date: 2007-04-09
creator: Hopcroft, John E.;Hartmanis, Juris
viewed: 21
title: Refinement of Hierarchies of Time Bounded Computations
abstract: It is shown that for any “slowly growing” time function $T(n)$ and any $\epsilon > 0$ there exists a computation which can be performed by a multitape Turing machine in time $T(n)\log^{\epsilon}T(n)$ and cannot be performed by any multitape Turing machine in time $T(n)$.

url: http://hdl.handle.net/1813/5874

date: 2007-04-09
creator: Shank, H.;Hartmanis, Juris
viewed: 42
title: Two Memory Bounds for the Recognition of Primes by Automata
abstract: Two Memory Bounds for the Recognition of Primes by Automata

url: http://hdl.handle.net/1813/5875
date: 2007-04-09
creator: Dennis, John E., Jr.;Brown, Kenneth M.
viewed: 25
title: On Newton-Like Iteration Functions: General Convergence Theorems and a Specific Algorithm
abstract: On Newton-Like Iteration Functions: General Convergence Theorems and a Specific Algorithm

url: http://hdl.handle.net/1813/5876
date: 2007-04-09
creator: Brown, Kenneth M.
viewed: 77
title: A Quadratically Convergent Newton-Like Method Based Upon Gaussian-Elimination
abstract: A Quadratically Convergent Newton-Like Method Based Upon Gaussian-Elimination

url: http://hdl.handle.net/1813/5877
date: 2007-04-09
creator: Morgan, Howard L.
viewed: 20
title: DPL: A Language for Instruction in CONTEMPORARY DATA PROCESSING CONCEPTS
abstract: The Data Processing Language (DPL) id designed with two aims. The first is to aid in teaching the concepts and techniques of contemporary data processing systems to those who need an appreciation of the field, but who do not need to become trined programmers. The second is to test a new method for organizing and programming large systems which share a common data base among several simultaneous users. The criteria for a contemporary data processing language are set forth and DPL is shown to meet them. These include remote terminal management, handling of shared data bases, file and device oriented input and output, and standard arithmetic and text processing features. In addition, simple syntax and extensive error detection and correction features fulfill important requirements of instructional computing systems. Interrupts are the basis for the new method of systems organization. The DPL programmer can specify conditions when interrupts should be generated, e.g., when the relation $X+Y=34$ is true, and can specify the routine which should be called to process each interrupt. The DPL monitoring system detects the occurrence of these conditions and generates the interrupts. Some of these variables involved in conditions which can generate interrupts may be in files. The programmer can attach to those files the interrupt processing routines and the interrupt conditions. When the file is read in, the system begins monitoring these attached interrupt conditions and may execute the attached interrupt processing routines, which are called file tags, even though the user who placed the tags on the file is no longer in control. Several interrupts may be generated as the result of the execution of a single DPL statement, and interrupts may be generated while executing an interrupt processing routine. Therefore, an algorithm is presented which schedules the execution of the interrupt processing routines. A management information system may thus be composed of two parts: a data base of tagged files, and a supervisor program which handless interaction with remote terminals and performs background tasks. This new organization is shown to have value both for its instructional clarity and for designing and programming large integrated information systems.

url: http://hdl.handle.net/1813/5878
date: 2007-04-09
creator: Salton, Gerard
viewed: 28
title: Relevance Assessments and Retrieval System Evaluation
abstract: Two widely used criteria for evaluating the effectiveness of information retrieval systems are, respectively, the recall and the precision. Since the determination of these measures is dependent on a distinction between documents which are relevant on the one hand, and documents which are not relevant on the other to a given query set, it has sometimes been claimed that an accurate, generally valid evaluation cannot be based on recall and precision. A study was made to determine the effect of variations in relevance assessments on the average recall and precision values used to measure retrieval effectiveness. Using a collection of 1200 documents in information science for test purposes, it is found that large scale differences in the relevance assessments do not produce significant variations in average recall and precision. It thus appears that properly computed recall and precision data may represent effectiveness indicators which are generally valid for many distinct user classes.

url: http://hdl.handle.net/1813/5879
date: 2007-04-09
creator: Wegner, Peter;McGowan, Clement
viewed: 23
title: A LISP Interpreter in SNOBOL4
abstract: A LISP Interpreter in SNOBOL4

url: http://hdl.handle.net/1813/5880
date: 2007-04-09
creator: Hartmanis, Juris
viewed: 18
title: Computational Complexity of One-Tape Turing Machine Computations
abstract: This paper is concerned with the quantitative aspects of one-tape Turing machine computations. It is shown, for instance, that there exists a sharp time bound which must be reached for the recognition of non-regular sets of sequences. It is shown that the computation time can be used to characterize the complexity of recursive sets of sequences and several results are obtained about this classification. These results are then applied to the recognition speed of context-free languages and it is shown, among other things, that it is recursively undecidable how much time is required to recognize a non-regular context-free language on a one-tape Turing machine. Several unsolved problems are discussed.

url: http://hdl.handle.net/1813/5881
date: 2007-04-09
creator: Maxwell, W. L.;Conway, Richard W.
viewed: 39
title: CUPL - An Approach to Introductory Computing Instruction
abstract: CUPL is a second-generation language and processor designed specifically for introductory instruction in computer programming. It combines a severely simple syntax (based loosely on PL/I) and very extensive tutorial and diagnostic assistance by the processor. The processor is core-resident and compiles very rapidly. The result is an effective instructional system that can be used for large numbers of students with modest demands on computer capacity. Technically CUPL is interesting for the error-correctinng capability of the compiler and the provision of direct operations for matrix algebra.

url: http://hdl.handle.net/1813/5882
date: 2007-04-09
creator: Salton, Gerard
viewed: 38
title: Automatic Content Analysis in Information Retrieval
abstract: The content analysis problem is first introduced, and some of the standard analysis procedures used in information retrieval are reviewed. The principal content analysis methods incorporated into the automatic SMART document retrieval system are then briefly examined and their effectiveness for information retrieval is discussed. Included in the system are word stem matching procedures, synonym recognition, phrase recognition, syntactic analysis, statistical term association techniques, and hierarchical expansion methods.

url: http://hdl.handle.net/1813/5883
date: 2007-04-09
creator: Salton, Gerard
viewed: 30
title: Automated Language Processing
abstract: This study covers recent developments in automatic text processing, including syntactic, semantic, and statistical language analysis methods. The emphasis is on applications in the areas of machine translation, information retrieval, and question answering. Recent on-line text processing methods, using man-machine interaction are covered in some detail, as are certain simple, syntactic analysis methods incorporated into a number of experimental information retrieval systems. An evaluation is made of the syntactic analysis methods, and their importance in a retrieval environmentt is discussed.

url: http://hdl.handle.net/1813/5884
date: 2007-04-09
creator: Hartmanis, Juris
viewed: 79
title: Tape Reversal Bounded Turing Machine Computations
abstract: This paper studies the classification of recursive sets by the number of tape reversals required for their recognition on a two-tape Turing machine with a one-way input tape. This measure yields a rich hierarchy of tape reversal limited complexity classes and their properties and ordering are investigated. The most striking difference between this and the previously studied complexity measures lies in the fact that the "speed-up" theorem does not hold for slowly growing tape reversal complexity classes. These differences are discussed, and several relations between the different complexity measures and languages are established.

url: http://hdl.handle.net/1813/5885
date: 2007-04-09
creator: Salton, Gerard
viewed: 55
title: Search and Retrieval Experiments in Real-Time Information Retrieval
abstract: Future operating document retrieval systems may be based on fully-automatic information analysis methods instead of manual indexing, and on real-time search procedures which allow the user to interact with the system during the search process. Performance characteristics are first given for fully-automatic information retrieval systems, and comparisons are made with presently operating partly-manual systems. Thereafter, various user-controlled search strategies are described, and the potential of these strategies in improving systems performance is discussed. The evaluation results for the real-time retrieval procedures are used to derive design criteria for future automatic information systems.

url: http://hdl.handle.net/1813/5886
date: 2007-04-09
creator: Wegner, Peter
viewed: 19
title: The Structure of SNOBOL4
abstract: The SNOBOL4 programming language was developed by Griswold, Poage and Polonski (1). It combines facilities available in problem oriented languages with string manipulation facilities, pattern matching facilities and facilities for compilation during execution. The present description attempts to accomplish three objectives. It is an introduction to SNOBOL4 for the programmer with previous programming experience in some programming language but not necessarily previous experience with SNOBOL3. It is intended also to provide dynamic insights into the mechanisms for statement execution, and to describe source language structures in terms of the information structures to which they give rise during execution. It is felt that dynaamic insights into the way in which source statements are executed help not only the system programmer but also the average user. This description is based on reference 1 and on two very worthwhile days of discussion with the authors of SNOBOL4 at Holmdel. The author is indebted also to John Kelly for fruitful discussion of aspects of SNOBOL4 and for proofreading the manuscript.

url: http://hdl.handle.net/1813/5887
date: 2007-04-09
creator: Salton, Gerard;Ide, E.
viewed: 43
title: Dynamic File Organization and Heuristic SearchStrategies in Information Retrieval
abstract: A great deal of effort has been devoted in recent years to the evaluation of automatic or semi-automatic information retrieval systems. Recent evaluation results indicate that the search effectiveness presently achieved, or likely to be achievable in the foreseeable future, is much smaller than expected by a majority of the potential user population. Furthermore, theoretical advances in language analysis and data organization promise only relatively modest future improvements. The most significant advances in retrieval effectiveness are likely to be obtained by using adaptive techniques to extract information from the user population during the search process, leading to an improved organization of the data space and to more effective search and retrieval operations. Various user feddback techniques are described producing either modifications in the user queries i such a way as to bring these queries closer to existing groups of relevant documents, or modifications in the document space to bring relevant documents closer to the corresponding search requests. The feedback and space modification techniques are examined in detail, and the resulting efficiencies in the remote and retrieval operations are described. Descriptive Terms: Information retrieval, document retrieval, user feedback, relevance feedback, request modifications, document modifications, document grouping, clustering, adaptive search method, cluster searches, search effectiveness.

url: http://hdl.handle.net/1813/5888
date: 2007-04-09
creator: Wegner, Peter;Axsom, L.
viewed: 41
title: The Four-Cubes Four-Color Problem or Instant Insanity
abstract: The Four-Cubes Four-Color Problem or Instant Insanity

url: http://hdl.handle.net/1813/5889
date: 2007-04-09
creator: Morgan, Howard L.

viewed: 20
title: Spelling Correction and Systems Programming
abstract: Several specialized techniques are shown to make the incorporation of spelling correction algorithms into compilers and operating systems efficient. These include the use of syntax and semantics information, restricted keyword and symbol table organizations, and consideration of only a limited class of spelling errors. The number of debugging runs per program has been cut down by using systems which perform spelling correction, saving both programmer and machine time. Key Words and Phrases: spelling correction, error correction, debugging, compilers, operating systems, diagnostics, error detection, misspelling, lexical analysis, systems programming.

url: http://hdl.handle.net/1813/5890
date: 2007-04-09
creator: Constable, Robert L.
viewed: 24
title: Upward and Downward Diagonalization over Axiomatic Complexity Classes
abstract: This report considers special cases of the question “”What conditions on u() and t() guarantees that $R^{\Phi}_{t}() \neq $R^{\Phi}_{u}()$?” where $R^{\Phi}_{t}()$ is the class of recursive functions whose Φ complexity is bounded by t(). In particular the condition $\stackrel{inf}{n\rightarrow\infty} \frac{t(n)}{u(n)} = 0$ and $\stackrel{lim}{n\rightarrow\infty} \frac{t(n)}{u(n)} = 0$ are examined, and it is shown that certain results of Hartmanis, Stearns and Hennis are in one sense the best possible. It is then shown that the diagonalization techniques used in results of this type are of two different sorts, upward and downward. The differences are made precise and very general conditions are found under which each type applies. These conditions widely generalize several well-known results for time and tape complexity measures. In the final section, the report considers some properties of a special class of names for complexity classes. The techniques used in Lemma 3.3 and Theorems 5.1 and 7.1 are new and promise wider application. Also, new results of Borodin and McCreight and Meyer are used, but otherwise the methods are those of Blum.

url: http://hdl.handle.net/1813/5891
date: 2007-04-09
creator: Morgan, Howard L.
viewed: 16
title: An Interrupt Based Organization for Management Information Systems
abstract: A programming structure, language constructs, and supervisorry system organization are proposed for the design and coding of large shared data base systems. The bases for this organization are a generalized interrupt structure and the newly introduced concept of “file tagging”, which is the process of associating program structures and interrupt generating conditions with items in the data base. An algorithm for resolving conflicts which arise in scheduling the interrupt processing routines is presented. DPL, a programming language and supervisory system in which these concepts are implemented, is used to illustrate the new organization which is proposed for management information systems. Keywords and phrases: management information systems, integrated data processing, supervisors, interrupts, monitoring systems, supervisory systems, interrupt scheduling, parallel processing.

url: http://hdl.handle.net/1813/5892
date: 2007-04-09
creator: Shaw, Alan C.
viewed: 28
title: Parsing of Graph-Representable Pictures
abstract: This paper describes a syntax-directed picture analysis system based on a formal picture description

scheme. The system accepts a description of a set of pictures in terms of a grammar generating strings in a picture description language; the grammar is explicitly used to direct the analysis or parse, and to control the calls on pattern classification routines for primitive picture components. Pictures are represented by directed graphs with labelled edges, where the edges denote elementary picture components and the graph connectivity mirrors the picture component connectivity; blank and don't care "patterns" allow the description of simple relations between visible patterns. The bulk of the paper is concerned with the picture parsing algorithm which is an n-dimensional analog of a classical top-down string parser, and an application of an implemented system to the analysis of spark chamber film. The potential benefits of this approach, as demonstrated by the application, include ease of implementation and modification of picture processing systems, and simplification of the pattern recognition problem by automatically taking advantage of contextual information. Key Phrases: picture processing, picture parsing, picture description, picture analysis, pattern recognition, top-down analyzer, graph representable pictures, syntax directed analysis, picture language, picture grammar, graphics language.

url: http://hdl.handle.net/1813/5893
date: 2007-04-09
creator: Constable, Robert L.
viewed: 17
title: The Operator Gap
abstract: This paper continues investigations pertaining to recursive bounds on computing resources (such as time or memory) and the amount by which these bounds must be increased if new computations are to occur within the new bound. The paper proves that no recursive operator can increase every recursive bound enough to reach new computations. In other words, given any general recursive operator F[], there is an arbitrarily large recursive t() such that between bound t() and bound F[t()]() there is a gap in which no new computation runs. This demonstrates that the gap phenomenon first discovered by Borodin for composition is a deeply intrinsic property of computational complexity measures. Moreover, the Operator Gap Theorem proved here is shown to be the strongest possible gap theorem for general recursive operators. The proof involves a priority argument but is sufficiently self-contained that it can easily be read by a wide audience. The paper also discusses interesting connections between the Operator Gap Theorem and McCreight and Meyer's important result that every complexity class can be named by a function from a measured set.

url: http://hdl.handle.net/1813/5894
date: 2007-04-09
creator: Salton, Gerard
viewed: 39
title: Automatic Text Analysis
abstract: Effective automatic methods are now available to replace conventional document indexing and classification.

url: http://hdl.handle.net/1813/5895
date: 2007-04-09
creator: McGowan, Clement
viewed: 19
title: On the Equivalence of Mechanical Evaluation Strategies
abstract: Two mechanical evaluation strategies are shown to correctly implement the λ-K-calculus and to be equivalent.

url: http://hdl.handle.net/1813/5896

date: 2007-04-09
creator: Elder, Howard A.
viewed: 23
title: On the Feasibility of Voice Input to an On-Line Computer Processing System
abstract: An on-line digital computer processing system is considered in which an ordinary telephone is the complete terminal device, input to the computer being provided as a sequence of spoken words, and output to the user being audio responses from the machine. The feasibility of implementing such a system with a FORTRAN-LIKE algebraic compiler as the object processor is considered. Complete details of a specific word recognition program are given. This technique depends on three simplifying restrictions, namely, a "small" vocabulary set, "known" speakers, and a "moment of silence" between each input word. Experimental results are presented giving error rates for different experimental conditions as well as the machine resources required to accomodate several users at a time. The results show that at this time it is both economically and logically feasible to handle at least 40 users at a time with an IBM 360/65 computer.

url: http://hdl.handle.net/1813/5897
date: 2007-04-09
creator: Salton, Gerard
viewed: 24
title: Evaluation Problems in Interactive Information Retrieval
abstract: Interactive retrieval procedures are normally based on rapidly accessible files. Special storage organizations and file search techniques are used, and the system user is made to fulfill an important role during the retrieval process. In the present study, the interactive retrieval environment is briefly examined. The special problems which arise in the evaluation of interactive retrieval are then discussed, and methods are described for evaluating partial file searches and user feedback techniques. Evaluation resultss obtained with the SMART system are presented.

url: http://hdl.handle.net/1813/5898
date: 2007-04-09
creator: Salton, Gerard
viewed: 23
title: Interactive Information Retrieval
abstract: The advent of time-sharing computer organizations and input-output console equipment has made it possible to experiment with interactive information handling methods in which the user takes on important functions both in planning and in executing information searches. The principal interactive text storage and retrieval processes are briefly reviewed, including text editing, text analysis and indexing, query formulation, and information searching. The user's role is stressed in each case, and particular attention is paid to interactive search procedures in which both the user queries and the stored information files become altered as a result of the user-system interaction. Evaluation results obtained with the SMART retrieval system are exhibited for some of the proposed methodology.

url: http://hdl.handle.net/1813/5899
date: 2007-04-09
creator: Borodin, Allan B.
viewed: 19
title: Computational Complexity and the Existence of Complexity Gaps
abstract: Computational Complexity and the Existence of Complexity Gaps

url: http://hdl.handle.net/1813/5900

date: 2007-04-09
creator: Hall, H. A.;Gearhart, W. B.;Brown, Kenneth M.
viewed: 34
title: On the Automatic Calculation of Solutions - Different from Those Previously Obtained - of Nonlinear Systems of Equations
abstract: Given a system of N nonlinear (algebraic or transcendental) real equations in N real unknowns, there exist a variety of numerical methods which obtain solutions of those equations. This paper presents two methods which are used to find further simple solutions - in addition to those already known a priori or from an earlier calculation. These methods have the advantage of keeping away from solutions previously calculated, saving the computer user the wasted effort entailed in converging to already known, perhaps uninteresting solutions points. The technique can also be used in avoiding previously found extreme points in function minimization. Many problems have "magnetic zeros", zeros which are converged to almost regardless of the starting guesses used. These magnetic zeros often mask out the zeros of real interest. The methods discussed are particularly effective in avoiding convergence to such magnetic zeros. Results of computer experiments ar presented.

url: http://hdl.handle.net/1813/5901
date: 2007-04-09
creator: Hartmanis, Juris
viewed: 38
title: A Note on One-way and Two-way Automata
abstract: The purpose of this note is to show that there exist non-regular languages whose memory requirements for recognition by one-way and two-way automata differ by a double exponential and that this difference cannot be exceeded.

url: http://hdl.handle.net/1813/5902
date: 2007-04-09
creator: Kerr, Leslie Robert;Hopcroft, John E.
viewed: 38
title: On Minimizing the Number of Multiplications Necessary for Matrix Multiplication
abstract: This paper develops an algorithm to multiply a px2 matrix by a 2xn matrix in $\lceil (3pn+max(n,p))/2 \rceil$ multiplications for matrix multiplication without commutativity. The algorithm minimizes the number of multiplications for matrix multiplication without commutativity for the special cases p=1 or 2, n=1,2, $\ cdots$ and p = 3, n = 3. It is shown that with commutativity fewer multiplications are required.

url: http://hdl.handle.net/1813/5903
date: 2007-04-09
creator: Dennis, John E., Jr.
viewed: 102
title: On the Local Convergence of Broyden's Method for NonlinearSystems of Equations
abstract: The purpose of this paper is to present an alternate to the proof given in [3] of the local convergence of Broyden's method. The result was stated there as a simple corollary of a Kantorovich-type theorem for the method. Here we allow ourselves to assume the existence of a root for the system of equations in question and as a result we are able to slightly relax the requirements on the partial derivatives of the system and greatly simplify the proof. We will confine the description of the method to bare essentials and refer the reader to [1] or [3] for more details.

url: http://hdl.handle.net/1813/5904

date: 2007-04-09
creator: Dennis, John E., Jr.;Brown, Kenneth M.
viewed: 110
title: On the Local Convergence of Nonlinear Successive Overrelaxation and Related Methods
abstract: On the Local Convergence of Nonlinear Successive Overrelaxation and Related Methods

url: http://hdl.handle.net/1813/5905
date: 2007-04-09
creator: Dennis, John E., Jr.
viewed: 40
title: On the Convergence of Broyden's Method for Nonlinear Systems of Equations
abstract: On the Convergence of Broyden's Method for Nonlinear Systems of Equations

url: http://hdl.handle.net/1813/5906
date: 2007-04-10
creator: Sharpe, Katherine
viewed: 121
title: 'I Heard Beauty Dying': The Cultural Critique of Plastic in Gravity's Rainbow
abstract: This essay attempts to get a grasp on Pynchon's 700-plus page omnibus, Gravity's Rainbow, by focusing on the development of a single motif in the novel: plastic. It argues that Pynchon takes 1960s and 1970s critiques of supply-driven consumer capitalism, of which plastic was a visible emblem, and makes them more emphatic by placing them into a fictionalized version of the prewar years and the 1940s. Looking backwards, and employing a creative license that allows him to attribute the rise of plastics technology and consumer capitalism to purposely evil entities (like his fictional versions of real-life corporations IG Farben and Shell Oil), Pynchon is able to deliver a narrative that locates the roots of contemporary problems in the technological and business innovations of the World War II era. In Gravity's Rainbow, as in early-'70s America, plastic comes to signify for a suite of negative meanings, from environmental degradation, to an exploitative economic order, to a sadistic psychology in which the desire to achieve immortality results in the destruction and perversion of life itself. The essay is divided into three sections. The first uses a cultural history of plastic to identify popular cultural attitudes towards plastic and locate them in Pynchon's text. The second turns towards a closer reading of Gravity's Rainbow, examining the character Greta Erdmann and her relationship to plastic. The final section considers a second character, Tyrone Slothrop, and concludes that Pynchon's critique of plastic ends on a pessimistic note, positing only a limited possibility for meaningful resistance towards plastic and the material and psychological economies that it represents.

url: http://hdl.handle.net/1813/5909
date: 2007-04-17
creator: Ashley, David
viewed: 94
title: Reducing Ventilation Energy Demand In Multifamily High Rise Buildings Through Preconditioning: Two Modeling Studies
abstract: Concerns over climate change and rising costs and demand of energy have fueled interest in various renewable and high efficiency energy technologies in recent years.
The energy demand associated with ventilation in high rise multifamily buildings can be quite significant. A number of technologies have been developed with the aim of reducing the demand associated with the maintenance of acceptable levels of indoor air quality and comfort in residential buildings.
Two such technologies were studied here. The unglazed transpired solar collector (UTSC) represents a radical shift from earlier collector designs with its perforated metal cladding and the absence of glazings and covers.

It acts as a ventilation air preheater by delivering warmed air to a conventional makeup air heater which supplies any necessary supplemental heating prior to building delivery. The perforated design allows the boundary layer to be sucked into the collector, resulting in very high thermal efficiencies.
A model consisting of a UTSC system and the building on which it is installed was developed. The model computes hourly performance based on TMY2 weather data. Results indicated the importance of the control system in maximizing energy capture and validated the realistic option of a nighttime bypass mode. Results of simulations in seven locations across the state of New York indicated that, while substantial energy capture was possible, economic performance appeared to be marginal.
Recovery ventilation (including both heat and energy recovery ventilation) offers another potentially attractive method of offsetting ventilation energy demand by preconditioning ventilation air. Heat and/or moisture are transferred between the exhaust and supply streams of the ventilation system, allowing the capture of ?waste? heat and moisture (or the lack of these two, depending on the season) from the exhaust stream. Recovery ventilation, which can also achieve very high efficiencies, has the advantage over solar technologies of operating continuously and unimpeded during both day and night and throughout the entire year since the heat/moisture exchange proceeds in either direction and is useful in both.
Unfortunately, serious problems hampering the field performance of recovery ventilation systems have included low system flows and pressures and even flow reversal at exhaust terminals. A model of a typical high rise residential building was developed based on an existing Albany building involved in a recovery ventilation case study and exhibiting these problems. The model successfully predicted the key field observations of low pressures and flows along with flow reversal under certain conditions. Factors found to significantly affect ventilation system performance included stack effect, opening of windows, and duct leakage. Possible solution strategies were investigated including increasing system pressure, compartmentalization, and leakage reduction. An important finding was that typical operating pressures are most likely too low to resist external disturbances such as stack effect. However, significant duct leakage can pose a formiddable obstacle to achieving higher pressure systems. These results indicate the importance of considering both the necessary pressures for immunization against uncontrollable disturbances and the duct leakage present (in retrofit applications) in order to maximize the performance of recovery ventilation systems in the field.
National Science Foundation Cornell IGERT Program Taitem Engineering

url: http://hdl.handle.net/1813/5911
date: 2007-04-19
creator: Holt, Richard C.

title: Comments on Prevention of System Deadlocks
abstract: Habermann's method of deadlock preventative is discussed, where deadlock is defined as a system state from which resource allocations to certain processes is not possible. It is shown that the scheduler may introduce deadlocks which Habermann's method does not prevent. Effective deadlock is defined as the situation where certain processes do not receive their resource requests. It is shown that deadlock prevention does not imply effective deadlock prevention. A method of effective deadlock prevention is given. Key Words and Phrases: multiprogramming, time-sharing, scheduling, resource allocation, deadlock, interlock, deadly embrace, knotting.

url: http://hdl.handle.net/1813/5912
date: 2007-04-19
creator: Lewis, Forbes;Hartmanis, Juris

title: The Use of Lists in the Study of Undecidable Problems in Automata Theory
abstract: NO ABSTRACT SUPPLIED

url: http://hdl.handle.net/1813/5913
date: 2007-04-19
creator: Constable, Robert L.
viewed: 17
title: Subrecursive Programming Languages for $\Re^{n}$
abstract: NO ABSTRACT SUPPLIED

url: http://hdl.handle.net/1813/5914
date: 2007-04-19
creator: Borodin, Allan B.;Constable, Robert L.
viewed: 17
title: On the Efficiency of Programs in Subrecursive Formalisms
abstract: NO ABSTRACT SUPPLIED

url: http://hdl.handle.net/1813/5915
date: 2007-04-19
creator: Jackson, D.M.
viewed: 39
title: An Error Analysis for Functions of Qualitative Attributes with Application to Information Retrieval
abstract: The use of overlapping, non-hierarchical classifications in information retrieval is considered. It is assumed that the population of objects to be classified is such that only a subset of the classes satisfying the classificatory criterion may be found. The effect of this assumption on the measurement of classification stability is considered. As a step towards the determination of stability, a general technique is presented for deriving the expectation of a statistical function of the similarities between the objects of the population. It is assumed that the objects are describable in terms of two-state attributes which are susceptible independently and equiprobably to error with an assignable probability. Two commonly encountered similarity functions are treated in detail. The techniques disclosed are applicable, in principle, to classification algorithms, whether hierarchical or non-hierarchical, which utilize a similarity matrix giving the similarities between pairs of objects described by two-state independent attributes.

url: http://hdl.handle.net/1813/5916
date: 2007-04-19
creator: Dennis, John E., Jr.;Brown, Kenneth M.
viewed: 37
title: A New Algorithm for Nonlinear Least Squares Curve Fitting
abstract: NO ABSTRACT SUPPLIED

url: http://hdl.handle.net/1813/5917
date: 2007-04-19
creator: Constable, Robert L.
viewed: 16
title: On the Size of Programs in Subrecursive Formalisms
abstract: This paper gives an overview of subrecursive hierarchy theory as it relates to computational complexity and applies some of the concepts to questions about the size of programs in subrecursive programming languages. The purpose is three-fold, to reveal in simple terms the workings of subrecursive hierarchies, to indicate new results in the area, and to point out ways that the fundamental ideas in hierarchy theory can lead to interesting questions about programming languages. A specific application yields new information

about Blum's results on the size of programs and about the relationship between size and efficiency.

url: http://hdl.handle.net/1813/5918
date: 2007-04-19
creator: Hopcroft, John E.;Hartmanis, Juris
viewed: 86
title: An Overview of the Theory of Computational Complexity
abstract: The purpose of this paper is to outline the theory of computational complexity which has emerged as a comprehensive theory during the last decade. This theory is concerned with the quantitative aspects of computations and its central theme is the measuring of the difficulty of computing functions. The paper does not attempt to give an exhaustive survey but instead presents the basic concepts, results and techniques of computational complexity from a new point of view from which the ideas are more easily understood and fit together as a coherant whole.

url: http://hdl.handle.net/1813/5919
date: 2007-04-19
creator: Lewis, Forbes
viewed: 32
title: Unsolvability Considerations in Computational Complexity
abstract: The study of Computational Complexity began with the investigation of Turing machine computations with limits on the amounts of tape or time which could be used. Later a set of general axioms for measures of computation was presented and this instigated much study of the properties of these general measures. Many interesting results were shown, but the general axioms allowed measures with undesirable properties and several attempts have been made to tighten up the axioms so that only desirable measures will be defined.

url: http://hdl.handle.net/1813/5920
date: 2007-04-19
creator: Sweet, Roland A.;Dennis, John E., Jr.
viewed: 28
title: Some Minimal Properties of the Trapezoidal Rule
abstract: NO ABSTRACT SUPPLIED

url: http://hdl.handle.net/1813/5921
date: 2007-04-19
creator: Morgan, Howard L.;Maxwell, W. L.;Conway, Richard W.
viewed: 26
title: Selective Security Capabilities in ASAP - A File Management System
abstract: NO ABSTRACT SUPPLIED

url: http://hdl.handle.net/1813/5922
date: 2007-04-19
creator: Reingold, E.M.;Holt, Richard C.
viewed: 18
title: On the Time Required to Detect Cycles and Connectivity in Directed Graphs
abstract: It is shown that when a directed graph is represented as a binary connection matrix, the problem of finding the shortest path between two nodes of a directed graph, and the problem of determining whether the directed graph has a cycle require at least $O(n^{2})$ operations. Thus the presently known best algorithms are optimal to within a multiplicative constant.

url: http://hdl.handle.net/1813/5923
date: 2007-04-19
creator: Conway, Richard W.
viewed: 18
title: Simulation of the Job Shop Process
abstract: NO ABSTRACT SUPPLIED

url: http://hdl.handle.net/1813/5924
date: 2007-04-19
creator: Jackson, D.M.
viewed: 39
title: The Stability of Classifications of Binary Attribute Data
abstract: NO ABSTRACT SUPPLIED

url: http://hdl.handle.net/1813/5925
date: 2007-04-19
creator: White, L.J.;Jackson, D.M.
viewed: 43
title: The Weakening of Taxonomic Inferences by Homological Errors
abstract: In the past decade there has been a growing concern in devising classification algorithms which are applicable to large bodies of data. Such algorithms are characterized necessarily by a sacrifice of statistical sophistication for a gain in computational simplicity. Accordingly, inferences drawn from taxonomic studies in which these algorithms have been employed may be affected by accidental and poorly understood features of such algorithms. An error analytic technique is presented which reduces this possibility. It is applicable to many of the classification algorithms currently in use. The combinatorial problems encountered in the error analysis are discussed and a computationally viable method for their solution is formulated. The technique is illustrated by an experiment with a small set of data.

url: http://hdl.handle.net/1813/5926
date: 2007-04-19
creator: Salton, Gerard
viewed: 69
title: The "Generality" Effect and the Retrieval Evaluation forLarge Collections
abstract: The retrieval effectiveness of large document collections is normally assessed by using small subsections of the file for test purposes, and extrapolating the data upward to represent the results for the full collection. The accuracy of such an extrapolation unhappily depends on the "generality" of the respective collections. In the present study the role of the generality effect in retrieval system evaluation is assessed, and evaluation results are given for the comparison of several document collections of distinct size and generality in the areas of documentation and aerodynamics.

url: http://hdl.handle.net/1813/5927
date: 2007-04-19
creator: Wagner, Robert A.
viewed: 29
title: On Scheduling Meetings
abstract: We commment on the problem of assigning papers to time-slots to minimize the time needed for a technical meeting. We claim that this problem is, in abstract, the problem of discovering a minimal coloring

of a conflict graph. This approach contrasts with that of Joseph E. Grimes in [1]. Key words and phrases: allocation, conflict matrix, connected component, scheduling, spanning tree, undirected linear graph, graph node coloring, graph vertex coloring.

url: http://hdl.handle.net/1813/5928
date: 2007-04-19
creator: Wagner, Robert A.
viewed: 35
title: Register Allocation in Assembly Language
abstract: This paper describes a scheme for using the facilities of a macro assembler to aid in allocating program variables to local-memory registers. The scheme allows the programmer to write the entire program before making any register-allocation decisions. The scheme requires that the programmer make explicit his assumptions about register ordering and usage, thus improving documentation. Key Words and phrases: register allocation, register assignment, symbolic register names, macro assembler, variable allocation, scalar variable equivalence, graph coloring.

url: http://hdl.handle.net/1813/5929
date: 2007-04-19
creator: Hartmanis, Juris
viewed: 18
title: Computational Complexity of Random Access Stored Program Machines
abstract: In this paper we explore the computational complexity measure defined by running times of programs on random access stored program machines, RASP'S. The purpose of this work is to study more realistic complexity measures and to provide a setting and some techniques to explore different computer organizations. The more interesting results of this paper are obtained by an argument about the size of the computed functions. For example, we show (without using diagonalization) that there exist arbitrarily complex functions with optimal RASP programs whose running time cannot be improved by any multiplicative constant. We show, furthermore, that these optimal programs cannot be fixed prodecures and self-modifying programs. The same technique is used to compare computation speed of machines with and without built in multiplication. We conclude the paper with a look at machines with associative memory and distributed logic machines.

url: http://hdl.handle.net/1813/5930
date: 2007-04-19
creator: Wagner, Robert A.
viewed: 33
title: Finiteness Assumptions and Intellectual Isolation of Computer Scientists
abstract: We investigate the consequences of assuming integer variables of algorithmic languages to be finite vs. infinite in number and/or range. We suggest that different groups of computer scientists use different postulates about algorithmic languages. This leads to difficulty in communication, since the assumptions are usually unstated. Key words and phrases: Algol vs. FORTRAN, finiteness assumptions, intellectual isolation, integer variable range, memory finiteness, finite word size.

url: http://hdl.handle.net/1813/5931
date: 2007-04-19
creator: Boggs, Paul T.
viewed: 17
title: The Solution of Nonlinear Operator Equations by A-Stable Integration Techniques

abstract: NO ABSTRACT SUPPLIED

url: http://hdl.handle.net/1813/5932
date: 2007-04-19
creator: Hartmanis, Juris
viewed: 22
title: Size Arguments in the Study of Computation Speeds
abstract: In this paper we use arguments about the size of the computed functions to investigate the computation speed of Turing machines. It turns out that the size arguments yield several new results which we have not been able to obtain previously by diagonalization. For example, we show that for arbitrarily complex running times $T(n)$ there exist functions which can be computed on a one-tape Turing machine in time $T(n)$ but not in time $t(n)$ provided $\stackrel{\lim}{n \rightarrow \infty} \frac{t(n)}{T(n)}=0$. The same result is also shown to hold for many-tape machines. We show furthermore, that there exist arbitrarily complex computations for which one-tape machines are slower than two-tape machines by a factor equal to the logarithm of the computation time of the two-tape machine. We conclude by discussing several other computational complexity measures and compare results obtained by diagonalization and size arguments.

url: http://hdl.handle.net/1813/5933
date: 2007-04-19
creator: Wagner, Robert A.
viewed: 30
title: Common Phrases and Minimum-Space Text Storage
abstract: A method for saving storage space for text strings, such as compiler diagnostic messages, is described. The method relies on hand-selection of a set of text-strings which are common to one or more messages. These phrases are then stored only once. The storage technique gives rise to a mathematical optimization problem: determine how each message should use the available phrases to minimize its storage requirement. This problem is non-trivial when phrases which overlap exist. However, we present a dynamic programming algorithm which solves the problem in time which grows linearly with the number of characters in the text. Keywords and Phrases: diagnosic messages, error messages, common phrases, minimum space, text storage, optimization, dynamic programming.

url: http://hdl.handle.net/1813/5934
date: 2007-04-19
creator: Kerr, Leslie Robert
viewed: 39
title: The Effect of Algebraic Structure on the Computational Complexity of Matrix Multiplication
abstract: NO ABSTRACT SUPPLIED

url: http://hdl.handle.net/1813/5935
date: 2007-04-19
creator: Salton, Gerard
viewed: 32
title: Automatic Processing of Current Affairs Queries
abstract: The SMART system is used for the analysis, search, and retrieval of news stories appearing in Time magazine. A comparison is made between the automatic text processing methods incorporated into the SMART system and a manual search using the classified index to Time. The results indicate that equivalent retrieval results are obtainable when both the manual and the automatic searches are carried out in a feedback mode.

url: http://hdl.handle.net/1813/5936
date: 2007-04-19
creator: Zelkowitz, Marvin
viewed: 34
title: Interrupt-Driven Programming
abstract: In "An Interrupt Based Organization for Management Information Systems" (1), the author of that paper proposes a new form of interrupt, a Boolean expression of variables in the program, as a natural extension from the present interrupt structure. His paper describes a software implementation; this note shows how his system could easily be implemented in hardware, with a corresponding decrease in system overhead. Keywords and Phrases: Interrupts, Interrupt scheduling, supervisors, monitors, debugging, program checkout, parallel processing, associative memories, microprogramming.

url: http://hdl.handle.net/1813/5937
date: 2007-04-19
creator: Wagner, Robert A.
viewed: 39
title: An Algorithm for Coloring the Nodes of a Graph
abstract: We study the problem of coloring the nodes of a graph such that two nodes joined by an arc are assigned different colors. An algorithm is presented which requires $~n^{3}$ time, where the graph contains n nodes. This algorithm yields near-minimal colorings. The algorithm is based on the "coalescence" and "free coalescence" of nodes to yield simpler graphs. Based on these same operations, we derive an exhaustive search which examines at most 2^{m} cases, where m arcs appear in the complement of the graph to be colored. Key words and phrases: Graph coloring, graph node coloring, graph vertex coloring.

url: http://hdl.handle.net/1813/5938
date: 2007-04-19
creator: Jackson, D.M.
viewed: 44
title: Classification, Relevance, and Information Retrieval
abstract: NO ABSTRACT SUPPLIED

url: http://hdl.handle.net/1813/5939
date: 2007-04-19
creator: Weiderman, Nelson H.;Shaw, Alan C.
viewed: 33
title: A Multiprogramming System for Education and Research
abstract: A novel multiprogramming case study which has proven useful in operating systems education and research is presented. The operating system and its unusual hypothetical machine are specified. The paper then describes experience with the case study as a class project involving hardware simulation, and systems design and implementation; and as a research tool for testing neww ideas in operating systems primitives and design methodologies. It is concluded that case studies of this type will be widely used in the future.

url: http://hdl.handle.net/1813/5940
date: 2007-04-19
creator: White, L.J.;Jackson, D.M.
viewed: 39
title: Numerical Approximations to Expectations of Functions of Binary Sequences Subject to Error

abstract: There is growing interest in devising non-statistical classification algorithms for multivariate populations. Statistical algorithms are avoided either because they are too costly, or because an adequate statistical model for the population does not exist (e.g. use of trainable linear machines in pattern recognition). Such algorithms may be sensitive (unstable) to errors in their data. The particular case of populations of objects characterised by binary attributes susceptible to independent and equiprobable errors is examined. The determination of stability requires the prior computation of the expectation of a statistical function of the object-pair similarities. The order and convergence of a numerical approximation for determining these expectations with prescribed accuracy is examined in the sub-asymptotic case in which normality does not occur. A number of results are given.

url: http://hdl.handle.net/1813/5941
date: 2007-04-19
creator: Tarjan, Robert Endre
viewed: 48
title: Enumeration of the Elementary Circuits of a Directed Graph
abstract: An algorithm to enumerate all the elementary circuits of a directed graph is presented. The algorithm uses back-tracking with lookahead to avoid unnecessary work, and it has a time bound of $O ((V+E)(C+1))$ when applied to a graph with V vertices, E edges, and C elementary circuits. Keywords: Algorithm, circuit, cycle, graph

url: http://hdl.handle.net/1813/5942
date: 2007-04-19
creator: Tarjan, Robert Endre
viewed: 23
title: On the Efficiency of a Good but Not Linear Set Union Algorithm
abstract: Consider two types of instructions for manipulating disjoint sets. FIND(x) computes the name of the (unique) set containing element x. UNION(A,B,C) combines sets A and B into a new set named C. We examinee a known algorithm for implementing sequences of these instructions. We show that if f(n) is the maximum time required by any sequence of n instructions, $k_{1} n \alpha (n) \leq f(n) \leq k_{2} n \log^{*} (n)$ for some constants k_{1} and k_{2}, where $\log^{*}(n) = \min\{i|\log^{i}(n) \leq 1\}$ and $\alpha(n)$ is a recursively defined function which satisfies $\alpha(n) \rightarrow \infty$ as $n \rightarrow \infty$. Thus the set union algorithm is $O(n \log^{*}(n))$ but not $O(n)$. Keywords and phrases: algorithm, complexity, equivalence, partition, set union, tree.

url: http://hdl.handle.net/1813/5943
date: 2007-04-19
creator: Constable, Robert L.
viewed: 21
title: Constructive Mathematics and Automatic Program Writers
abstract: One point made here is that formal constructive mathematics can be interpreted as a “high-level” programming language; another point is that there are good reasons for doing so. Among them is the fact that a theoretical basis for automatic program writers (APW’s) becomes especially perspicuous (in such a context the problem of assigning meaning to programs a la Floyd [6] is the inverse of program writing). Another reason is that such an interpretation reveals a number off interesting mathematical problems in the theory of computing. While making these points we find occasion to present new observations on the completeness and efficiency of automatic program writers and to formulate a specific example of what we call von Neumann’s principle on the logical complexity of systems. We apply the principle in the automatic program writing context and discuss its more general ramifications about the intelligibility of programs.

url: http://hdl.handle.net/1813/5944
date: 2007-04-19
creator: White, L.J.;Jackson, D.M.
viewed: 33
title: The Combinatorial Decomposition of Stability Problems in Non-Statistical Classification Theory
abstract: NO ABSTRACT SUPPLIED

url: http://hdl.handle.net/1813/5945
date: 2007-04-19
creator: Horowitz, Ellis;Jackson, D.M.
viewed: 37
title: The Symbolic Computation of Functions of Sequences over Finite Alphabets with Given Transition Probabilities by Sequence Length Independent Algorithms
abstract: A special case of the problem discussed in this paper occurs in connection with non-statistical classification and is introduced from this point of view. The special case concerns the computation of expectations of statistical functions of the "distance" between pairs of fixed length sequences over a binary alphabet with given a priori state transition probabilities. The general problem involves an extension to alphabets of arbitrary order and the comparison of an arbitrary number of fixed length sequences. Given a set of sequences, it is shown that for a large class of functions exact computation may be carried out by an algorithm whose computation time is independent of the length of the sequences. It is further shown that results for all functions of this class may be derived from a small number of basis functions. Two methods for computing basis functions are given. Basis functions for the commonly encountered special case involving pairs of binary sequences are given explicitly.

url: http://hdl.handle.net/1813/5946
date: 2007-04-19
creator: Dennis, John E., Jr.
viewed: 15
title: On Some Methods Based on Broyden's Secant Approximation to the Hessian
abstract: NO ABSTRACT SUPPLIED

url: http://hdl.handle.net/1813/5947
date: 2007-04-19
creator: Weiderman, Nelson H.
viewed: 34
title: Synchronization and Simulation in Operating System Construction
abstract: NO ABSTRACT SUPPLIED

url: http://hdl.handle.net/1813/5948
date: 2007-04-19
creator: Wilcox, Thomas R.
viewed: 31
title: Generating Machine Code for High-Level Programming Languages
abstract: NO ABSTRACT SUPPLIED

url: http://hdl.handle.net/1813/5949
date: 2007-04-19

creator: Wagner, Robert A.
viewed: 35
title: A Proposal for Compile-Time Facilities
abstract: A novel, simple scheme for providing compile-time facilities to PL/I programmers is proposed. The scheme emphasizes language unity and implementation ease at the expense of syntactic nicety. A similar approach is possible in high-level languages other than PL/I, assuming they include adequate character string processing facilities. This paper describes the scheme, and attempts to analyze its advantage and shortcomings. Keywords and Phrases: macros, macro processing, compile-time facilities, compile time macros, compiler macros, high level language macros.

url: http://hdl.handle.net/1813/5950
date: 2007-04-19
creator: More, Jorge J.;Dennis, John E., Jr.
viewed: 19
title: A Characterization of Superlinear Convergence and its Application to Quasi-Newton Methods
abstract: Let F be a mapping from real n-dimensional Euclidean space into itself. Most practical algorithms for finding a zero of F are of the form $x_{k+1} = x_{k} - B_{k}^{-1_{Fx_{k}}}$ where $\{B_{k}\}$ is a sequence of non-singular matrices. The main result of this paper is a characterization theorem for the superlinear convergence to a zero of F of sequences of the above form. This result is then used to give a unified treatment of the results on the superlinear convergence of the Davidon-Fletcher-Powell method obtained by Powell for the case in which exact line searches are used, and by Broyden, Dennis, and More for the case without line searches. As a by-product, several results on the asymptotic behavior of the sequence $\{B_{k}\}$ are obtained. An interesting aspect of these results is that superlinear convergence is obtained without any consistency conditions; i.e. without requiring that the sequence $\{B_{k}\}$ converge to the Jacobian.

url: http://hdl.handle.net/1813/5951
date: 2007-04-19
creator: Gries, David
viewed: 16
title: Programming by Induction
abstract: A technique for creating programs, called programming by induction, is described. The term is used because of the similarity between programming by induction and proving a theorem by induction.

url: http://hdl.handle.net/1813/5952
date: 2007-04-19
creator: Wilcox, Thomas R.;Conway, Richard W.
viewed: 20
title: Design and Implementation of a Diagnostic Compiler for PL/I
abstract: PL/C is a compiler for a dialect for PL/I. The design objective was to provide a maximum degree of diagnostic assistance in a batch processing environment. For the most part this assistance is implicit and is provided automatically by the compiler. The most remarkable characteristic of PL/C is its perseverance -- it completes translation of every program submitted and continues execution until a user-established error limit is reached. This requires that the compiler repair errors encountered during both translation and execution, and the design of PL/C is dominated by this consideration. PL/C also introduces several explicit user-controlled facilities for program testing. Some are conventional, providing a convenient high-level trace and dump capability. An experimental version of PL/C also permits the user to controllably reverse the direction of program execution and to write routines that are asynchronously invoked when an arbitrary condition becomes true. To accomodate these extensions to PL/I without abandoning compatibility with the

IBM compiler, PL/C permits `pseudo-comments' - constructions whose contents can optionally be considered either source text or comment. In spite of th ediagnostic effort PL/C is a fast and efficient processor. It effectively demonstrates that compilers can provide better diagnostic assistance than is customarily offered, even when a sophisticated source language is employed, and that this assistance need not be prohibitively costly. Key Words and Phrases: Compilers, Debugging, PL/I

url: http://hdl.handle.net/1813/5953
date: 2007-04-19
creator: Horowitz, Ellis;Heindel, Lee E.
viewed: 36
title: On Decreasing the Computing Time for Modular Arithmetic
abstract: In this paper it is shown that by suitably modifying Garner's algorithm for applying the Chinese Remainder Theorem to optimally employ the fast multiplication techniques of Schonhage and Strassen, one can often decrease the computing time of algebraic algorithms employing modular (congruence, residue) arithmetic.

url: http://hdl.handle.net/1813/5954
date: 2007-04-19
creator: Weber, R.P.;Traub, J.F.;Dennis, John E., Jr.
viewed: 15
title: On the Matrix Polynomial, Lamda-Matrix and Block Eigenvalue Problems
abstract: A matrix S is a solvent of the matrix polynomial $M(X) \equiv X^{m} + A_{1}X^{m-1} + \cdots + A_{m}$, if $M(S) = \stackrel{0}{=}$, where A_{1}, X and S are square matrices. We present some new mathematical results for matrix polynomials, as well as a globally convergent algorithm for calculating such solvents. In the theoretical part of this paper, existence theorems for solvents, a generalized division, interpolation, a block Vandermonde, and a generalized Lagrangian basis are studied. Algorithms are presented which generalize Traub's scalar polynomial methods, Bernoulli's method, and eigenvector powering. The related lambda-matrix problem, that of finding a scalar λ such that $I \lambda^{m} + A_{1} \lambda^{m-1} + \cdots + A_{m}$ is singular, is examined along with the matrix polynomial problem. The matrix polynomial problem can be cast into a block eigenvalue formulation as follows. Given a matrix A of order mn, find a matrix X of order n, such that $AV=VX$, where V is a matrix of full rank. Some of the implications of this new block eigenvalue formulation are considered.

url: http://hdl.handle.net/1813/5955
date: 2007-04-19
creator: More, Jorge J.
viewed: 19
title: The Application of Variational Inequalities to Complementarity Problems and Existence Theorems
abstract: If $F : C \rightarrow R^{n}$ is a continuous (nonlinear) mapping on a closed, convex subset C of R^{n}, it is shown that very weak coercivity conditins on F guarantee the existence of a solution x^{*} in C to the variational inequality $(x-x^{*}, Fx^{*}) \geq 0$ for each x in C. By restricting the shape of C, it is shown that x^{*} solves different problems, and in each case we are able to obtain new existence results. If C is a cone K, the x^{*} is a solution to the complementarity problem: Find an x^{*} in K such that Fx^{*} belongs to the polar of K and $(x^{*}, Fx^{*})=0$. In this case it is possible to generalize some of the feasibility results available in the linear theory and to give an iterative scheme for finding x^{*}. If C is similar to a simplex then x^{*} turns out to be a solution of nonlinear inequalities in the preorder induced by a cone, while if C or K is R^{n}, then $Fx^{*} =0$.

url: http://hdl.handle.net/1813/5956
date: 2007-04-19
creator: Horowitz, Ellis
viewed: 16
title: Algorthms for Rational Function Arithmetic Operations
abstract: Despite recent advances in speeding up many arithmetic and algebraic algorithms plus an increased concern with algorithm analysis, no computing time study has ever been done for algorithms which perform the rational function arithmetic operations. Mathematical symbol manipulation systems which provide for operations on rational functions use algorithms which were initially given by P. Henrici in 1956. In this paper, these algorithms are precisely specified and their computing times analyzed. Then new algorithms based on the use of modular arithmetic are developed and analyzed. It is shown that the computing time for adding and taking the derivative of univariate rational functions is 2 orders of magnitude faster using the modular algorithms. Also, the computing time for rational function multiplication will be one order of magnitude faster using the modular algorithm. The new method is generalized to the multivariate case and extensive empirical results are given. Keywords: Rational functions, modular arithmetic, arithmetic oeprations, algebraic algorithms.

url: http://hdl.handle.net/1813/5957
date: 2007-04-19
creator: Harris, Robert V.
viewed: 13
title: Toward a Polynomial Bound on DP: A Special Case
abstract: NO ABSTRACT SUPPLIED

url: http://hdl.handle.net/1813/5958
date: 2007-04-19
creator: Karp, R. M.;Hopcroft, John E.
viewed: 26
title: A Linear Algorithm for Testing Equivalence of Finite Automata
abstract: An algorithm is given for determining if two finite automata with start states are equivalent. The asymptotic running time of the algorithm is bounded by a constant times the product of the number of states of the larger automaton with the size of the input alphabet.

url: http://hdl.handle.net/1813/5959
date: 2007-04-19
creator: Salton, Gerard
viewed: 32
title: A New Comparison Between Conventional Indexing (MEDLARS) andAutomatic Text Processing (SMART)
abstract: A new testing process is described designed to compare conventional retrieval (MEDLARS) and automatic text analysis methods (SMART). The results obtained with a collection of documents chosen independently of either SMART or MEDLARS indicate that a simple automatic extraction of keywords from document abstracts produces a 30 to 40 percent loss compared with MEDLARS indexing. A replacement of the unranked Boolean searches used in MEDLARS by the standard ranked output normally provided by SMART reduces the loss to between 15 and 20 percent. When an automatically generated word control list or a thesaurus is used as part of the SMART analysis, the results are comparable in effectiveness to those obtained by the intellectual MEDLARS indexing. Finally, the incorporation of user feedback procedures into SMART furnishes an improvement over the normal MEDLARS output of 15 to 30 percent. One concludes

again that no technical justification exists for maintaining controlled, manual indexing in operational retrieval environments.

url: http://hdl.handle.net/1813/5960
date: 2007-04-19
creator: Levy, Jean-Pierre
viewed: 23
title: Automatic Correction of Syntax Errors in Programming Languages
abstract: A very substantial fraction of the time and efforts required to develop a program is devoted to the removal of errors. In order to simplify this task, a model to automatize the correction of syntax errors is developed. It is the first model which is both formal and fairly realistic to appear in the literature. The notion of error is defined and studied formally. Then, using this definition, a systematic error-correction process is modelled. This process makes local corrections over clusters of errors, using the context around the errors to determine the corrections and to insure that the different local corrections performed on the string do not interfere with one another. The error-correction process can be naturally embedded in many left-to-right syntax checking processes. It uses the recognizer both to detect errors and to find possible corrections. The process has two modes: a ``standard mode'' used for syntax checking and an ``error-correction mode'' used for determining the context of a cluster of errors and for finding all possible corrections of these errors. In the ``standard mode'', the syntax is checked at the same speed as if no error-correction mechanism is implemented. Thus, for programs which contain no errors, no price is paid for the presence of this mechanism. The ``error-correction mode'' consist of two phases: the backward move which locates the left context of the cluster, and the forward move which construct possible corrections and locates the right context of the cluster. This process seems the most natural way to perform left-to-right syntax checking and error correction. Some techniques for efficiently finding the range of the backward move are developed. The formal model is not practical when using the conventional context-free description of programming languages. In order to make it more practical, the notion of bracketed context-free language is introduced and proposed as a model for the syntax fo programming languages. Then, heuristic restrictions on the type of errors corrected are discussed. They may lead to a simpler process. In particular, assuming that brackets are corrected only when no other correction is possible, and that errors in deep levels of nesting (with respect to the point where the errors are detected) are neglected, it is shown how the process can be used to correct syntax errors in programming languages.

url: http://hdl.handle.net/1813/5961
date: 2007-04-19
creator: Horowitz, Ellis
viewed: 33
title: A Unified View of the Complexity of Evaluation and Interpolation
abstract: Four problems are considered: 1) from an n-precision integer compute its residues modulo n single precision primes; 2) from an n-degree polynomial compute its values at n points; 3) from n residues compute the unique n-precision integer congruent to the residues; 4) from n points compute the unique interpolating polynomial through those points. If $M(n)$ is the time for n-precision integer multiplication, then the time for problems 1 and 2 is shown to be $M(n) \log n$ and for problems 3 and 4 to be $M(n)(\log n)^{2}$. Moreover, it is shown that each of the four algorithms are really all instances of the same general algorithm. Finally, it is shown how preconditioning or a change of domain will reduce the time for problems 3 and 4 to $M(n)(\log n)$.

url: http://hdl.handle.net/1813/5962
date: 2007-04-19

creator: Horowitz, Ellis
viewed: 79
title: A Fast Method for Interpolating Preconditioning
abstract: Given n points (x_{i},y_{i}) the best algorithms for finding the unique interpolating polynomial $G(x)$ such that $G(x_{i})=y_{i}$ take $O(n^{2})$ arithmetic operations. If the $(x_{i}$ are known in advance then an algorithm for finding $G(x)$ is presented which takes only $O(n(\log n)^{3})$ steps. Also, it is shown how to precompute certain functions of the x_{i}, in $O(n^{2})$ steps, such that this restricted interpolation algorithm can be easily used. Finally, it is shown that speeding up the general interpolation problem is possible if one can solve a simpler problem, namely to find a polynomial $G(x)$ such that $G(x_{i})=0$ for $1 \leq i \leq j$ and $G(x_{i})=1$ for $j+1 \leq i \leq n$.

url: http://hdl.handle.net/1813/5963
date: 2007-04-19
creator: Worona, Steven L.;Wilcox, Thomas R.;Conway, Richard W.
viewed: 26
title: A Proposal for an Interactive Version of PL/C
abstract: NO ABSTRACT SUPPLIED

url: http://hdl.handle.net/1813/5964
date: 2007-04-19
creator: Morgan, Howard L.;Maxwell, W. L.;Conway, Richard W.
viewed: 21
title: On the Implementation of Security Measures in Information Systems
abstract: The security of an information system maay be modelled by a matrix whose elements are decision rules and whose row and column indices are users and data items respectively. A set of four functions are used to access this matrix at translation and execution time. Distinguishing between data dependent and data independent decision rules enables one to perform much of the checking of security once at translation time rather than repeatedly at execution time. The model is used to explain security features of several existing systems, and serves as a framework for a proposal for general security system implementation within today's languages and operating systems. Keywords: security, privacy, access control confidentiality, operating systems, access management, data banks, management information systems.

url: http://hdl.handle.net/1813/5965
date: 2007-04-19
creator: Shaw, Alan C.
viewed: 16
title: Picture Graphs, Grammars, and Parsing
abstract: This paper is concerned with the syntactic description and analysis of pictures when graphs are employed as the primary description formalism. The present state of development, a number of significant open problems, and the advantages and limitations of this approach are discussed under the following three headings: (a) representation of pictures by graphs, (b) graph languages and grammars, and (c) parsing of graphs and pictures. In (a) we investigate transformations from pictures to graphs based on n-ary relations $(n \geq 1)$ that exist among picture components, both at the primitive pattern level and among higher level subpictures; n-ary relations are reduced when $n>2$ or expanded when $n=1$ to binary relations. Several grammatical schemes for generating graph descriptions are then evaluated with respect to their descriptive adequacy, complexity, and practical and theoretical tractability. Syntax-directed analysis of graphss and pictures is treated from two points of view - how to parse efficiently and how to enlist the descriptive mechanism as an aid in the difficult lower level pattern recognition tasks. The latter point is particularly

emphasized with the aim of promoting a more systematic approach to contextual recognition.

url: http://hdl.handle.net/1813/5966
date: 2007-04-19
creator: More, Jorge J.
viewed: 19
title: Nonlinear Generalizations of Matrix Diagonal Dominance with Application to Gauss-Seidel Iterations
abstract: A new class of nonlinear mappings is introduced which contains, in the linear case, the strictly and irreducibly diagonally dominant matrices as well as other classes of matrices introduced by Duffin and Walter. We then extend some of the properties of the above mentioned matrices to these weakly Ω-diagonally dominant functions, and point out their connection to the M- and P- functions studied by Rheinboldt, and More and Rheinboldt, respectively. Finally, new convergence theorems for the nonlinear Jacobi and Gauss-Seidel iterations are presented.

url: http://hdl.handle.net/1813/5967
date: 2007-04-19
creator: Zelkowitz, Marvin
viewed: 43
title: Reversible Execution as a Diagnostic Tool," (preliminary draft)
abstract: NO ABSTRACT SUPPLIED

url: http://hdl.handle.net/1813/5968
date: 2007-04-19
creator: Wagner, Robert A.
viewed: 33
title: An Algorithm for Extracting Phrases in a Space-Optimal Fashion
abstract: NO ABSTRACT SUPPLIED

url: http://hdl.handle.net/1813/5969
date: 2007-04-19
creator: Constable, Robert L.
viewed: 40
title: Loop Schemata
abstract: We define a class of program schemata arising from the subrecursive programming language Loop. In this preliminary report on Loop schemata we show how to assign functional expressions to these schemata (as one aspect of the problem of assigning meaning to these programs), and we outline a solution to the schemata equivalence problem. Schemata equivalence is reduced to questions about formal expressions. Certain subcases of the problem are easily shown solvable, and although we claim that the general problem is solvable, we do not present the complete solution here because of its complexity. Key Words and Phrases: program, program schemata, Algol, universal programming language, Loop language, subrecursive language, computable function, primitive recursive function, functional, general recursive functional, equivalence problem, unsolvability.

url: http://hdl.handle.net/1813/5970
date: 2007-04-19
creator: Zumoff, Joel
viewed: 19

title: ser's Manual for the SMART Information Retrieval System
abstract: NO ABSTRACT SUPPLIED

url: http://hdl.handle.net/1813/5971
date: 2007-04-19
creator: Constable, Robert L.
viewed: 31
title: Subrecursive Programming Languages II: On Program Size
abstract: Programming languages which express programs for all computable (recursive) functions are called universal, those expressing programs only for a subset are called subrecursive programming languages, SPL's.
M. Blum has shown that for certain SPL's any universal programming language (UPL) contains programs which are arbitrarily shorter and nearly as efficient as the shortest SPL program for the same function. We offer new proofs of this theorem to make the relationship. between size and efficiency more revealing and to show that finitely often efficiency is the price of economy of size. From the new proof we derive refinements of the basic theorem. In particular we consider the size-efficiency exchange for the task of computing constants, and derive a measure of the relative expressive power of SPL's. The results are illustrated with some new programming language models.

url: http://hdl.handle.net/1813/5972
date: 2007-04-19
creator: Shaw, Alan C.;Morgan, Howard L.;Horowitz, Ellis
viewed: 19
title: Computers and Society: A Proposed Course for Computer Scientists
abstract: The purpose of this paper is to describe a course concerned with both the effects of computers on society and the responsibilities of computer scientists to society. The impact of computers is divided into five components: political, economic, cultural, social, and moral; the main partt of the paper defines each component and presents examples of the relevant issues. In the remaining portions, we discuss the possible formats for such a course, give a topic by topic outline, and list a selected set of references. It is hoped that the proposal will make it easier to initiate courses on this subject. Keywords: Computers and society, social implications, course proposal.

url: http://hdl.handle.net/1813/5973
date: 2007-04-19
creator: Dennis, John E., Jr.
viewed: 18
title: Algorithms for Nonlinear Problems Which Use DiscreteApproximations to Derivatives
abstract: The most desirable algorithms for nonlinear programming problems call for obtaining the gradient of the objective and the Jacobian of the constraint function. The analytic form is often impossible and almost always impractical to obtain. The usual expedient is to use difference quotients to approximate the partial derivatives. This paper is concerned with the theoretical and practical ramifications of such modifications to basic algorithms. Among the methods surveyed are steepest descent, Stewart's modifications of the Davidon-Fletcher-Powell method, the Levenberg-Marquardt method, Newton's method, and the nonlinear reduced gradient method. Numerical results are included in the presentation. Key Words and Phrases: Nonlinear function minimization, numerical differentiation, nonlinear programming.

url: http://hdl.handle.net/1813/5974
date: 2007-04-19

creator: Constable, Robert L.
viewed: 19
title: Subrecursive Programming Language III, The Multiple Recursive Functions, $\Re^{n}$
abstract: The characterization of program structure is an elusive aspect of the theory of programming languages. Contingent on such a characterization is an interesting study of the trade-off relationships between program structure and efficiency, between structure and intelligibility, between structure and size, and so forth. One promising definition of program structure is suggested by the studies of the structure of recursion schemata pursued by logicians in the 1930's. In this paper we carry over some of these ideas to programming and present new computer-oriented definitions of certain well-known classes of recursive functions, namely the multiple recursive,$\Re^{n}$, function of Peter. The treatment will facilitate discussions of ultra-complex functions when the need arises. Surprisingly, the need to discuss them does arise frequently at least for doubly recursive function when teaching results about primitive recursive functions and the various languages for computing them. Students want examples of non-primitive recursive functions and computations. Theoreticians also want simple examples of functions which have high structural as well as computational complexity. $\Re^{2}$ functions and the languages given here serve these purposes.

url: http://hdl.handle.net/1813/5975
date: 2007-04-19
creator: Vari, Thomas Michael
viewed: 14
title: On the Number of Multiplications Required to Compute Quadratic Functions
abstract: This is a study of the number of multiplications required for the evaluation of quadratic functions in n variables. Several sufficient conditions are presented for a requirement of j multiplications. A procedure is given for generating the optimal program for any quadratic function over a non-commutative ring. An application of these results solves an open problem possed by Knuth. Necessary and sufficient conditions are found for real and complex functions to require j multiplications.

url: http://hdl.handle.net/1813/5976
date: 2007-04-19
creator: Salton, Gerard
viewed: 32
title: Dynamic Document Processing
abstract: The current role of computers in automatic document processing is briefly outlined, and some reasons are given why the early promise of library automation and of the mechanization of documentation processes has not been fulfilled. A new dynamic document environment is then outlined in which clustered files are searched, and information is retrieved following an interactive user-controlled search process. Methods are described for an automatic query modification based on user needs, and for a continuous reorganization of the stored information as a function of earlier file processing and of normal collection growth. The proposed procedures provide powerful tools for information retrieval and for the control of dynamic library collections in which new items are continually added and old ones are retired.

url: http://hdl.handle.net/1813/5977
date: 2007-04-19
creator: Rose, Donald J.;Bunch, James R.
viewed: 44
title: The Role of Partitioning in the Numerical Solution of Sparse Systems.
abstract:

url: http://hdl.handle.net/1813/5978
date: 2007-04-19
creator: Tarjan, Robert Endre
viewed: 37
title: Finding a Maximum Clique
abstract: An algorithm for finding a maximum clique in an arbitrary graph is described. The algorithm has a worst-case time bound of $k(1.286)^{n}$ for some constant k, where n is the number of vertices in the graph. Within a fixed time, the algorithm can analyze a graph with 2 3/4 as many vertices as the largest graph which the obvious algorithm (examining all subsets of vertices) can analyze. Keywords: Algorithm, Clique, Graph, Independent Set.

url: http://hdl.handle.net/1813/5979
date: 2007-04-19
creator: More, Jorge J.;Dennis, John E., Jr.
viewed: 19
title: A Characterization of Superlinear Convergence and its Application to Quasi-Newton Methods
abstract: Let F be a mapping from real n-dimensional Euclidean space into itself. Most practical algorithms for finding a zero of F are of the form $x_{k+1} = x_{k} - B_{k}^{-1_{Fx_{k}}}$ where $\{B_{k}\}$ is a sequence of non-singular matrices. The main result of this paper is a characterization theorem for the superlinear convergence to a zero of F of sequences of the above form. This result is then used to give a unified treatment of the results on the superlinear convergence of the Davidon-Fletcher-Powell method obtained by Powell for the case in which exact line searches are used, and by Broyden, Dennis, and More for the case without line searches. As a by-product, several results on the asymptotic behavior of the sequence $\{B_{k}\}$ are obtained. An interesting aspect of these results is that superlinear convergence is obtained without any consistency conditions; i.e. without requiring that the sequence $\{B_{k}\}$ converge to the Jacobian.

url: http://hdl.handle.net/1813/5980
date: 2007-04-19
creator: Muchnick, S.S.;Constable, Robert L.
viewed: 22
title: Subrecursive Program Schemata I and III. Undecidable Equivalence Problems and II. Decidable EquivalenceProblems
abstract: The study of program schemata and the study of subrecursive programming languages are both concerned with limiting program structure in order to permit a more complete analysis of algorithms while retaining sufficiently rich computing power to allow interesting algorithms. In this paper we combine these approaches by defining classes of subrecursive program schemata and investigating their equivalence problems. Since the languages are all subrecursive, any scheme written in any one of them must halt (as long as we assume the basic functions and predicates are all total). Hence equivalence of schemes is the first question of interest we can ask about these languages. We consider schematic versions of various subrecursive programming languages similar to the Loop language. We distinguish between Pre-Loop and Post-Loop languages on the basis of whether the exit condition in an iteration loop is tested before iteration, as in Algol (Pre-), or after iteration, as in FORTRAN (Post-). We show that at the program level all these languages have the same computing power (the primitive recursive functions) and all have unsolvable equivalence problems (of arithmetic degree Π^{0}_{1}). But at the level of schemes, Pre-Loop has an unsolvable equivalence problem, while at least one formulation of Post-Loop has a solvable equivalence problem. If L is a programming language or scheme language, then we denote by E(L) the equivalence problem in L. The basic languages considered are: Loop ($\equiv$ Pre-Loop) - Loop language for primitive recursive functions. Post-Loop - Post-Loop language for primitive recursive functions. Loop$_{\Diamond}$ - Loop language with restricted

conditionals. L [D, ()] - Loop schemata over D with identity. L$_{\Diamond}$ [D, ()] - Loop schemata with conditionals. PL [D, ()] - Post-Loop schemata over D. PL$_{\Diamond}$ [D, ()] - Post-Loop schemata with conditionals. P - Program (flowchart) schemata. P$_{d}$ - Program schemata with DO-statements. In contrast to (pure) Loop schemata studied previously by the first author, some of these languages contain the identity function so that a pure data transfer, $X \leftarrow Y$, is possible. Moreover, the equivalence algorithms given here are for the special case of linear schemes (to be defined below) with monadic function variables. Linear schemes are designated by placing L before the name of the more general class, thus LL for linear Loop, LPL for linear Post-Loop, etc. In all schemes considered here the functions are monadic, so no special designation of function rank is provided. It is well known that E(P) is recursively unsolvable and E(P) $\in \Pi^{0}_{2}$. We show that E(Loop), E(Post-Loop), E(L$_{\Diamond}$) (both with and without the pure data transfer), and E(L) are recursively unsolvable, while E(LPL) is recursively solvable. The extension of the equivalence algorithm for LPL to polyadic functions appears at present to be a tedious but straightforward modification to the monadic algorithm. We are hopeful that a simpler and more generally applicable technique will emerge for demonstrating solvability or unsolvability of this class of equivalence problems. The algorithm and proofs given here are but a crude first step in delimiting this problem.

url: http://hdl.handle.net/1813/5981
date: 2007-04-19
creator: Johnson, Donald B.
viewed: 23
title: Algorithms for Shortest Paths
abstract: New algorithms are presented for the general all pairs and single source shortest path problems and for the single source problem restricted to nonnegative arc weights. The new algorithms are faster on sparse networks than algorithms previously known. In addition, new results are presented on the behavior of well-known algorithms, two of which have exponential running times under surprisingly innocuous conditions.

url: http://hdl.handle.net/1813/5982
date: 2007-04-19
creator: Szymanski, Thomas G.;Gries, David;Brown, Steven
viewed: 35
title: Program Schemes with Pushdown Stores
abstract: We attempt to characterize classes of schemes allowing pushdown stores, building on an earlier work by Constable and Gries [1]. We study the effect (on the computational power) of aloowing one, two, or more pushdown stores, both with and without the ability to detect when a pds is empty. A main result is that the use of using one pds is empty. A main result is that the use of using one pds is computationally equivalent to allowing recursive functions. We also study the effect of adding the ability to do integer arithmetic, and multi-dimensional arrays. Keywords: Program schemes, schemata, pushdown stores, stacks, recursion, programming languages.

url: http://hdl.handle.net/1813/5983
date: 2007-04-19
creator: Williams, John H.
viewed: 18
title: Bounded Context Parsable Grammars
abstract: In this paper we extend Floyd's notion of parsing by bounded context to define the Bounded Context Parsable Grammars, a class of recursive subsets of context free grammars for which we can construct linear time parsers. it is shown that the set of languages of the grammars thus defined properly contains the set of

deterministic languages without the empty sentence. Keywords and Phrases: bounded context grammars, linear time parsers, deterministic context free languages.

url: http://hdl.handle.net/1813/5984
date: 2007-04-19
creator: Horowitz, Ellis
viewed: 20
title: The Efficient Calculation of Powers of Polynomials
abstract: Suppose we are given a polynomial $P(x_{1},\ldots,x_{r})$ in $r \geq 1$ variables, let m bound the degree of P in all variables $x_{i}, l \leq i \leq r$, and we wish to raise P to the n^{th} power, $n>1$. In a recent paper which compared the iterative versus the binary method it was shown that their respective computing times were $O(m^{2r}n^{r+1})$ versus $O((mn)^{2r})$ when using single precision arithmetic. In this paper a new algorithm is given whose computing time is shown to be $O((mn)^{r+1})$. Also if we allow for polynomials with multiprecision integer coefficients, the new algorithm presented here will be faster by a factor of $m^{r-1}n^{r}$ over the binary method and faster by a factor of m^{r-1} over the iterative method. Extensive empirical studies of all three methods show that this new algorithm will be superior for polynomials of even relatively small degree, thus guaranteeing a practical as well as a useful result.

url: http://hdl.handle.net/1813/5985
date: 2007-04-19
creator: Horowitz, Ellis
viewed: 17
title: The Application of Symbolic Mathematics to a Singular Perturbation Problem
abstract: A basic technique for the numerical solution of ordinary differential equations is to express them as a singular perturbation problem. However, computational studies indicate that the resultant matrix equations which must be solved are often highly ill-conditioned. In this paper a particular singular perturbation problem which was shown to be ill-conditioned using 8 numerical methods is solved by symbolic techniques. These techniques lead both to an analytic proof of the solution plus to the precise knowledge of the asymptotic behavior of the solution vector as it converges. The difficulties encountered in solving the problem symbolically are discussed. Then several conclusions are drawn about the merits of a symbolic versus a numeric approach when applied to the solution of linear systems. Finally some advice and warnings to both the user and the designer of symbol manipulation systems are given concerning their goals and expectations when large matrix equations are to be solved.

url: http://hdl.handle.net/1813/5986
date: 2007-04-19
creator: Harris, Robert V.
viewed: 19
title: A Polynomial Bound on the Complexity of the Davis-PutnamAlgorithm Applied to Symmetrizable Propositions
abstract: The problem considered is the relation of minimal computation space to minimal computation time; more specifically, it is desired to determine the time complexity of the tautology problem for propositional logic; the space complexity is known to be linear. This is of special interest in view of Stephen Cook's p-reducibility theorem (May, 1971 ACM Symposium). Algorithms considered are the analytic tableau method, which appears to be inalterably exponential in space and time, and the Davis-Putnam algorithm, part of a resolution procedure introduced in JACM in 1960. Although the algorithm as stated has been shown to be exponential, the known examples are disposed of by (1) locally optimizing the choice of elimination variable and (2) using the subsumption rule (absorption rule), which asserts that if any clause is identical to a subclause of another

clause, the larger clause may be deleted. An algebraic notation is developed which makes it clear that Davis and Putnam's Rules 1 and 2 are special cases of Rule 3 plus local optimization and subsumption. The algebraic notation consists of using vectors to represent clauses; the i^{th} element of the vector is equal to +, -, 0, or 1, according as the i^{th} variable occurs positively, negatively, or not at all. This notation is used in an APL computer program; by using 01,10,00, and 11 to represent +, -, 0, and 1, the program can be written entirely in terms of APL logical operators on arrays, with loops needed only because of size limitations, at a considerable savings in time and space compared to a list representation of the formula, for up to about twenty variables. The proof in brief of the polynomial special-case bound: Call a DNF formula ``reduced'' if the subsumption rule will delete no clauses; call it ``symmetric'' if it is invariant (as a set of clauses) under interchange of variable names. For any clause R, let R^{+} be the number of positive literals in R and $R{-}$ the number of negated literals. Call (R^{+},R^{-}) the (clause-)type of R. A symmetric formula A then satisfies the property that if (R^{+},R^{-}) is the type of some clause in A, then every clause of type (R^{+},R^{-}) is also a clause of A. An algebra of clause-types is developed; it is easily shown that if $r=(R^{+},R^{-})$ and $s=(S^{+},S^{-})$ are unequal types of a reduced symmetric DNF formula (RSDNF), then either $R^{+} greater than S^{+}$ and $R^{-} less than S^{-}$, or $R^{+} less than S^{+}$ and $R^{-} greater than S^{-}$. The former pair is denoted $``r \ogeq s''; \ogeq$ is a strict ordering of clause-types, which is total for RSDNF's. If $r \ogeq s$ and for no p of E is $r \ogeq p \ogeq s$, say r adj s (in E). Denote by PROD(A) the result of one iteration of the Davis-Putnam algorithm with subsumption. Let E be and RSDNF in V variables. The t is a type of PROD(E) if either (1) t is a type of E (with $t^{+} + t^{-} \leq V-1)$, and for no x or y is $(t^{+} + 1, x)$ or $(y, t^{-} + 1)$ a type of E; or (2) $t=(r^{+} -1, s^{-} -1)$, with r adj s in E. It is further shown that if r adj s in PROD(E), then either $r^{+} = s^{+} +1$, or $s^{-} =r^{-} +1$, or $(r^{+} -1, s^{-} -1)$ is not a type of PROD(PROD(E)). A simple combinatorial argument then shows that each type of PROD(PROD(E)) has fewer clauses than some type of PROD(E). The polynomial bound is then immediate, since there are at most $V+1$ types in any RSDNF formula in V variables, and the number of varialbles decreases with each iteration, and there can be at most V iterations. The extension to symmetrizable is trivial.

url: http://hdl.handle.net/1813/5987
date: 2007-04-19
creator: Sahni, Sartaj
viewed: 44
title: Some Related Problems from Network Flows, Game Theory and Integer Programming
abstract: We consider several important problems for which no polynomially time bounded algorithm is known. These problems are shown to be related in that a polynomial algorithm for one implies a polynomial algorrithm for the others.

url: http://hdl.handle.net/1813/5988
date: 2007-04-19
creator: Harris, Larry R.
viewed: 14
title: A Model for Adaptive Problem Solving Applied to Natural Language Acquisition
abstract: Adaptive Problem Solving is the application of artificial intelligence learning techniques to practical problems. The approach taken in studying Adaptive Problem Solving is three-fold. First, to develop a model for Adaptive Problem Solving in order to specify the processes involved in computer learning, as well as the interaction between these processes. Second, theoretically well-founded, practical algorithms are developed for each of these learning processes. Third, as an application of this theory, the Natural Language Acquisition Problem is formulated in terms of the adaptive model. The specification of algorithms to perform the learning processes leads to the development of the Bandwidth Heuristic Search, an extension of the heuristic search,

that includes many practical considerations without forfeiting any theoretical capabilities. A modification of this algorithm, the Bandwidth Heuristic Search for MIN/MAX trees is shown to be superior to the alpha-beta minimax process. The model is applied to the Natural Language Acquisition Problem in order to force an encounter with several critical problems involved with computer learning. The Natural Language Acquisition Problem is the problem of providing a robot the adaptive mechanisms sufficient to learn to converse with a human teacher using natural language. The robot first learns the lexicon of the language by correlating the teacher's description of the robot's actions with the robot's internal description. Then the robot infers a grammar that reflects the structure of the teacher's sentences. At this point the robot can begin conversing using a natural language. The linguistic capability of the robot includes the ability to disambiguate lexical and structural ambiguities, and the ability to formulate full sentence replies. After several learning sessions the robot converses in English using nested dependent clauses. This adaptive linguistic system successfully copes with many of the critical problems involved in computer learning and serves as an example of an adaptive program in which the learning, rather than yielding only minor improvements, provides the primary basis for successful performance.

url: http://hdl.handle.net/1813/5989
date: 2007-04-19
creator: Sahni, Sartaj;Horowitz, Ellis
viewed: 32
title: Computing Partitions with Applications to the Knapsack Problem
abstract: Given r numbers $s_{1}, \ldots, s_{r}$, algorithms are investigated for finding all possible combinations of these numbers which sum to M. This problem is a particular instance of the 0-1 unidimensional knapsack problem. All of the usual algorithms for this problem are investigated both in terms of asymptotic computing times and storage requirements, as well as average computing times. We develop a technique which improves all of the dynamic programming methods by a square root factor. Using this improvement a variety of new heuristics and improved data structures are incorporated for decreasing the average behavior of these methods. The resulting algorithms are then compared on a wide set of data. It is then shown how these improvements can be applied to various versions of the knapsack problem. Key words and Phrases: partitions, knapsack problem, dynamic programmiing, integer optimization.

url: http://hdl.handle.net/1813/5990
date: 2007-04-19
creator: Brown, John Steven
viewed: 18
title: Program Schemata and Information Flow: A Study of Some Aspects of the Schema Power of Data Structures
abstract: The concept of a program schema, which represents the skeleton of a computer program, is important for its potential and actual applicability to code optimization, to understanding the behavior of programs using various control and data structure features, and to developing a theory of information flow as related to program form and power. In this study tow storage devices, the tape and the queue, are considered, and their effect on the schema power hierarchy explored. The behavior and relative capability of each one of the various types of tapes and queues is discussed in the light of the ways in which information is allowed to move, according to the inherent characteristics of the devices. Main results include the facts that addition of a single tape unit to the simplest schema class P gives no additional power, and that the basic cyclic nature of queues and the persistence of data on tapes are important power determinants. An attempt is made to bridge the gap between schema theory and actual programs not only by studying models of actual storage units but also by allowing an arbitrarily long (but finite) input stream. Such an extension generally upsets the onion-like power inclusions of the finite input hierarchy because of the calculations possible on the implicitly-

input arbitrary integer, which is the number of inout values. The information flow characteristics of the data structures associated with a particular schema class may allow such an arbitrary input to be viewed exactly once, exactly twice, or in general m times, and such distinctions give rise to differences in computational power. Requirements insuring that the interconnection of schemata form a schema with the union of the capabilities of the subschemata are considered. The hierarchy of schemata without the identity assignment is also studied, and it is demonstrated that in the simplest class P and the universal class P_{Ae} no loss of power results from prohibiting identity assignments. Discussion of the as-yet-unsolved problem of the power of the class $P_{(2b,0)}$ and its associated derivatives is presented. A summary of prospects for developing program schema research in several different potentially practical directions concludes the work.

url: http://hdl.handle.net/1813/5991
date: 2007-04-19
creator: Tenney, Richard Lee
viewed: 30
title: Decidable Pairing Functions
abstract: In Chapter I of this paper we show that the usual, textbook pairing functions have decidable first-order theories. This will be done by exhibiting an infinite axiomatization of certain pairing functions which we characterize as ``acyclic except for $\triangle$''. This condition is satisfied by the usual pairing functions. We then use a technique of Ehrenfeucht and Fraisse to show that the decision problem for such a pairing function is effectively reduced to the decision problem for the function restricted to $\triangle$. In contrast to the decidability of the first-order theories of certain pairing functions, we show that the weak second-order and monadic second-order theories of these pairing functions are undecidable. In Chapter II we show how to extend the first-order Ehrenfeucht game to a second-order game. Using this extended game, we show that the monadic second-order theory of an equivalence relation is decidable. Some of the results of Chapter I were announced in [16].

url: http://hdl.handle.net/1813/5992
date: 2007-04-19
creator: Mehlhorn, Kurt
viewed: 17
title: The "Almost All" Theory of Subrecursive Degrees is Decidable
abstract: We use constructive measure theory to show the decidability pf the "almost all" theory of subrecursive degrees. The formulas of this theory are built up using the constant 0 standing for the minimum degree, the functions $\cup,\cap$ standing for the join and meet of two degrees respectively, the relation $\leq$ standing for the reducibility-ordering, the logical connectives "ampersand", $\neg$ and the quantifier (almost $\forall$ a). An efficient decision procedure is described.

url: http://hdl.handle.net/1813/5993
date: 2007-04-19
creator: Salton, Gerard
viewed: 26
title: Proposals for a Dynamic Library
abstract: The current library environment is first examined, and an attempt is made to explain why the standard approaches to the library problem have been less productive than had been anticipated. A new design is then introduced for modern library operations based on a two-fold strategy: on the input side, the widest possible utilization should be made of cooperative and shared operations, whereas dynamic, user-controlled procedures should be used for the subsequent internal processes. The dynamic environment applies in particular to the maintenance of the indexing vocabulary, the organization of the stored information files,

the performance of search and retrieval operations, and the control of the library collection necessitated by document growth and retirement. Some experimental results are included as an illustration for the proposed dynamic operations.

url: http://hdl.handle.net/1813/5996
date: 2007-04-19
creator: Hartmanis, Juris (Principal Investigator)
viewed: 20
title: Final Report on NSF Research Grant Automata and Computational Complexity 1968-1972
abstract: This report summarizes the results obtained in research supported by the National Science Foundation Grant AUTOMATA AND COMPUTATIONAL COMPLEXITY. The report lists the problem areas considered, the publications resulting from this work and gives an outline of the more recent research results which have not yet been published.

url: http://hdl.handle.net/1813/5997
date: 2007-04-19
creator: Sahni, Sartaj;Horowitz, Ellis
viewed: 40
title: On the Computation of Powers of a Class of Polynomials
abstract: A general class of polynomials is defined which includes as subcases sparse and dense polynomials. For any polynomial P within this class a host of algorithms are analyzed for computing P^{n}. While the Homomorphism algorithm is superior on dense polynomials it is shown that for sufficiently sparse polynomials, iteration is more efficient. A simple rule that takes linear time is given for deciding when it is advisable to use either one of these algorithms. Keywords: Polynomial Powers, sparse polynomials, modular algorithms.

url: http://hdl.handle.net/1813/5998
date: 2007-04-19
creator: Bunch, James R.
viewed: 21
title: Partial Pivoting Strategies for Symmetric Matrices
abstract: Partial pivoting strategies for the decomposition of symmetric matrices are discussed for solving symmetric (indefinite) systems of linear equations and for calculating the signature of symmetric matrices, in both the full and the sparse band cases. Keywords: diagonal pivoting, symmetric, indefinite, linear equations, signature, sparse, band.

url: http://hdl.handle.net/1813/5999
date: 2007-04-19
creator: Musinski, J.;Hopcroft, John E.
viewed: 31
title: Duality Applied to the Complexity of Matrix Multiplication and Other Bilinear Forms
abstract: The paper considers the complexity of bilinear forms in a noncommutative ring. The dual of a computation is defined and applied to matrix multiplication and other bilinear forms. It is shown that the dual of an optimal computation gives an optimal computation for a dual problem. An nxm by mxp matrix product is shown to be the dual of an nxp by pxm or an mxn by nxp matrix product implyiing that each of the matrix products requires the same number of multiplications to compute. Finally an algorithm for computing a single bilinear form over a noncommutaative ring with a minimum number of multiplications is derived by considering a dual problem.

url: http://hdl.handle.net/1813/6000
date: 2007-04-19
creator: Rose, Donald J.;Bunch, James R.
viewed: 28
title: Partitioning, Tearing, and Modification of Sparse Linear Systems
abstract: The computational complexity of partitioning sparse matrices is developed graph-theoretically. The results are used to study tearing and modification, and to show that single-element tearing of symmetric systems is rarely advantageous when the torn system is solved by elimination.

url: http://hdl.handle.net/1813/6001
date: 2007-04-19
creator: Rose, Donald J.;Bunch, James R.
viewed: 16
title: Single-Element Tearing and Modification of Sparse Symmetric Systems
abstract: Tearing and modification obtains the ssolution of a linear system synthetically by first solving a slightly different ("torn") system and then modifying that solution. We show that single-element tearing of symmetric systems is rarely advantageous when the modified system is solved by elimination, and we classify those systems for which it is advantageous.

url: http://hdl.handle.net/1813/6002
date: 2007-04-19
creator: Gries, David
viewed: 25
title: Describing an Algorithm by Hopcroft
abstract: We give an algorithm, its correctness proof, and its proof of execution time bound, for finding the sets of equivalent states in a deterministic finite state automaton. The time bound is $K\cdotm\cdot\n\ cdot\\log n$ where K is a constant, m the number of input symbols, and n the number of states. Hopcroft [3] has already published such an algorithm. The main reason for this paper is to illustrate the use of communicating an algorithm to others using a structured, top-down approach. We have also been able to improve on Hopcroft's algorithm by reducing the size of the algorithm and correspondingly complicating the proof of the running time bound.

url: http://hdl.handle.net/1813/6003
date: 2007-04-19
creator: Hopcroft, John E.;Bunch, James R.
viewed: 27
title: Triangular Factorization and Inversion by Fast Matrix Multiplication
abstract: The fast matrix multiplication algorithm by Strassen is used to obtain the triangular factorization of a permutation of any non-singular matrix of order n in "greater than" C sub{1}n sup{log sub{2}7} operations, and hence the inverse of any non-singular matrix in "greater than" C sub{2}n sup{log sub{2}7} operations.

url: http://hdl.handle.net/1813/6005
date: 2007-04-19
creator: Salton, Gerard
viewed: 23
title: Experiments in Multi-Lingual Information Retrieval
abstract: A comparison was made of the performance in an automatic information retrieval environment

of user queries and document abstracts available in natural language form in both English and French. The results obtained indicate that the automatic indexing and retrieval techniques actually used appear equally effective in handling the query and document texts in both languages.

url: http://hdl.handle.net/1813/6006
date: 2007-04-19
creator: Johnson, Donald B.
viewed: 19
title: On the Power of Arrays In Universal Languages
abstract: A language with arrays but with no conditional statement is shown to be universal under "simulation", a relation on programs frequently encountered in the practical computing world. Any r.e. set can be enumerated by a program (in this language) whose flow chart is a single loop which contains no alternate execution paths normally thought necessary for computation in general. A related result is shown for any general program, thus characterizing selection in arrays as at least as powerful as conditional branching in programs. These results are related to important results in schemata.

url: http://hdl.handle.net/1813/6007
date: 2007-04-19
creator: Hunt, Harry B., III
viewed: 27
title: On the Time and Tape Complexity of Languages, I
abstract: We investigate the relationship between the classes of languages accepted by deterministic and nondeterministic polynomial time bounded Turing machines and the relationship between the classes of languages accepted by deterministic polynomial time bounded and by nondeterministic polynomial tape bounded Turing machines. In both cases we study generators of the nondeterministic class that generate it by operations that the deterministic class is closed under.

url: http://hdl.handle.net/1813/6008
date: 2007-04-19
creator: Tarjan, Robert Endre
viewed: 31
title: Testing Flow Graph Reducibility
abstract: Many problems in program optimizationn have been solved by applying a technique called interval analysis to the flow graph of the program. A flow graph which is susceptible to this type of analysis is called reducible. This paper describes an algorithm for testing whether a flow graph is reducible. The algorithm uses depth-first search to reveal the structure of the flow graph and a good method for computing disjoint set unions to determine reducibility from the search information. When the algorithm is implemented on a random access computer, it requires $O(E \log^{*} E)$ time to analyze a graph with E edges, where $\log^{*} x=\min\{i|\log^{i}x \leq 1\}$. The time bound compares favorably with the $O(E \log E)$ bound of a previously known algorithm.

url: http://hdl.handle.net/1813/6009
date: 2007-04-19
creator: Horowitz, Ellis
viewed: 19
title: On the Substitution of Polynomial Forms
abstract: The problem of devising efficient algorithms for computing $Q(x_{1},\ldots,x_{r-1},P(x_{1},\ldots,x_{r-1}))$ where P and Q are multivariate polynomials is considered. It is shown that for polynomials which

are completely dense an algorithm based upon evaluation and interpolation is more efficient than Horner's method. Then various characterizations for sparse polynomials are made and the subsequent methods are re-analyzed. In conclusion, a test is devised which takes only linear time to compute and by which a decision can automatically be made concerning whether to use a substitution algorithm which exploits sparsity or one which assumes relatively dense inputs. This choice yields the method which takes the fewest arithmetic operations.

url: http://hdl.handle.net/1813/6010
date: 2007-04-19
creator: Hunt, Harry B. III
viewed: 27
title: The Equivalence Problem for Regular Expressions with Intersection is Not Polynomial in Tape
abstract: We investigate the complexity of several predicates on regular sets. In particular, we show: 1) the equivalence and emptiness problem for regular expressions using only the operators -, $\cup$, ., and $\cap$ are p-complete. 2) the emptiness problem for regular expressions using the operators -, $\cup$, ., $\cap$ and * is tape-hard; 3) the emptiness problem for regular expressions using the operators -, $\cup$, ., $\cap$ and 2 is tape-hard; 4) the equivalence problem for regular expressions using the operators -, $\cup$, ., $\cap$ and * is not polynomial in tape; and 5) the equivalence problem for regular expressions using the operators -, $\cup$, ., $\cap$ and 2 requires exponential time.

url: http://hdl.handle.net/1813/6011
date: 2007-04-19
creator: Tarjan, Robert Endre;Hopcroft, John E.
viewed: 26
title: Efficient Planarity Testing
abstract: This paper describes an efficient algorithm to determine whether an arbitrary graph G can be embedded in the plane. The algorithm may be viewed as an iterative version of a method originally proposed by Auslander and Parter and correctly formulated by Goldstein. The algorithm uses depth-first search and has O(V) time and space bounds, where V is the number of vertices in G. An Algol implementation of the algorithm successfully tested graphs with as many as 900 vertices in less than 12 seconds.

url: http://hdl.handle.net/1813/6012
date: 2007-04-19
creator: Bunch, James R.
viewed: 16
title: Complexity of Sparse Elimination
abstract: This paper surveys some of the recent research on the applications of the algebraic and combinatorial properties of Gaussian elimination on sparse matrices. Keywords: sparse matrix, Gaussian elimination, graph theory, computational complexity, triangulation, optimal ordering, optimum ordering, grid graph, band matrix.

url: http://hdl.handle.net/1813/6013
date: 2007-04-19
creator: Dingwall, Thomas J.
viewed: 15
title: Communication Within Structured Operating Systems
abstract: NO ABSTRACT SUPPLIED

url: http://hdl.handle.net/1813/6014
date: 2007-04-19
creator: Szymanski, Thomas G.
viewed: 68
title: Generalized Bottom-Up Parsing
abstract: In this thesis we present a decision procedure for testing the correctness of a broad class of bottom-up parsing machines. Motivated by the work of Colmerauer and Williams, we allow our parsers to find any simple phrase (not necessarily the leftmost) in the input string. Such a parser can be implemented on an automaton using two puchdown stores and can in fact produce a complete parse for an input string in linear time with respect to the length of the input. Certain restrictions are necessary in order for the method to work, but nevertheless it is sufficiently general to handle most existing classes of parsers. Moreover, the adjustment of certain parameters to this decision procedure gives rise in a natural way to such classes of grammars as the LR(k) class of Knuth, the BRC class of Floyd and the BCP class of Williams. Further adjustment of these parameters suggests other, more general, classes of parsable grammars which we investigate here for the first time. Among these new classes of grammars is one first suggested by Knuth and given the name LR(k,t). This class is a generalization of the LR(k) method and intuitively is that class of grammar for which it is possible, in any sentential form, to find one of the t leftmost simple phrases given only that portion of the string to the left of the phrase and the first k characters to its right. We give an exact construction for parsers of this class and present the surprising fact that these grammars can be parsed using a deterministic pushdown automaton. We also investigate a class herein called $LR(k,\infty)$ in which we completely relax the condition that the selected phrase be in any certain location. This latter class, which represents the ultimate left to right bottom-up parser, is shown to be too general to have “nice” decidability properties. A final class of grammars investigated is designated FPFAP(k), that is, the class of grammars which are parsable in a left to right fashion by a finite state automaton using k characters of lookahead. This class is shown to lie strictly between the LR(k,t) and $LR(k,\infty)$ classes. We conclude by demonstrating the relationship between these and other classes of grammars, not only from the point of view of the grammars themselves, but also with regard to the classes of languages induced by the grammars.

url: http://hdl.handle.net/1813/6015
date: 2007-04-19
creator: Hunt, Harry B., III;Hartmanis, Juris
viewed: 30
title: The LBA Problem and its Importance in the Theory of Computing
abstract: In this paper we study the classic problem of determining whether the deterministic and non-deterministic context-sensitive languages are the same or, equivalently, whether the languages accepted by deterministic and non-deterministic linearly bounded automata are the same. We show that this problem is equivalent to several other natural problems in the theory of computing and that the techniques used on the LDA problem have several other applications in complexity theory. For example, we show that there exists a hardest-tape recognizable non-deterministic context-sensitive language L_{1}, such that L_{1} is a deterministic context-sensitive language if and only if the deterministic and non-deterministic context-sensitive languages are the same. We show furthermore, that many decision problems about sets described by regular expressions are instances of these tape-hardest recognizable context-sensitive languages. Thus, it follows that non-determinism in Turing machine computations (using at least linear tape) can not save memory over deterministic Turing machine computations if and only if the equivalence of regular expressions can be decided by a deterministic linearly bounded automaton. It also follows that the equivalence of regular expressions can be decided by a non-deterministic linearly bounded automaton if and only if the family of context-sensitive languages is closed under complementation.

url: http://hdl.handle.net/1813/6016
date: 2007-04-19
creator: Yang, C.S.;Salton, Gerard
viewed: 55
title: On the Specification of Term Values in Automatic Indexing
abstract: The existing practice in automatic indexing is reviewed, and it is shown that the standard theories for the specification of term values (or weights) are not adequate. New techniques are introduced for the assignment of weights to index terms, based on the characteristics of individual document collections. The effectiveness of some of the proposed methods is evaluated.

url: http://hdl.handle.net/1813/6017
date: 2007-04-19
creator: More, Jorge J.
viewed: 16
title: Classes of Functions and Feasibility Conditions in Nonlinear Complimentarity Problems
abstract: Given a mapping F from real Euclidean n-space into itself, we investigate the connection between various known classes of functions and the nonlinear complementarity problem: Find and $x^{*} \geq 0$ such that $ F x^{*} \geq 0$ and is orthogonal to x^{*}. In particular, we study the extent to which the existence of a $u \geq 0$ with $F $u \geq 0$ (feasible point) implies the existence of a solution to the nonlinear complementarity problem, and extend, to nonlinear mappings, known results in the linear complementarity problem on P-matrices, diagonally dominant matrices with nonnegative diagonal elements, matrices with off-diagonal non-positive entries, and positive semidefinite matrices.

url: http://hdl.handle.net/1813/6018
date: 2007-04-19
creator: Hartmanis, Juris
viewed: 16
title: On the Problem of Finding Natural Computational Complexity Measures
abstract: To develop an abstract theory which deals with the quantitative aspects of computing we need a deeper understanding of how to define “natural” computational complexity measures axiomatically. To this end, this paper summarizess the principal properties which hold for some natural complexity measures but not for all measures and which have been proposed as desirable properties of natural measuress. The paper discusses the nature of these properties, studies their interrelations and their possible values towards defining natural computational complexity measures. A number off open problems are discussed and directions for further research are suggested.

url: http://hdl.handle.net/1813/6019
date: 2007-04-19
creator: Kamath, Narayana Sadananda
viewed: 79
title: Gaussian Elimination with Pivoting is Optimal
abstract: V. Strassen discovered that two matrices of order 2 could be multiplied using 7 multiplications and 18 additions of numberss and has shown that two matrices of order n could be multiplied in less than $4 \cdot 7 n^{\log_{2}7}$ operations, an operation being defined as a multiplication, division, subtraction or addition. Also he has shown that the classical Gaussian elimination is not optimal by giving an algorithm to compute the inverse of a nonsingular matrix with certain principal submatrices nonsingular in less than $5 \cdot 64 n^{\log_{2}7}$ operations. In other words, Strassen’s algorithm provides no room for pivoting. J. Bunch and J. Hopcroft have got rid of the above anomaly and have shown how to obtain the triangular

factorization of a permutation of a nonsingular matrix in less than $2 \cdot 44 n^{\log_{2}7}$ operations and the inverse in less than$6 \cdot 83 n^{\log_{2}7}$ operations. In this thesis it is shown, using the results of Strassen and Bunch and Hopcroft, that Gaussian elimination with pivoting is optimal in the sense that the bound for the number of operations required to do Gaussian elimination is the least for "sufficiently large" systems of equations. Also expressions are derived for the various coefficients in the bounds for the various procedures that arise in solving linear systems of equations with the general assumption that two matrices of order u could be multiplied in p multiplications and q additions of numbers.

url: http://hdl.handle.net/1813/6021
date: 2007-04-19
creator: Babad, Jair Moshe
viewed: 32
title: Price Scheduling in a Time-Sharing Queueing System
abstract: This thesis deals with a time-sharing system in which users may join after paying an appropriate toll and are subjected to service and waiting charges. The form of an optimal joining policy that minimizes the expected loss of users who may join the system at some of its queues is derived, and is shown to be a control-limit policy with a single control number for every possible entry queue; a newly arriving user will join the minimal-priority entry queue that is not filled up to its contrl number. Tolls and charges that maximize the average expected revenue of the system, as well as the control numbers, are determined for a round-robin time-sharing system. A multi-entrance foreground-background time-sharing system with random entrance is analyzed and the characteristics of the system, such as expected waiting times and expected number of waiting users in each queue, are given. It is shown that when the entry into this system is based on tolls and charges, there exists a set of prices (and associated control numbers) that maximizes the discounted expected revenues of the system.

url: http://hdl.handle.net/1813/6022
date: 2007-04-19
creator: Baker, Theodore Paul;Hartmanis, Juris
viewed: 39
title: On Simple Goedel Numberings and Translations
abstract: In this paper we consider Goedel numberings (viewed as simple models for programming languages) into which all other Goedel numberings can be translated very easily. Several such classes of Goedel numberings are defined and their properties are investigated. We also compare these classes of Goedel numberings to optimal Goedel numberings and show that translation into optimal Goedel numberings can be computationally arbitrarily complex.

url: http://hdl.handle.net/1813/6023
date: 2007-04-19
creator: Sahni, Sartaj;Horowitz, Ellis
viewed: 44
title: On Computing the Determinant of Matrices with Polynomial Entries
abstract: We consider the problem of computing the determinant of a matrix of polynomials. Four algorithms are compared: expansion by minors, Gaussian elimination over the integers, a method based on evaluation and interpolation, and a procedure which computes the characteristic polynomial of the matrix. Each method is analyzed with respect to its computing time and storage requirements using several models for polynomial growth. The results show which method is preferable for a given computational model. In addition to these asymptotic results, the analysis is exactly done for certain especially small, yet practical and important cases.
Key Words: determinants, matrix of polynomials, Gaussian elimination, expansion by minors, characteristic

polynomial.

url: http://hdl.handle.net/1813/6024
date: 2007-04-19
creator: Yu, C. T.
viewed: 24
title: Theory of Indexing and Classification
abstract: Given a written text in natural language, it is convenient to represent the information content of the text by one or more entities, variously known as concepts, keywords, or terms. It is desired to choose "good" terms which collectively reflect the information content as accurately as possible. A characterization is given of discriminating (good) and non-discriminating (bad) terms, based on the document frequencies of occurrence and the distribution of frequencies of the terms in the documents (texts) of a given document collection. Based on this characterization, reasons are presented for the success and/or the failure of some well-known indexing methods, namely thesaurus construction, "weighting" of the rare terms, and the deletion of non-discriminating terms. A method, which converts non-discriminating terms to discriminating terms is described. Experiments are performed to show that the new method is of practical use. In order to improve the content analysis (indexing) further, term classes are constructed using a process known as pseudoclassification. It is shown that the to construct term classes through discriminating terms. Experiments using the new method are performed on two document collections in medicine and aerodynamics. For both collections, the new method yields substantial improvements over the method of the deletion of non-discriminating terms. In Chapter III, the idea of a term class is formalized and generalized. Techniques from the theory of algorithms are used to examine the computational complexity of certain useful methods for the automatic construction of term classes. It is shown that any algorithm which maximizes the number of relevant documents that are retrieved (recall) and the number of irrelevant documents that are rejected (precision) under some pre-assigned term classes is polynomial complete (likely to take exponential amount of computer time). Four heuristic methods which decrease the computaational time for the automatic construction of term classes using a "pseudo-classification" process are presented. Experiments with these methods and their variations produce surprisingly good results. Chapter IV deals with the clustering of documents. A new clustering method which makes use of the query formulations previously processed by the system is presented. The proposed method clusters the requests in the form of a tree. From that tree, a corresponding tree of documents is constructed. The resulting clusters have the following useful properties. (1) The clusters are independent of the order in which the documents are processed. (2) Overlapping of clusters is allowed in that documents may appear in more than one class or cluster (3) Not all the documents need to be clustered. The new clustering method is then compared with other automatic classification procedures, namely the Single-Link Method, Dattola's Method, Rocchio's Method and Bonner's Method with repect to systems effectiveness, systems efficiency, and computer time required for clustering. Both theoretical and experimental results seem to indicate that the new method is superior to the olded methods. Chapter V summarizes the resultss obtained in this thesis and indicates possible future research areas. Many of the more tedious or difficult proofs in different parts of the thesis are included in Appendices I, II, and III.

url: http://hdl.handle.net/1813/6025
date: 2007-04-19
creator: Hunt, Harry B., III
viewed: 25
title: On the Time and Tape Complexity of Languages
abstract: We investigate the following: (1) the relationship between the classes of languages accepted by deterministic and nondeterministic polynomial time bounded Turing machines; (2) the relationship between the classes of languages accepted by deterministic and nondeterministic linear bounded automata;

(3) sufficient conditions for undecidability of linguistic predicates; and (4) the time and space complexity of several predicates on the regular sets. We show that the set $\{ R | R$ is a $(\cup, ^{.}, *, \caap)$ regular expression and $L(R) = \{0,1\}^*\}$ is not recognizable by any polynomial space bounded Turing machine. We also find conditions which guarantee that any predicate on the regular sets satisfying them is as hard to decide as emptiness or equivalence.

url: http://hdl.handle.net/1813/6026
date: 2007-04-19
creator: Bunch, James R.
viewed: 14
title: Analysis of Sparse Elimination
abstract: An error analysis is presented for Gaussian elimination when the matrix is arbitrarily sparse. Error analyses for elimination on band matrices and full matrices follow as special cases.

url: http://hdl.handle.net/1813/6027
date: 2007-04-19
creator: Even, Shimon
viewed: 24
title: An Algorithm for Determining Whether the Connectivity of a Graph is at Least k
abstract: The algorithm presented in this paper is for testing whether the connectivity of a large graph of n vertices is at least k. First the case of undirected graphs is discussed, and then it is shown that a variation of this algorithm works for directed graphs. The number of steps the algorithm requires, in case $k less than \sqrt{n}$, is bounded by $O(kn^{3})$.

url: http://hdl.handle.net/1813/6028
date: 2007-04-19
creator: Baker, Theodore Paul
viewed: 40
title: Computational Complexity and Nondeterminism in Flowchart Programs
abstract: NO ABSTRACT SUPPLIED

url: http://hdl.handle.net/1813/6029
date: 2007-04-19
creator: Constable, Robert L.
viewed: 15
title: A Constructive Theory of Recursive Functions
abstract: NO ABSTRACT SUPPLIED

url: http://hdl.handle.net/1813/6030
date: 2007-04-19
creator: Constable, Robert L.
viewed: 17
title: On the Relation of Refinement Between Algorithms
abstract: We define a class of tree schemata and a notion of refinement between trees (finite or infinite). These concepts allow us to talk about different “ways to program an algorithm” and the “structure” of an algorithm. We obtain as a special case certain concepts such as “approximation”, “convergence” and “fixed point semantics” recently employed by Scott to describe the semantics of flow diagrams. We concentrate in this paper on relating our concepts to Scott’s.

url: http://hdl.handle.net/1813/6031
date: 2007-04-19
creator: Yu, C. T.;Yang, C. S.;Salton, Gerard
viewed: 36
title: Contribution to the Theory of Indexing
abstract: An attempt is made to characterize the usefulness of terms occurring in stored documents and user queries as a function of their frequency characteristics across the documents of a collection. It is found that the best terms are those having medium frequency in the collection and skewed frequency distributions. Correspondingly, terms exhibiting either very high or very low document frequency are not as useful. To improve the indexing vocabulary, it becomes necessary to group low frequency terms into classes, and to break up high frequency terms by forming phrases. An indexing theory is described based on term frequency considerations, and a new phrase generation method is introduced. The resulting improvements in the indexing vocabulary are evaluated.

url: http://hdl.handle.net/1813/6032
date: 2007-04-19
creator: Galil, Zvi
viewed: 33
title: Functional Schemas with Nested Predicates
abstract: A class of (monadic) functional schemas with nested predicates is defined. It is shown that termination, divergence and freedom problems for these schemas are decidable. It is proved that when the schemas are more general the freedom problem is undecidable. A procedure is given for deleting the identity function from the schema's definition at the cost of increasing k by 1 when k is the maximum depth of nesting. Part of our results extend results of [1] about schemas without nesting. Our algorithm for checking freedom is not a natural extension of theirs. Furthermore, using our algorithm for schemas without nesting yields a much more efficient way of deciding freedom than the algorithm suggested in [1]. Keywords and Phrases: monadic functional schemas, nested predicates, decision problems, equivalence, freedom, polynomial time, DPDA.

url: http://hdl.handle.net/1813/6033
date: 2007-04-19
creator: Gay, David M.
viewed: 16
title: On Scolnik's Proposed Polynomial-Time Linear Programming Algorithm
abstract: At a recent symposium, Hugo Sccolnik expressed some ideas leading to an algorithm which he thought might solve the linear programming problem in polynomial time. We examine the algorithm and find that it often fails to solve the linear programming problem, even in the special cases considered by Scolnik. We conclude that the algorithm probably cannot be modified to work properly.

url: http://hdl.handle.net/1813/6034
date: 2007-04-19
creator: Hartmanis, Juris
viewed: 15
title: Computational Complexity of Formal Translations
abstract: The purpose of this paper is to define a mathematical model for the study of quantitative problems about translations between universal languages and to investigate such problems. The results derived in this paper deal with the efficiency of the translated algorithms, the optimality of translations and the complexity

of the translation process between different languages. Keywords: universal languages, Goedel numberings, translations, complexity of translations, optimality, length of translated programs.

url: http://hdl.handle.net/1813/6035
date: 2007-04-19
creator: Kou, Lawrence T.
viewed: 16
title: Polynomial Complete Consecutive Information Retrieval Problems
abstract: NO ABSTRACT SUPPLIED

url: http://hdl.handle.net/1813/6036
date: 2007-04-19
creator: Weihrauch, K.
viewed: 25
title: On the Computational Complexity of Program Schemata
abstract: An ordering called "faster" is defined on the class of iterative program schemata. It is in good accordance with the intuition of "better" applied to program schemata. Many of the commonly used optimization techniques yield "faster" programs in this sense. For Ianov schemata the relation "faster" is decidable, but even on strong equivalence classes the ordering may be very complicated. For iterative program schemata there is a certain kind of speedup. Whereas there is an arbitrary slowdown for programs, slowdown for program schemata is limited.

url: http://hdl.handle.net/1813/6037
date: 2007-04-19
creator: Tarjan, Robert Endre;Hopcroft, John E.
viewed: 25
title: Dividing a Graph into Triconnected Components
abstract: An algorithm for dividing a graph into triconnected components is presented. When implemented on a random access computer, the algorithm requires $O(V+E)$ time and space to analyze a graph with V vertices and E edges. The algorithms is both theoretically optimal to within a constant factor and efficient in practice. Keywords: articulation point, connectivity, depth-first search, graph, separability, separation, triconnectivity.

url: http://hdl.handle.net/1813/6038
date: 2007-04-19
creator: Mehlhorn, Kurt
viewed: 16
title: Polynomial and Abstract Subrecursive Classes
abstract: We define polynomial time computable operator. Our definition generalizes Cook's definition to arbitrary function inputs. Polynomial classes are defined in terms of these operators; the properties of these classes are investigated. Honest polynomial classes are generated by running time. They possess a modified Ritchie-Cobham property. A polynomial class is a complexity class if it is honest. Starting from the observation that many results about subrecursive classes hold for all reducibility relations (e.g. primitive recursive in, elementary recursive in), which were studied so far, we define abstract subrecursive reducibility relation. Many results hold for all abstract subrecursive reducibilities.

url: http://hdl.handle.net/1813/6039
date: 2007-04-19

creator: Ehrlich, Gideon
viewed: 34
title: Partitions Generators
abstract: Several algorithms for generating partitions of positive numbers are given. First, an algorithm for generating all the partitions is given, then algorithms for generating of all partitions in which all terms are smaller than a given n, between n and m, and partitions of n to a given k. Each of the algorithms produces the whole sequence in a time proportional to the length of that sequence; moreover, each new partition is produced in no more than a constant number of steps independent on the parameters of the algorithm.

url: http://hdl.handle.net/1813/6040
date: 2007-04-19
creator: Dennis, John E., Jr.;Boggs, Paul T.
viewed: 17
title: A Continuous Analogue Analysis of Nonlinear Iterative Methods
abstract: This paper applies the asymptotic stability theory for ordinary differential equations to Gavurin's continuous analogue of several well-known nonlinear iterative methods. In particular, a general theory is developed which extends the Ortega-Rheinboldt concept of consistency to include the widely used finite difference approximations to the gradient as well as the finite difference approximation to the Jacobian in Newton's method. The theory is also shown to be applicable to the Levenberg-Marquardt methods.

url: http://hdl.handle.net/1813/6041
date: 2007-04-19
creator: Sahni, Sartaj;Hunt, Harry B., III;Constable, Robert L.
viewed: 34
title: On the Computational Complexity of Scheme Equivalence
abstract: We consider the computational complexity of several decidable problems about program schemes and simple programming languages. In particular, we show that the equivalence problem for Ianov schemes is NP-complete, but that the equivalence problem for strongly free schemes, which approximate the class of Ianov schemes which would actually be written, can be solved in time quadratic in the size of the scheme. We also show that many other simple scheme classes or simple restricted programming languages have polynomially complete equivalence problems. Some are complete for the same reason that Ianov schemes are complete and some are complete for other reasons.

url: http://hdl.handle.net/1813/6042
date: 2007-04-19
creator: Gries, David
viewed: 18
title: A Note on Program Development
abstract: NO ABSTRACT SUPPLIED

url: http://hdl.handle.net/1813/6043
date: 2007-04-19
creator: Salton, Gerard
viewed: 27
title: A Theory of Indexing
abstract: THe content analysis, or indexing problem, is fundamental in information storage and retrieval. Several automatic procedures are examined for the assignment of significance values to the terms, or keywords, identifying the documents of a collection. Good and bad index terms are characterized by objective

measures, leading to the conclusion that the best index terms are those with medium document frequency and skewed frequency distributions. A discrimination value model is introduced which makes it possible to construct effective indexing vocabularies by using phrase and thesaurus transformations to modify poor discriminators - those whose document frequency is too high, or too low - into better discriminators, and hence more useful index terms. Test results are included which illustrate the effectiveness of the theory.

url: http://hdl.handle.net/1813/6044
date: 2007-04-19
creator: Galil, Zvi
viewed: 31
title: Two Way Deterministic Pushdown Automaton Languages and Some Open Problems in the Theory of Computation
abstract: We consider some of the important unsolved problems in the theory of computation concerning the relationship between deterministic and nondeterministic computations, and between tape and time bounded computations. For each such problem we find an equivalent problem concerning two way deterministic pushdown automaton languages. This is the first time many of the open problems have been reduced to questions about one class of automata. Keywords and phrases: Two way deterministic pushdown automata, open problems, determinism versus nondeterminism, space bounded computations, time bounded computations, Turing machines, multihead pushdown automata, two way counter machines, auxiliary pushdown machines.

url: http://hdl.handle.net/1813/6045
date: 2007-04-19
creator: Simon, Janos
viewed: 17
title: On the Power of Multiplication in Random Access Machines
abstract: We consider random access machines with a multiplication operation, having the added capability of computing logical operations on bit vectors in parallel. The contents of a register are considered both as an integer and as a vector of bits and both arithmetic and boolean operations may be used on the same register. We prove that, counting one operation as a unit of time and considering the machines as acceptors, deterministic and nondeterministic polynomial time acceptable languages are the same, and are exactly the languages recognizable in polynomial tape by a Turing machine. We observe that the same measure on machines without multiplication is polynomially related to Turing machine time - thus the power of multiplication on this model characterizes the difference between Turing machine tape and time measures. We discuss other instruction sets and their power.

url: http://hdl.handle.net/1813/6046
date: 2007-04-19
creator: Egli, Herbert
viewed: 24
title: Programming Language Semantics Using Extensional λ-Calculus Models
abstract: We prove a theorem which provides an intuitive understanding of the meaning of λ-terms in Scott's extensional λ-calculus models. This allows us to use those models for the definition of high-level programming languages. In order to illustrate this we define a programming language which includes blocks and (arbitrary recursive) procedures. Two aspects justify this approach. First of all, the logical properties of those (typeless) λ-calculus models are appealing for a formalization similar to LCF [6] which formalizes typed λ-calculus models. Secondly, not having the type restrictions that LCF imposes allows us to define the semantics of high-level programming languages in the spirit of

"mathematical semantics" [12] (which is usually based on recursively defined domains), thus the semantic nature of syntactic constructs can be exhibited clearly. Keywords: Mathematical semantics, Programming Languages, λ-calculus Models, typed, typeless, extensional, Logic, LCF.

url: http://hdl.handle.net/1813/6047
date: 2007-04-19
creator: Gay, David M.
viewed: 24
title: More Remarks on Scolnik's Approach to Linear Programming
abstract: This report briefly discusses certain points in Hugo Scolnik's letter (Spring 1974) to the SIGMAP membership, then examines whether superfluous constraints are responsible for the difficulties in Scolnik's approach to linear programming, and finally discusses possible starting heuristics, based on Scolnik's approach, for the simplex algorithm.

url: http://hdl.handle.net/1813/6048
date: 2007-04-19
creator: Yu, C. T.;Yang, C. S.;Salton, Gerard
viewed: 44
title: A Theory of Term Importance in Automatic Text Analysis
abstract: Most existing automatic content analysis and indexing techniques are based on word frequency characteristics applied largely in an ad hoc manner. Contradictory requirements arise in this connection, in that terms exhibiting high occurence frequencies in individual documents are often useful for high recall performance (to retrieve many relevant items), whereas terms with low frequency in the whole collection are useful for high precision (to reject nonrelevant items).

url: http://hdl.handle.net/1813/6049
date: 2007-04-19
creator: Egli, Herbert;Constable, Robert L.
viewed: 23
title: Computability on Continuous Higher Types and its Role in the Semantics of Programming Languages
abstract: This paper is about mathematical problems in programming language semantics and their influence on recursive function theory. In the process if constructing computable Scott models of the lambda calculus we examine the concepts of deterministic and non-deterministic effective operators of all finite types and continuous deterministic and non-deterministic partial computable operators on continuous inputs of all finite types. These are new recursion theoretic concepts which are appropriate to semantics and were inspired in part by Scott's work on continuity.

url: http://hdl.handle.net/1813/6050
date: 2007-04-19
creator: Simon, Janos;Hartmanis, Juris
viewed: 14
title: On the Structure of Feasible Computations
abstract: During the last four years research on the lower level computational complexity has yielded a rich set of interesting results which have revealed deep and unexpected connections between various problems and thus brought new unity to this area of computer science. This work has also yielded new techniques and insights which are likely to have further applications, and it has identified some very central problems in the quantitative theory of computing. The purpose of this paper is to give the reader an overview of these

developments, an insight into some of these results and applications, as well as an appreciation of the unity and structure which has emerged in this area of research.

url: http://hdl.handle.net/1813/6051
date: 2007-04-19
creator: Moore, Charles G. III
viewed: 19
title: Potential Capabilities in Algol-Like Programs
abstract: NO ABSTRACT SUPPLIED

url: http://hdl.handle.net/1813/6052
date: 2007-04-19
creator: Conway, Richard W.;Moore, Charles G. III
viewed: 14
title: Program Predictability and Data Security
abstract: NO ABSTRACT SUPPLIED

url: http://hdl.handle.net/1813/6053
date: 2007-04-19
creator: Simon, Janos;Hartmanis, Juris
viewed: 19
title: On the Power of Multiplication in Random Access Machines
abstract: We consider random access machines with a multiplication operation, having the added capability of computing logical operations on bit vectors in parallel. The contents of a register are considered both as an integer and as a vector of bits and both arithmetic and boolean operations may be used on the same register. We prove that, counting one operation as a unit of time and considering the machines as acceptors, deterministic and non-deterministic polynomial time acceptable languages are the same, and are exactly the languages recognizable in polynomial tape by Turing machines. We observe that the same measure on machines without multiplication is polynomially related to Turing machine time - thus the added computational power due to multiplication in random access machines is equivalent to the computaitonal power which polynomially tape-bounded Turing machine computations have over polynomially time-bounded computations. Therefore, in this formulation, it is not harder to multiply than to add if and only if PTAPE=PTIME for Turing machines. We also discuss other instruction sets for random access machines and their computational power.

url: http://hdl.handle.net/1813/6054
date: 2007-04-19
creator: Andrews, Gregory R.
viewed: 19
title: COPS - A Mechanism for Computer Protection
abstract: A computer protection mechanism is a set of tools for controlling the actions of computations and safeguarding stored information. This paper describes a new mechanism, COPS, which is a kernel of data structures, primitive operations, and a monitor and is used to specify and enforce the capabilities of actors (processes and procedures). COPS can be used to implement a variety of security policies and systems and to enhance software reliability. Its tools are sufficient to solve problems in the areas of isolation, controlled sharing, restricted access, mutually suspicious interaction, and confinement. Key Words and phrases: protection, kernel, operating system, security, access control.

url: http://hdl.handle.net/1813/6055

date: 2007-04-19
creator: Trangenstein, J. A.;More, Jorge J.
viewed: 21
title: On the Global Convergence of Broyden's Method
abstract: We consider Broyden's 1965 method for solving nonlinear equations. If the mapping is linear, then a simple modification of this method guarantees global and Q-superlinear convergence. For nonlinear mappings it is shown that the hybrid strategy for nonlinear equations due to Powell leads to R-superlinear convergence provided the search directions from a uniformly linearly indepenent sequence. We then explore this last concept and its connection with Broyden's method. Finally, we point out how the above results extend to Powell's symmetric version of Broyden's method.

url: http://hdl.handle.net/1813/6056
date: 2007-04-19
creator: More, Jorge J.;Dennis, John E., Jr.
viewed: 55
title: Quasi-Newton Methods, Motivation and Theory
abstract: This paper is an attempt to motivate and justify quasi-Newton methods as useful modifications of Newton's method for general and gradient nonlinear systems of equations. References are given to ample numerical justification; here we give an overview of many of the important theoretical results and each is accompanied by sufficient discussion to make the results and hence the methods plausible. Key Words and Phrases: unconstrained minimization, nonlinear simultaneous equations, update methods, quasi-Newton methods.

url: http://hdl.handle.net/1813/6057
date: 2007-04-19
creator: Yang, C. S.;Wong, A.;Salton, Gerard
viewed: 120
title: A Vector Space Model for Automatic Indexing
abstract: In a document retieval, or other pattern matching environment where stored entities (documents) are compared with each other, or with incoming patterns (search requests), it appears that the best indexing (property) space is one where each entity lies as far away from the others as possible; that is, retrieval performance correlates inversely with space density. This result is used to choose an optimum indexing vocabulary for a collection of documents. Typical evaluation results are shown demonstrating the usefulness of the model.

url: http://hdl.handle.net/1813/6058
date: 2007-04-19
creator: Solomon, Marvin
viewed: 24
title: Modes, Values and Expressions
abstract: NO ABSTRACT SUPPLIED

url: http://hdl.handle.net/1813/6059
date: 2007-04-19
creator: Chien, Ann-Sheng A.
viewed: 18
title: A Class of Derivative-Free Algorithms for Unconstrained Minimization
abstract: NO ABSTRACT SUPPLIED

url: http://hdl.handle.net/1813/6060
date: 2007-04-19
creator: Boas, P. van Emde
viewed: 81
title: An O(nloglogn) On-line Algorithm for the Insert-Exact Min Problem
abstract: Integers within the range 1,...,n are inserted in a set, and on several occasions the minimal element is extracted from the set. We present an algorithm to executee a sequence of O(n) of these instrucitions on-line in time O(nloglogn) on a Random Access Machine. The instruction repertoire can be extended by instructions like allmin(i) (delete all elements not greater than i), extract max, or predecessor (i) (find the largest element less than i), without disturbing the O(loglogn) processing time per item. Whereas the off-line insert-extract min problem is known to be reducible to the on-line union-find problem, we prove that the off-line insert-allmin problem is equivalent to the off-line union-find problem, hence the off-line problems have faster algorithms. As an application we show that our algorithm can be used to process a sequence of O(n) instructions of the types: "split an interval", "unite two adjacent intervals", and "find the interval currently containing element j", on-line in time O(nloglogn). Keywords: set-manipulation, Analysis of Algorithms, binary tree.

url: http://hdl.handle.net/1813/6061
date: 2007-04-19
creator: Paul, Wolfgang J.
viewed: 21
title: 2.25 N-Lower Bound on the Combinational Complexity of Boolean Functions
abstract: Consider the combinational complexity L(f) of Boolean functions over the basis $\Omega = \{f|f:\{0,1\}^{2} \rightarrow \{0,1\}\}$. A new Method for proving linear lower bounds of size 2n is presented. Combining it with methods presented in [7] and [9], we establish for a special set of functions $f^{n}:\{0,1\} : 2.25n \leq L(f) \leq 6n$.

url: http://hdl.handle.net/1813/6062
date: 2007-04-19
creator: Galil, Zvi
viewed: 36
title: On the Complexity of Resolution Procedures for Theorem Proving
abstract: We study several procedures for theorem proving based on the resolution principle. We consider (1) Davis Putnam procedure; (2) regular resolution; (3) unrestricted resolution; (4) resolution with extension; and (5) several versions of bounded resolution. The powers of these procedures are compared. Exponential lower bounds are proved for the run-time of some of them.

url: http://hdl.handle.net/1813/6063
date: 2007-04-23
creator: Hopcroft, John E.;Hartmanis, Juris
viewed: 13
title: Independence Results in Computer Science
abstract: In this note we show that instances of problems which appear naturally in computer science cannot be answered in formalized set theory. We show, for example, that some relativized versions of the famous P = NP problem cannot be answered in formalized set theory, that explicit algorithms can be given whose running time is independent of the axioms of set theory, and that one can exhibit a specific context-free grammar G for which it cannot be proven in set theory that $L(G) = \sum^{*}$ or $L(G) \neq \sum^{*}$.

url: http://hdl.handle.net/1813/6064
date: 2007-04-23
creator: Schneider, Fred B.;Gries, David
viewed: 17
title: Equational Propositional Logic
abstract: We formalize equational propositional logic, prove that it is sound and complete, and compare the equational-proof style with the more traditional Hilbert style.

url: http://hdl.handle.net/1813/6065
date: 2007-04-23
creator: Buch, Vineet;Basu, Anindya;Avula, Veena;Von Eicken, Thorsten
viewed: 32
title: Low-Latency Communication over ATM Networks using Active Messages
abstract: Recent developments in communication architectures for parallel machines have made significant progress and reduced the communication overheads and latencies by over an order of magnitude as compared to earlier proposals. This paper examines whether these techniques can carry over to clusters of workstations connected by an ATM network even though clusters use standard operating system software, are equipped with network interfaces optimized for stream communication, do not allow direct protected user-level access to the network, and use networks without reliable transmission or flow control. In a first part, this paper describes the differences in communication characteristics between clusters of workstations built from standard hardware and software components and state-of-the-art multiprocessors. The lack of flow control and of operating system coordination affects the communication layer design significantly and requires larger buffers at each end than on multiprocessors. A second part evaluates a prototype implementation of the low-latency Active Messages communication model on a Sun workstation cluster interconnected by an ATM network. Measurements show application-to-application latencies of about 20 microseconds for small messages which is roughly comparable to the Active Messages implementation on the Thinking Machines CM-5 multiprocessor.

url: http://hdl.handle.net/1813/6066
date: 2007-04-23
creator: Marzullo, Keith;Alvisi, Lorenzo
viewed: 16
title: Optimal Message Logging Protocols \\ (Preliminary Version)
abstract: Message logging protocols are an integral part of a technique for implementing processes that can recover from crash failures. All message logging protocols require that the state of a recovered process be consistent with the states of the other processes. This consistency requirement is usually expressed in terms of {\em orphan processes\/}, surviving processes whose states are inconsistent with the recovered state of a crashed process. Orphans are either avoided through careful logging or are eliminated through a somewhat complex recovery protocol. We give a specification of the consistency property “no orphan processes”. From this specification, we describe how different existing classes of message logging protocols (namely {\ em optimistic}, {\em pessimistic}, and a class that we call {\em causal}) implement this property. We then propose a set of metrics to evaluate the performance of message logging protocols, and characterize the protocols that are {\em optimal} with respect to these metrics. We give several examples of optimal message logging protocols that can tolerate f overlapping failures and recoveries for a parameter $f: 1 \le f \le n$, and discuss the tradeoffs that arise in the implementation of these protocols.

url: http://hdl.handle.net/1813/6068

date: 2007-04-23
creator: Pnueli, Amir;Manna, Zohar;Henzinger, Thomas A.;Kapur, Arjun
viewed: 26
title: Proving Safety Properties of Hybrid Systems
abstract: We propose a methodology for the specification, verification, and design of hybrid systems. The methodology consists of the computational model of Concrete Phase Transition Systems, the specification language of Hybrid Temporal Logic (HTL), the graphical system description language of Hybrid Automata, and a proof system for verifying that hybrid automata satisfy their HTL specifications. The novelty of the approach lies in the continuous-time logic, which allows specification of both point-based and interval-based properties (i.e., properties which describe changes over an interval) and provides direct references to derivatives of variables, and in the proof system that supports verification of point-based and interval-based properties. The proof rules demonstrate that sound and convenient induction rules can be established for continuous-time logics. The proof rules are illustrated on several examples.

url: http://hdl.handle.net/1813/6069
date: 2007-04-23
creator: Underwood, Judith
viewed: 38
title: Aspects of the Computational Content of Proofs
abstract: In this thesis, we explore three aspects of the computational content of proofs. These are: a computational interpretation of the metatheory of intuitionistic propositional logic, an extension of this approach to intuitionistic predicate logic, and a computational interpretation of classical sequent proofs. We begin with a study of the computational aspects of validity, provability, and completeness for intuitionistic propositional logic. We give a constructive proof of completeness of Kripke models for intuitionistic propositional calculus, such that the computational content of the proof is a form of the tableau algorithm. Since the evidence for provability we construct is actually a term in typed λ-calculus, we can interpret this result as a formal relationship between Kripke semantics and realizability semantics. We also show how a formal proof of the completeness theorem in Nuprl could be used to add the tableau decision procedure for provability to Nuprl's collection of proof techniques via reflection. We then explore how these results could be generalized to the metatheory of intuitionistic predicate logic. To do this, we develop some machinery for representing infinite Kripke models in type theory using co-inductive types. Although provability in intuitionistic predicate logic is undecidable, we can still prove a constructive theorem in the metatheory which has computational content. We also show that using classical logic in part of the proof does not destroy the computational content of the proof. Finally, we examine the computational aspects of classical sequent proofs. We show how the interpretation of nonlocal control operators as the computational content of classical axioms allows us to prove a completeness result for intuitionistic predicate logic with a depth-first-search tableau procedure as the computational content of the proof. Using the nonlocal control operator \cc\ as the the computational interpretation of the classical axiom we define a method for extracting programs from classical sequent proofs in propositional logic. We give a proof-theoretic account of continuations and their behaviour in this context, and prove a number of properties of the extraction.

url: http://hdl.handle.net/1813/6070
date: 2007-04-23
creator: Birman, Kenneth P.;Cooper, David A.
viewed: 16
title: Preserving Privacy in a Network of Mobile Computers
abstract: Even as wireless networks create the potential for access to information from mobile platforms, they pose a problem for privacy. In order to retrieve messages, users must periodically poll the network. The

information that the user must give to the network could potentially be used to track that user. However, the movements of the user can also be used to hide the user's location if the protocols for sending and retrieving messages are carefully designed. In this paper we will describe a set of protocols that we have developed to allow a user with a mobile computer to communicate without compromising privacy.

url: http://hdl.handle.net/1813/6071
date: 2007-04-23
creator: Li, Yuying
viewed: 28
title: On Global Convergence of A Trust Region and Affine Scaling Methodfor Nonlinearly Constrained Minimization
abstract: A nonlinearly constrained optimization problem can be solved by the exact penalty approach involving nondifferentiable functions $\sum_{i} |c_i(x)|$ and $\sum_{i}\max(0,c_i(x))$. In \cite{Li94a}, a trust region affine scaling approach based on a 2-norm subproblem is proposed for solving a nonlinear l_1 problem. The (quadratic) approximation and the trust region subproblem are defined using affine scaling techniques. Explicit sufficient decrease conditions are proposed to obtain a limit point satisfying complementarity, dual feasibility, and second order optimality. In this paper, we present the global convergence properties of this new approach.

url: http://hdl.handle.net/1813/6072
date: 2007-04-23
creator: Li, Yuying
viewed: 26
title: A Trust Region and Affine Scaling Method for Nonlinearly ConstrainedMinimization
abstract: A nonlinearly constrained minimization problem can be solved by the exact penalty approach involving nondifferentiable functions $\sum_{i} |c_i(x)|$ and $\sum_{i}\max(0,c_i(x))$. In this paper, a trust region approach based on a 2-norm subproblem is proposed for solving a nonlinear l_1 problem. The (quadratic) approximation and the trust region subproblem are defined using affine scaling techniques. Explicit sufficient decrease conditions based on the approximations are suggested for obtaining a limit point satisfying complementarity, Kuhn-Tucker conditions, and second order necessary conditions. The global convergence analysis of the method is presented in \cite{Li94b}.

url: http://hdl.handle.net/1813/6073
date: 2007-04-23
creator: Johnson, Richard C.
viewed: 22
title: Efficient Program Analysis Using Dependence Flow Graphs
abstract: Program analysis plays a major role in advanced compilers, yet traditional approaches to data flow analysis are quite time consuming. Prior techniques for speeding up data flow analysis have either exploited program structure or have used alternate "sparse" dependence representations to avoid performing unnecessary work. No general method exploiting both program structure and sparsity has emerged. We present a new framework for program analysis using dependence flow graphs (DFGs), an intermediate representation derived from dataflow machine graphs. DFGs integrate data and control dependences in a way that supports general and efficient program analysis while avoiding the problems of previous dependence representations. In particular, our approach simultaneously exploits program structure, sparsity of data flow systems, and data structure reuse to speed up analysis. At the heart of our method is a new program decomposition based on identifying single-entry single-exit (SESE) regions of the control flow graph (CFG). We show that finding SESE regions is equivalent to the problem of finding control dependence regions, and

we develop optimal linear-time algorithms for these problems. The nesting relationship of SESE regions is recorded in a data structure called the program structure tree (PST). Since each SESE region is a control flow graph in its own right, we can speed up many CFG algorithms by applying them independently to each SESE region in a divide-and-conquer manner. Additionally, SESE regions can be categorized according to their local structure (e.g. as if-then-else or loop regions), and this local structure may be exploited by applying simple syntactic methods according to the region kind. Hierarchical program structure is used in solving global data flow problems by first solving local problems within progressively larger SESE regions. The global solution is then propagated to enclosed regions in a top-down pass over the PST. Sparsity is exploited within each data flow problem by avoiding propagation of data flow values through SESE regions that do not effect the data flow solution. We show that the sparsity found in common scalar optimizations is captured precisely by dependence flow graphs; the DFG is then viewed as a reusable "basis set" of sparse graphs. Since sparsity is based on SESE regions of the PST, we may exploit structure and sparsity simultaneously. By solving data flow systems using the DFG, we avoid the cost of rediscovering structure and sparsity for each problem instance. In this case, the cost of building the dependence flow graph is amortized over many related data flow problems. Such data structure reuse is essential to realizing the full potential of sparse data flow methods. However, reuse adds the additional burden of maintaining the DFG as the program is transformed during optimization. Using the PST, we derive practical incremental algorithms for updating both the DFG and the PST itself. We demonstrate the value of our approach through measurements taken from an optimizing FORTRAN compiler that uses the program structure tree and dependence flow graph as its internal representation. From our experiments, we conclude that sparse methods hold great potential for speeding up data flow analysis, but that reusing and incrementally updating a sparse representation is the key to realizing this potential.

url: http://hdl.handle.net/1813/6074
date: 2007-04-23
creator: Allen, Stuart;Mannion, Conal
viewed: 16
title: A Notation for Computer Aided Mathematics
abstract: The NuPrl4 term structure and editor display mechanism are used to provide unambiguous notations for use in the the development of computer supported mathematical arguments. These notations are used to provide a natural statment of a theorem in Hamiltonian dynamics, anchored in a computationally unambiguous representation, that can be made explicit if required.

url: http://hdl.handle.net/1813/6075
date: 2007-04-23
creator: Ferreira, Paulo;Shapiro, Marc
viewed: 60
title: Larchant-RDOSS: a distributed shared persistent memory and its garbage collector
abstract: Larchant-RDOSS is a distributed shared memory that persists on reliable storage across process lifetimes. Memory management is automatic: including consistent caching of data and of locks, collecting objects unreachable from the persistent root, writing reachable objects to disk, and reducing store fragmentation. Memory management is based on a novel garbage collection algorithm, that approximates a global trace by a series of local traces, with no induced I/O or locking traffic, and no synchronization between the collector and the application processes. This results in a simple programming model, and expected minimal added application latency. The algorithm is designed for the most unfavorable environment (uncontrolled programming language, reference by pointers, distributed system, non-coherent shared memory) and should work well also in more favorable settings.

url: http://hdl.handle.net/1813/6076
date: 2007-04-23
creator: Kozen, Dexter
viewed: 16
title: Set Constaints and Logic Programming
abstract: Set constraints are inclusion relations between expressions denoting sets of ground terms over a randed alphabet. They are the main ingredient in set-based program analysis[3,4,12,13,17,20,21,22,26]. In this paper we describe a constraint logic programming language CLP(SC) over set constraints in the style of Jaffar and Lassez[15]. The language subsumes ordinary logic programs over an IIerbrand domain. We give an efficient unification algorithm and operational, declarative, and fixpoint semantics. We show how the language can be applied in set-based program analysis by deriving explicitly the monadic approximation of the collecting semantics of IIeintze and Jaffar[12,13].

url: http://hdl.handle.net/1813/6077
date: 2007-04-23
creator: Schneider, Fred B.;Van Renesse, Robbert;Johansen, Dag
viewed: 21
title: Operating System Support for Mobile Agents
abstract: An “agent” is a process that may migrate through a computer network in order to satisfy requests made by its clients. Agents implement a computational metaphor that is analogous to how most people conduct business in their daily lives: visit a place, use a service (perhaps after some negotiation), and then move on. Thus, for the computer illiterate, agents are an attractive way to describe network-wide computations. Agents are also useful abstractions for programmers who must implement distributed applications. This is because in the agent metaphor, the processor or “place” the computation is performed is not hidden from the programmer, but the communications channels are. Most current research on agents has focused on language design and application issues. The TACOMA project (Tromso And COrnell Moving Agents) has, instead, focused on operating system support for agents and how agents can be used to solve problems traditionally addressed by operating systems. We have implemented prototype systems to support agents using UNIX and using Tcl/Tk on top of Horus. This paper outlines insights and questions based on that experience. We discuss abstractions needed by an operating system to support agents, and discuss some problems that arise in connection with electronic commerce involving agents.

url: http://hdl.handle.net/1813/6078
date: 2007-04-23
creator: Li, Wei
viewed: 17
title: COMPILING FOR NUMA PARALLEL MACHINES
abstract: A common feature of many scalable parallel machines is non-uniform memory access (NUMA) --- data access to local memory is much faster than to non-local memories. In addition, when a number of remote accesses must be made, it is usually more efficient to use block transfers of data rather than to use many small messages. Almost every modern processor is designed with a memory hierarchy organized into several levels -- each smaller and faster than the level below. In general, the effective use of parallel machines requires careful attention to the following issues: (1) exposing and exploiting parallelism; (2) accessing local memory instead of remote memory; (3) using block transfers for remote accesses; (4) reusing data in the cache; and (5) load balancing. We have built a system called {\em Pnuma} for programming NUMA machines. We make the following contributions: First, we propose a parallelization scheme for both parallelism and data locality. Second, we develop a framework based on {\em non-singular} matrices and integer lattice theory for the systematic development of loop transformations. Program transformations, such as loop restructuring,

are critical to achieving high performance. The framework can be used in parallelizing compilers for both coarse-grain and fine-grain parallel architectures. We have implemented a loop restructuring toolkit called {\em Lambda} based on this framework. Third, using this loop transformation framework, we develop algorithms for improving memory locality. The memory locality algorithm restructures loop nests to expose opportunities for parallel execution and for block transfers, while keeping data accesses local wherever possible. Fourth, for cache locality, we introduce a new simple cache model based on {\em reuse distances\/}, which is more precise than the existing {\em reuse vector space} model. We develop a new loop transformation technique that optimizes directly on reuse distances, so that no exhaustive search is necessary. Fifth, we use our loop transformation framework to improve parallelism as well. We develop a unified algorithm for parallelism, memory locality and cache locality. System evaluations have been conducted on a multiprocessor machine without cache (BBN GP1000), a uniprocessor workstation with cache (HP 9000/720) and a multiprocessor machine with caches (KSR1), using programs from linear algebra, NASA benchmarks and SIMPLE hydrodynamics benchmark.

url: http://hdl.handle.net/1813/6079
date: 2007-04-23
creator: Santosa, Fadil;Li, Yuying
viewed: 24
title: An Affine Scaling Algorithm for Minimizing Total Variation in ImageEnhancement
abstract: A computational algorithm is proposed for image enhancement based on total variation minimization with constraints. This constrained minimization problem is introduced by Rudin et al \ cite{osher1,osher3,osher2} to enhance blurred and noisy images. Our computational algorithm solves the constrained minimization problem directly by adapting the affine scaling method for the unconstrained l_1 problem \cite{CL89}. The resulting computational scheme, when viewed as an image enhancement process, has the feature that it can be used in an interactive manner in situations where knowledge of the noise level is either unavailable or unreliable. This computational algorithm can be implemented with a conjugate gradient method. It is further demonstrated that the iterative enhancement process is efficient.

url: http://hdl.handle.net/1813/6080
date: 2007-04-23
creator: Harel, David;Hirst, Tirza
viewed: 15
title: Completeness Results for Recursive Data Bases
abstract: We consider infinite recursive (i.e., computable) relational data bases. Since the set of computable queries on such data bases is not closed under even simple relational operations, one must either make do with a very modest class of queries or considerably restrict the class of allowed data bases. We define two query languages, one for each of these possibilities, and prove their completeness. The first is the language of quantifier-free first-order logic, which is shown to be complete for the non-restricted case. The second is an appropriately modified version of Chandra and Harel's language QL, which is proved complete for the case of ``highly symmetric" data bases, i.e., ones whose set of automorphisms is of finite index for each tuple-width. We also address the related notion of BP-completeness.

url: http://hdl.handle.net/1813/6081
date: 2007-04-23
creator: Kim-Chuan, Toh
viewed: 15
title: GMRES vs. ideal GMRES
abstract: \begin{abstract} \noindent The GMRES algorithm minimizes $\norm{p(A)b}$ over polynomials p

of degree n normalized at $z=0$. The ideal GMRES problem is obtained if one considers minimization of $\norm{p(A)}$ instead. The ideal problem forms an upper bound for the worst-case true problem, where the GMRES norm $\norm{p_b(A)b}$ is maximized over b. In work not yet published, Faber, Joubert, Knill and Manteuffel have shown that this upper bound need not be attained, constructing a 4×4 example in which the ratio of the true to ideal GMRES norms is 0.9999. Here, we present a simpler 4×4 example in which the ratio approaches zero when a certain parameter tends to zero. The same example also leads to the same conclusion for Arnoldi vs. ideal Arnoldi norms. \end{abstract}

url: http://hdl.handle.net/1813/6082
date: 2007-04-23
creator: Vavasis, Stephen;Hough, Patricia
viewed: 18
title: Complete Orthogonal Decomposition for Weighted Least Squares
abstract: Consider a full-rank weighted least-squares problem in which the weight matrix is highly ill-conditioned. Because of the ill-conditioning, standard methods for solving least-squares problems, QR factorization and the nullspace method for example, break down. G. W. Stewart established a norm bound for such a system of equations, indicating that it may be possible to find an algorithm that gives an accurate solution. S. A. Vavasis proposed a new definition of stability that is based on this result. He also proposed the NSH algorithm for solving this least-squares problem and showed that it satisfies the new definition of stability. This paper describes a complete orthogonal decomposition algorithm to solve this problem and shows that it is also stable. This new algorithm is simpler and more efficient than the NSH method.

url: http://hdl.handle.net/1813/6083
date: 2007-04-23
creator: Strong, Ray;Rosu, Marcel-Catalin;Ho, Ching-Tien;Dolev, Danny;Bruck, Jehoshua
viewed: 19
title: Efficient Message Passing Interface (MPI) for Parallel Computing onClusters of Workstations
abstract: Parallel computing on clusters of workstations and personal computers has very high potential, since it leverages existing hardware and software. Parallel programming environments offer the user a convenient way to express parallel computation and communication. In fact, recently, a Message Passing Interface (MPI) has been proposed as an industrial standard for writing "portable" message-passing parallel programs. The communication part of MPI consists of the usual point-to-point communication as well as collective communication. However, existing implementations of programming environments for clusters are built on top of a point-to-point communication layer (send and receive) over local area networks (LANs) and, as a result, suffer from poor performance in the collective communication part. In this paper, we present an efficient design and implementation of the collective communication part in MPI that is optimized for clusters of workstations. Our system consists of two main components: the MPI-CCL layer that includes the collective communication functionality of MPI and a User-level Reliable Transport Protocol (URTP) that interfaces with the LAN Data-link layer and leverages the fact that the LAN is a broadcast medium. Our system is integrated with the operating system via an efficient kernel extension mechanism that we developed. The kernel extension significantly improves the performance of our implementation as it can handle part of the communication overhead without involving user space. We have implemented our system on a collection of IBM RS/6000 workstations connected via a 10Mbit Ethernet LAN. Our performance measurements are taken from real scientific applications that run in a parallel mode by means of the MPI. The hypothesis behind our design is that system's performance will be bounded by interactions between the kernel and user space rather than by the bandwidth delivered by the LAN Data-Link Layer. Our results indicate that the performance of our MPI Broadcast (on top of Ethernet) is about twice as fast as a recently published software implementation of broadcast on top of ATM.

url: http://hdl.handle.net/1813/6084
date: 2007-04-23
creator: Kozen, Dexter
viewed: 33
title: Rational Spaces and Set Constraints
abstract: Set constraints are inclusions between expressions denoting sets of ground terms. They have been used extensively in program analysis and type inference. In this paper we investigate the topological structure of the spaces of solutions to systems of set constraints. We identify a family of topological spaces called {\em rational spaces}, which formalize the notion of a topological space with a regular or self-similar structure, such as the Cantor discontinuum or the space of runs of a finite automaton. We develop the basic theory of rational spaces and derive generalizations and proofs from topological principles of some results in the literature on set constraints.

url: http://hdl.handle.net/1813/6085
date: 2007-04-23
creator: Schneider, Fred B.
viewed: 30
title: Notes on Proof Outline Logic
abstract: Formulas of Proof Outline Logic are program texts annotated with assertions. Assertions may contain control predicates as well as terms whose values depend on previous states, making the assertion language rather expressive. The logic is complete for proving safety properties of concurrent programs. A deductive system for the logic is presented. Solutions to the mutual exclusion and readers/writers problems illustrate how the logic can be used as a tool for program development.

url: http://hdl.handle.net/1813/6086
date: 2007-04-23
creator: Yuan, Wei;Coleman, Thomas F.
viewed: 22
title: A New Trust Region algorithm for Equality Constrained Optimization
abstract: We present a new trust region algorithms for solving nonlinear equality constrained optimization problems. At each iterate a change of variables is performed to improve the ability of the algorithm to follow the constraint level sets. The algorithm employs L_{2} penalty functions for obtaining global convergence. Under certain assumptions we prove that this algorithm globally converges to a point satisfying the second order necessary optimality conditions; the local convergence rate is quadratic. Results of preliminary numerical experiments are presented.

url: http://hdl.handle.net/1813/6087
date: 2007-04-23
creator: Wilcox, Thomas R.
viewed: 27
title: Defining and Manipulating Symbolic Bit Flags in Assembly Language
abstract: NO ABSTRACT SUPPLIED

url: http://hdl.handle.net/1813/6088
date: 2007-04-23
creator: Henzinger, Thomas A.;Alur, Rajeev
viewed: 30

title: A Really Temporal Logic
abstract: We introduce a temporal logic for the specification of real-time systems. Our logic, TPTL, employs a novel quantifier construct for referencing time: the freeze quantifier binds a variable to the time of the local temporal context. TPTL is both a natural language for specification and a suitable formalism for verification. We present a tableau-based decision procedure and a model checking algorithm for TPTL. Several generalizations of TPTL are shown to be highly undecidable.

url: http://hdl.handle.net/1813/6089
date: 2007-04-23
creator: Gehani, Narain
viewed: 77
title: Data Types for Very High Level Programming Languages
abstract: Very high level programming languages (higher than PL/I, Algol 60, etc.) attempt to free the programmer from providing details and let him concentrate on the algorithm for the problem at hand. The importance of very high level programming languages is further emphasized by decreasing machine costs, increased programming costs and the desire to have programs that are well structured, easy to understand and prove correct. Very high level languages provide powerful control structures and data structures that allow the problem to be specified in a natural manner. In this dissertation, we propose several ways of raising the level of a language. The different types of for iteration statements are consolidated into one general for statement. This, along with a new type, the domain of an array, provides us with an easy way of processing arrays; nested iteration statements are no longer necessary. The syntactic list and array generators and the concept of overloading make programming more flexible. The current notion that a data type is a set of values together with basic operations on that set leads us to conclude that formal parameter types need not be explicitly stated. Given a formal parameter X with operations $z_{1}, z_{2},\ldots, z_{n}$ being performed on it within the procedure, one should be able to supply, as an actual parameter in a call, a variable of any type that has the operations $z_{1}, z_{2},\ldots, z_{n}$ defined on it. For example, this concept allows us to write one procedure that finds the maximum value of the elements of an array of any dimension and any element or index type. Grids are arrays that can have any shape. Grid elements need not be contiguous i.e. grids can have holes in them. For example, grids can be trapezoidal, parabolic, rectangular with a hole or pyramid-like. Programs written using grids are more general than those written using arrays and/or functions to simulate non-array shapes. To alter an existing program to work for another grid shape one need only modify the grid declaration suitably, leaving the rest of the program intact. Programs are smaller, semantically clearer and have a more natural problem representation. Grids may be used to represent sparse matrices. Data security is achieved by allowing parts of grids pass as parameters to be readd only or completely masked out. Grids have been implemented as an extension to Fortran. Using Pascal as the base language, we show by series of examples from numerical analysis, data processing, engineering etc., how the above concepts raise the level of a programming language and how they blend together naturally and systematically. Efficient ways of implementing them are also discussed.

url: http://hdl.handle.net/1813/6090
date: 2007-04-23
creator: Strip, David;Conway, Richard W.
viewed: 21
title: Selective Partial Access to a Database
abstract: NO ABSTRACT SUPPLIED

url: http://hdl.handle.net/1813/6091
date: 2007-04-23

creator: Siu, M. K.;Salton, Gerard;Yu, C. T.
viewed: 40
title: Effective Automatic Indexing Using Single Terms, Term Phrases and Thesaurus Class Assignments
abstract: In a retrieval environment, indexing is the task which consists in the assignment to stored records and incoming information requests of content identifiers capable of representing record or query content. It is known that effective content identifiers (index terms) must exhibit the correct level of specificity in a given collection environment. Terms that are too broad must be rendered specific by being utilized as term phrases, while narrow terms must be broadened by supplying synonymous or related terms normally extracted from a thesaurus. Formal proofs are given in the present study of the retrieval effectiveness of indexing policies using single terms, term phrases and thesaurus class assignments for puposes of content representation. Keywords and Phrases: automatic information retrieval, automatic indexing, content analysis, term phrases, thesaurus classes, term addition, term deletion, retrieval evaluation, recall and precision.

url: http://hdl.handle.net/1813/6092
date: 2007-04-23
creator: Zippel, Richard;Rubinfeld, Ronitt
viewed: 21
title: A New Modular Interpolation Algorithm for Factoring Multivariate Polynomials
abstract: In this paper, we present a technique that uses a new interpolation scheme to reconstruct a multivariate polynomial factorization from a number of univariate factorizations. Whereas other interpolation algorithms for polynomial factorization depend on various extensions of the Hilbert irreducibility theorem, our approach is the first to depend only upon the classical formulation. The key to our technique is the interpolation scheme for multivalued black boxes originally developed by Ar et. al. [1]. We feel that this combination of the classical Hilbert irreducibility theorem and multivalued black boxes provides a particularly simple and intuitive approach to polynomial factorization.

url: http://hdl.handle.net/1813/6093
date: 2007-04-23
creator: Mitchell, Scott A.
viewed: 19
title: Mesh Generation With Provable Quality Bounds
abstract: We consider the problem of generating a triangulation of provable quality for two and three dimensional polyhedral regions. That is, we seek a triangulation, allowing additional vertices called Steiner points, such that the triangular or tetrahedral elements have a bound on their shape. In three dimensions we also seek an upper bound on the number of tetrahedra in the triangulation. These triangulation algorithms find application in mesh generation for finite element methods. The polyhedral region must be bounded and well defined, but may have holes of arbitrary complexity. In three dimensions, we assume there are no restrictions on where we may place Steiner points. Our triangulation is optimal in the following two senses. First, our triangulation achieves the best possible aspect ratio up to a constant factor, which is our bound on element shape. Second, for any other triangulation of the same region into m triangles with bounded aspect ratio, our triangulation has size $n = O(m)$. Such a triangulation is desired as an initial mesh for a finite element mesh refinement algorithm. Previous three dimensional triangulation schemes either worked only on a restricted class of input, or did not guarantee well-shaped tetrahedra, or were not able to bound the output size. We build on some of the ideas presented in previous work by Bern, Eppstein and Gilbert, who have shown how to triangulate a two dimensional polyhedral region with holes, with similar quality and optimality bounds. In two dimensions, we assume the restriction that we may introduce Steiner points on the polygon's interior, but not on its boundary. Of all triangulations satisfying this restriction, our triangulation has the maximum minimum angle, up to a constant factor. This is the first known algorithm

for this problem with provably optimal element shape. The algorithm solves several subproblems of mesh generation.

url: http://hdl.handle.net/1813/6094
date: 2007-04-23
creator: Birman, Kenneth P.;Ricciardi, Aleta M.
viewed: 17
title: Process Membership in Asynchronous Environments
abstract: The development of reliable distributed software is simplified by the ability to assume a fail-stop failure model. We discuss the emulation of such a model in an asynchronous distributed environment. The solution we propose, called Strong-GMP, can be supported through a highly efficient protocol, and has been implemented as part of a distributed systems software project at Cornell University. Here, we focus on the precise definition of the problem, the protocol, correctness proofs and an analysis of costs. Keywords: Asynchronous computation; Fault detection; Process membership; Fault tolerance; Process group.

url: http://hdl.handle.net/1813/6095
date: 2007-04-23
creator: Lekas, Tony;Bressoud, Thomas C.;Aizikowitz, Jacob I.;Schneider, Fred B.(Editor);Brown, Richard A.(Editor)
viewed: 26
title: The Trainset Railroad Simulation
abstract: A prototype real-time process control application is described. A simulator for this application is available--its interface is specified.

url: http://hdl.handle.net/1813/6096
date: 2007-04-23
creator: Pnueli, Amir;Manna, Zohar;Henzinger, Thomas A.
viewed: 32
title: Temporal Proof Methodologies for Timed Transition Systems
abstract: We extend the specification language of temporal logic, the corresponding verification framework, and the underlying computational model to deal with real-time properties of reactive systems. The abstract notion of timed transition systems generalizes traditional transition systems conservatively: qualitative fairness requirements are replaced (and superseded) by quantitative lower-bound and upper-bound timing constraints on transitions. This framework can model real-time systems that communicate either through shared variables or by message passing and real-time issues such as timeouts, process priorities (interrupts), and process scheduling. We exhibit two styles for the specification of real-time systems. While the first approach uses time-bounded versions of the temporal operators, the second approach allows explicit references to time through a special clock variable. Corresponding to the two styles of specification, we present and compare two different proof methodologies for the verification of timing requirements that are expressed in these styles. For the bounded-operator style, we provide a set of proof rules for establishing bounded-invariance and bounded-response properties of timed transition systems. This approach generalizes the standard temporal proof rules for verifying invariance and response properties conservatively. For the explicit-clock style, we exploit the observation that every time-bounded property is a safety property and use the standard temporal proof rules for establishing safety properties.

url: http://hdl.handle.net/1813/6097
date: 2007-04-23
creator: Li, Yuying

viewed: 19
title: Solving L_{p}-Norm Problems and Applications
abstract: The l_{p} norm discrete estimation problem min$_{x\in\Re^{n}} \Vert b-A^{T} x\Vert^{p}_{p}$ has been solved in many data analysis applications, e.g. geophysical modeling. Recently, a new globally convergent Newton method (called GNCS) has been proposed for solving $l{p}$ problems with 1 $\leq p \leq$ 2 [5]. This method is much faster than the widely used IRLS method when 1 $\leq p \leq$ 1.5 and comparable to it when $p greater than $ 1.5. In this paper, modification is made to the line search prodedure so that the GNCS method is applicable for l_{p} problems with 1 $\leq p less than \infty$. The global convergence results for l_{1} problems are obtained under weaker assumptions than required in [2]. In addition, the usefulness of l_{p} norm solution with 1 $\leq p \leq$ 2 is demonstrated by applying the GNCS algorithm to a synthetic geophysical tomographic inversion problem. Additional numerical results are included to support the efficiency of GNCS. Key Words: linear regression, discrete estimation, tomographic inversion, IRLS, GNCS, linear programming, Newton method. Subject Classification: AMS/MOS: 65H10, 65K05, 65K10.

url: http://hdl.handle.net/1813/6098
date: 2007-04-23
creator: Jayanti, Prasad
viewed: 26
title: On the Robustness of Herlihy's Hierarchy
abstract: A wait-free hierarchy maps object types to levels in $Z^{+} \cup \{ \infty \}$, and has the following property: if a type T is at level N, and T' is an arbitrary type, then there is a wait-free implementation of an object of type T', for N processes, using only registers and objects of type T. The infinite hierarchy defined by Herlihy is an example of a wait-free hierarchy. A wait-free hierarchy is robust if it has the following property: if T is at level N, and $\cal S$ is a finite set of types belonging to levels N -- 1 or lower, then there is no wait-free implementation of an object of type T, for N processes, using any number and any combination of objects belonging to the types in $\cal S$. Robustness implies that there are no clever ways of combining weak shared objects to obtain stronger ones. Contrary to what many reserchers believe [AGTV92, AR92, Her91a], we prove that Herlihy's hierarchy is not robust. We then define some natural variants of Herlihy's hierarchy, which are also infinite wait-free hierarchies. With the exception of one, which is still open, these are not robust either. We conclude with the open question of whether non-trivial robust wait-free hierarchies exist.

url: http://hdl.handle.net/1813/6099
date: 2007-04-23
creator: Marzullo, Keith;Bard, Bloom;Scheider, Fred B.
viewed: 82
title: Putting Time into Proof Outlines
abstract: A logic for reasoning about timing properties of concurrent programs is presented. The logic is based on Hoare-style proof outlines and can handle maximal parallelism as well as certain resource-constrained execution environments. The correctness proof for a mutual exclusion protocol that uses execution timings in a subtle way illustrates the logic in action. A soundness proof using structual operational semantics is outlines in the appendix.

url: http://hdl.handle.net/1813/6100
date: 2007-04-23
creator: Buckley, Chris;Allan, James;Salton, Gerard
viewed: 29
title: Approaches to Passage Retrieval in Full Text Information Systems

abstract: Large collections of full-text documents are now commonly used in automated information retrieval. When the stored document texts are long, the retrieval of complete documents may not be in the users' best interest. In such circumstances, efficient and effective retrieval results may be obtained by using passage retrieval strategies designed to retrieve text excerpts of varying size in response to statements of user interest. New approaches are described in this study for implementing selective passage retrieval systems, and identifying text passages responsive to particular user needs. An automated encyclopedia search system is used to evaluate the usefulness of the proposed methods.

url: http://hdl.handle.net/1813/6101
date: 2007-04-23
creator: Leeser, Miriam;Aagaard, Mark
viewed: 72
title: A Theorem Proving Based Methodology for Software Verification
abstract: We have developed an effective methodology for using a proof development system to prove properties about functional programs. This methodology includes techniques such as hiding implementation details and using higher order theorems to structure proofs and aid in abstract reasoning. The methodology was discovered and refined while verifying a logic synthesis tool with the Nuprl proof development system. The logic synthesis tool, Pbs, implements the weak division algorithm. Pbs consists of approximately 1000 lines of code implemented in a functional subset of Standard ML. It is a proven and usable implementation of a hardware synthesis tool. The program was verified by embedding the subset of SML in Nuprl and then verifying the correctness of the implementation of Pbs in the Nuprl logic.

url: http://hdl.handle.net/1813/6102
date: 2007-04-23
creator: Pansiot, J.;Hopcroft, John E.
viewed: 23
title: On the Reachability Problem for 5-Dimensional Vector Addition Systems
abstract: The reachability set for vector addition systems of dimension less than or equal to five are shown to be effectively computable semilinear sets. Thus reachability, equvalence and containment are decidable up to dimension 5. An example of a non-semilinear reachability set is given for dimension 6. Keywords and phrases: Vector addition system, Petri net, semilinear set, algorithms, decidability.

url: http://hdl.handle.net/1813/6103
date: 2007-04-23
creator: Pathria, Dimpy;Trefethen, Lloyd N.;Reddy, Satish C.
viewed: 28
title: Pseudospectra of the Convection-Diffusion Operator
abstract: The spectrum of the simplest 1D convection-diffusion operator is a discrete subset of the negative real axis, but the pseudospectra are regions in the complex plane that approximate parabolas. Put another way, the norm of the resolvent is exponentially large as a function of the Peclet number throughout a certain parabolic region. These observations have a simple physical basis, and suggest that conventional spectral analysis for convection-diffusion operators may be of limited value in some applications.

url: http://hdl.handle.net/1813/6104
date: 2007-04-23
creator: Fischer, Ted
viewed: 26
title: Optimizing the Degree of Minimum Weight Spanning Trees

abstract: This paper presents two algorithms to construct minimum weight spanning trees with approximately minimum degree. The first method gives a spanning tree whose maximum degree is $O(\delta^{*} + logn)$ where δ^{*} is the minimum possible, and n is the number of vertices. The second method gives a spanning tree of degree no more than $k \cdot (\delta^{*} + 1)$, where k is the number of distinct weights in the graph. Finding the exact minimum is NP-hard.

url: http://hdl.handle.net/1813/6105
date: 2007-04-23
creator: Ricciardi, Aleta M.;Schiper, Andre
viewed: 39
title: Virtually-Synchronous Communication Based on a Weak Failure Suspector
abstract: Failure detectors (or, more accurately, Failure Suspectors - FS) appear to be a fundamental service upon which to build fault-tolerant, distributed applications. This paper shows that a FS with very weak semantics (i.e. that delivers failure and recovery information in no specific order) suffices to implement virtually-synchronous communication (VSC) in an asynchronous system subject to process crash failures and network partitions. The VSC paradigm is particularly useful in asynchronous systems and greatly simplifies building fault-tolerant applications that mask failures by replicating processes. We suggest a three-component architecture to implement virtually-synchronous communication : 1) at the lowest level, the FS component; on top of it, 2a) a component that defines new views, and 2b) a component that reliably multicasts messages within a view. The issues covered in this paper also lead to a better understanding of the various membership service semantics proposed in recent literature.

url: http://hdl.handle.net/1813/6106
date: 2007-04-23
creator: Chandra, Tushar Deepak;Chandra, Siddharth
viewed: 84
title: Undecidability in Macroeconomics (Preliminary Draft)
abstract: In this paper, we study the difficulty of solving problems in economics. For this purpose, we adopt the notion of undecidability from recursion theory. We show that certain problems in economics are undecidable, i.e., cannot be solved by a Turing Machine, a device that is at least as powerful as any computational device that can be constructed [2]. In particular, we prove that even in finite closed economies subject to a variable initial condition, in which a social planner knows the behavior of every agent in the economy, certain important social planning problems are undecidable. Thus, it may be impossible to make effective policy decisions. Philosophically, this result formally brings into question the Rational Expectations Hypothesis, which assumes that each agent is able to determine what it should do if it wishes to maximize its utility. We show that even when an optimal rational forecast exists for each agent (based on the information currently available to it), agents may lack the ability to make these forecasts. For example, Lucas [7] describes economic models as “mechanical, artificial world(s), populated by ... interacting robots”. Since any mechanical robot can be at most as computationally powerful as a Turing Machine, such economies are vulnerable to the phenomenon of undecidability.

url: http://hdl.handle.net/1813/6107
date: 2007-04-23
creator: Donald, Bruce Randall
viewed: 19
title: On Information Invariants in Robotics
abstract: We consider the problem of determining the information requirements to perform robot tasks, using the concept of information invariants. This paper represents our attempt to characterize a family of

complicated and subtle issues concerned with measuring robot task complexity. We also provide a first approximation to a purely operational theory that addresses a narrow but interesting special case. We discuss several measures for the information complexity of a task: (a) How much internal state should the robot retain? (b)How many cooperating agents are required, and how much communication between them is necessary? (c) How can the robot change (side-effect) the environment in order to record state or sensory information to perform a task? (d) How much information is provided by sensors? and (e) How much computation is required by the robot? We consider how one might develop a kind of "calculus" on (a) - (e) in order to compare the power of sensor systems analytically. To this end, we attempt to develop a notion of information invariants. We develop a theory whereby one sensor can be "reduced" to another (much in the spirit of computation-theoretic reductions), by adding, deleting and reallocating (a) - (e) among collaborating autonomous agents.

url: http://hdl.handle.net/1813/6108
date: 2007-04-23
creator: Li, Yuying;Coleman, Thomas F.
viewed: 22
title: An Interior Trust Region Approach for Nonlinear Minimization Subject to Bounds
abstract: We propose a new trust region approach for minimizing a nonlinear function subject to simple bounds. By choosing an appropriate quadratic model and scaling matrix at each iteration, we show that it is not necessary to solve a quadratic programming subproblem, with linear inequalities, to obtain an improved step using the trust region idea. Instead, a solution to a trust region subproblem is defined by minimizing a quadratic function subject only to an ellipsoidal constraint. The iterates generated by these methods are always strictly feasible. Our proposed methods reduce to a standard trust region approach for the unconstrained problem when there are no upper or lower bounds on the variables. Global and quadratic convergence of the methods is established; preliminary numerical experiments are reported.

url: http://hdl.handle.net/1813/6109
date: 2007-04-23
creator: Ho, Pei-Hsin;Henzinger, Thomas A.;Courcoubetis, Costas;Alur, Rajeev
viewed: 39
title: Hybrid Automata: An Algorithmic Approach to the Specification and Verification of Hybrid Systems
abstract: We introduce the framework of hybrid automata as a model and specification language for hybrid systems. Hybrid automata can be viewed as a generalization of timed automata, in which the behavior of variables is governed in each state by a set of differential equations. We show that many of the examples considered in the workshop can be defined by hybrid automata. While the reachability problem is undecidable even for very restricted classes of hybrid automata, we present two semidecision procedures for verifying safety properties of piecewise-linear hybrid automata, in which all variables change at constant rates. The two procedures are based, respectively, on minimizing and computing fixpoints on generally infinite state spaces. We show that if the procedures terminate, then they give correct answers. We then demonstrate that for many of the typical workshop examples, the procedures do terminate and thus provide an automatic way for verifying their properties.

url: http://hdl.handle.net/1813/6110
date: 2007-04-23
creator: Pnueli, Amir;Manna, Zohar;Henzinger, Thomas A.
viewed: 16
title: Towards Refining Temporal Specifications into Hybrid Systems
abstract: We propose a formal framework for designing hybrid systems by stepwise refinement. Starting

with a specification in hybrid temporal logic, we make successively more transitions explicit until we obtain an executable system.

url: http://hdl.handle.net/1813/6111
date: 2007-04-23
creator: Henzinger, Thomas A.;Alur, Rajeev
viewed: 28
title: Parametric Real-Time Reasoning
abstract: Traditional approaches to the algorithmic verification of real-time systems are limited to checking program correctness with respect to concrete timing properties (e.g., "message delivery within 10 milliseconds"). We address the more realistic and more ambitious problem of deriving symbolic constraints on the timing properties required of real-time systems (e.g., "message delivery within the time it takes to execute two assignment statements"). To model this problem, we introduce parametric timed automata - finite-state machines whose transitions are constrained with parametric timing requirements. The emptiness question for parametric timed automata is central to the verification problem. On the negative side, we show that in general this question is undecidable. On the positive side, we provide algorithms for checking the emptiness of restricted classes of parametric timed automata. The practical relevance of these classes is illustrated with several verification examples. There remains a gap between the automata classes for which we know that emptiness is decidable and undecidable, respectively, and this gap is related to various hard and open problems of logic and automata theory.

url: http://hdl.handle.net/1813/6112
date: 2007-04-23
creator: Marzullo, Keith;Budhiraja, Navin
viewed: 20
title: Tradeoffs in Implementing Primary-Backup Protocols
abstract: One way to implement a fault-tolerant service is to replicate the state of a server across a primary server and a set of backup servers. Clients make requests to the primary, which then computes the response, informs the backup of the state change, and then replies to the client. If the primary subsequently fails then a backup takes over as a new primary. Informally, the primary-backup protocol is nonblocking if the primary need not wait for acknowledgements from the backups before responding to the client. While most primary-backup protocols are blocking, we argue that non-blocking protocols can be constructed for most of the process and communication failures that are expected to occur in future communications systems. We then implement and measure the performance of two kinds of nonblocking protocols--one based on point-to-point communication and one based on broadcast--and compare the results with conventional blocking primary-backup protocols.

url: http://hdl.handle.net/1813/6113
date: 2007-04-23
creator: Zippel, Richard;Palmer, Richard S.;Cremer, James F.;Chew, L. Paul;Berkooz, Gal
viewed: 39
title: Generating Spectral Method Solvers for Partial Differential Equations
abstract: A major cost in scientific computing is the creation of software that performs the numerical computations. This paper presents preliminary results on research to build a framework for automating the construction of numerical solvers for differential equations. Within this framework, the scientific computing problem is described using a very high level programming language that captures the original differential equations in a natural fashion. A sequence of code "transformers" are used to gradually refine the high level description of the problem into a concrete, executable form. Numerical techniques like the finite

element method, the spectral method and the Crank-Nicolson discretization scheme are encoded in these transformers and once so encoded can be applied to a wide variety of different problems. This framework provides a natural environment for coarse scale parallelization based on relatively abstract properties of the specific equations and methods.

url: http://hdl.handle.net/1813/6114
date: 2007-04-23
creator: Salesin, David.;Arvo, James;Novins, Kevin L.
viewed: 33
title: Adaptive Error Bracketing for Controlled-Precision Volume Rendering
abstract: We present a new ray tracing approach to volume rendering in which the low-albedo volume rendering integral for each ray is efficiently computed to any prescribed accuracy. By bracketing the emission and absorption functions along each ray with adaptively refined step functions, computation is directed toward large sources of error and continued until a desired accuracy is reached. As a result, coarse approximations can be used in regions that are nearly uniform, of low emission, or of low visibility due to absorption by material closer to the eye. Adaptive refinement for each ray is performed using a hierarchical organization of the volume data; at each step, a part of the ray estimated to contribute large error is refined, and the approximate integral is updated incrementally. Our current implementation operates on regularly-spaced data samples combined with trilinear interpolation; however, the concepts described apply to more general data topologies and reconstruction filters.

url: http://hdl.handle.net/1813/6115
date: 2007-04-23
creator: Rus, Daniela
viewed: 24
title: Fine Motion Planning for Dexterous Manipulation
abstract: This thesis investigates the problem of dexterous manipulation; how can robots affect the world around them by means of their end-effectors? Dexterous manipulation is fundamental to robots operating intelligently and independently in their environments and it is a special motion planning problem. Since the general motion planning problem with uncertainty is NEXP-hard, effort must be directed to defining classes of tasks that are tractable. We consider the reorientation problem: for a given robot hand, an arbitrary object, and a desired orientation with respect to the hand, find an algorithm to synthesize a robust plan for the fingers that accomplishes the desired reorientation. A reorientation algorithm devised for a robot hand should satisfy several properties. First, it must be able to accomplish arbitrarily large rotations. Second, since it must be implemented on a real device, it should involve simple finger motions that can be computed fast. Third, since the application domain is characterized by uncertainties that manifest themselves as imprecisions in calculations and inaccuracies in control, it must exhibit good stability properties. We propose algorithms for the reorientation problem that satisfy these properties. The basic idea is to use some of the robot fingers to constrain the motion of the object and others to generate motion. This results in the idea of finger tracking as a high-level primitive for manipulation. We also propose an algebraic framework for manipulation that is theoretically well-founded and in which it is possible to use systematically and effectively the differential equations describing the interaction between objects in contact. Finally, we describe a simulator for the reorientation of polyhedra by finger tracking.

url: http://hdl.handle.net/1813/6116
date: 2007-04-23
creator: Tampieri, Filippo
viewed: 34

title: Discontinuity Meshing for Radiosity Image Synthesis
abstract: The simulation of global illumination is one of the most fundamental problems in computer graphics, with applications is a wide variety of areas. This problem studies the light energy transfer between reflective surfaces in an environment. Initially derived from the field of thermal engineering, radiosity has emerged over the past several years as one of the most promising solution methods. Despite having produced some of the most realistic-looking computer generated images to date, radiosity methods have not yet met with widespread acceptance. The main obstacle has been their need for very careful and time consuming user intervention, without which, current techniques are prone to generating a wide range of annoying visual artifacts. These artifacts are generally due to poor surface meshing, resulting in insufficient sampling density and ineffective sample placement. This thesis investigates the roots of this problem by taking a step back from the traditional finite element formulation of radiosity and examining the more general integral equation formulation. An analysis of the radiance functions described by this equation shows how umbra and penumbra boundaries as well as other sharp changes in illumination actually correspond to discontinuities in the radiance function and its derivatives. The results of this analysis have led to the concept of discontinuity meshing, whereby accurate approximations to the radiance functions are computed by explicitly representing their discontinuities as boundaries in the mesh. This concept has been applied to the design of a discontinuity meshing algorithm for polyhedral environments. The algorithm is embedded in a progressive refinement radiosity system and uses piecewise quadratic interpolation to reconstruct a smooth radiance function while preserving discontinuities where appropriate. The radiosity solutions produced by the new algorithm are compared against a photograph of a physical environment, an analytical solution, and a conventional, yet state-of-the-art, radiosity system, and its performance on architectural models of medium complexity is measured. The results are remarkably accurate both numerically and visually. The new discontinuity meshing algorithm drastically reduces, and in many cases eliminates, many of the annoying artifacts typical of conventional radiosity meshes, producing images of previously unattained quality. Moreover, the meshing is completely automatic and produces solutions that are highly view-independent.

url: http://hdl.handle.net/1813/6117
date: 2007-04-23
creator: Fortune, Steven;Chew, L. Paul
viewed: 17
title: Sorting Helps for Voronoi Diagrams
abstract: It is well known that, using standard models of computation, it requires $\Omega(n$ log n) time to build a Voronoi diagram for n data points. This follows from the fact that a Voronoi diagram algorithm can be used to sort. But if the data points are sorted before we start, can the Voronoi diagram be built any faster? We show that for certain interesting, although nonstandard types of Voronoi diagrams, sorting helps. These nonstandard types Voronoi diagrams use a convex distance function instead of the standard Euclidean distance. A convex distance function exists for any convex shape, but the distance functions based on polygons (especially triangles) lead to particularly efficient Voronoi diagram algorithms - fast algorithms using simple data structures. Specifically, a Voronoi diagram using a convex distance function based on a triangle can be built in $O(n$ log log n) time after initially sorting the n data points twice. Convex distance functions based on other polygons require more initial sorting.

url: http://hdl.handle.net/1813/6118
date: 2007-04-23
creator: Chew, L. Paul
viewed: 60
title: Near-Quadratic Bounds for the L_{1} Voronoi Diagram of Moving Points
abstract: Given a set of n moving points in the plane, how many topological changes occur in the Voronoi

diagram of the points? If each point has constant velocity then there is an upper bound of $O(n^{3})$ [Guibas, Mitchell and Roos] and an easy lower bound of $\Omega(n^{2})$. It is widely believed that the true upper bound should be close to $O(n^{2})$. We show this belief to be true for the case of Voronoi diagrams based on the L_{1} (or L_{∞}) metric; the number of changes is shown to be $O(n^{2} \alpha (n))$ where $\alpha(n)$ grows so slowly it is effectively a small constant for all reasonable values of n.

url: http://hdl.handle.net/1813/6119
date: 2007-04-23
creator: Glade, Bradford B.;Birman, Kenneth P.
viewed: 16
title: Consistent Failure Reporting in Reliable Communication Systems
abstract: The difficulty of developing reliable distributed software is an impediment to applying distributed computing technology in many settings. This paper reviews some common platforms for distributed software development and argues that inconsistent failure reporting in communication mechanisms represents a significant obstacle to reliability.

url: http://hdl.handle.net/1813/6120
date: 2007-04-23
creator: Kleinberg, Jon M.
viewed: 27
title: A Lower Bound for Two-Server Balancing Algorithms
abstract: We consider the class of balancing algorithms for two servers. Such algorithms have appeared in a number of the early papers on this problem; they are so named because they seek to "balance" the distance travelled evenly among the servers. In this paper, we show a universal lower bound on the competitive ratio of any balancing algorithm for two servers. The lower bound is equal to (5 + $\sqrt{7}$)/2 ($\sim$ 3.82), and consequently shows that no optimal on-line algorithm for two servers can be expressed as a balancing algorithm.

url: http://hdl.handle.net/1813/6121
date: 2007-04-23
creator: Mullainathan, Sendhil;Kleinberg, Jon M.
viewed: 15
title: Resource Bounds and Combinations of Consensus Objects
abstract: The shared-memory model of computation typically provides processes with an arbitrary number of copies of the available object types; yet a simple argument shows that any consensus protocol can only make use of some finite subset of these. Thus we believe it is useful to consider the problem of consensus from the point of view of resource bounds, determining whether consensus can still be solved when the number of copies of the system's shared objects is limited. This approach leads to a general technique which we call the combination protocol, in which the number of processes that can achieve consensus with a given object increases as more copies of it are made available. Such a phenomenon brings up questions about the robustness of Herlihy's consensus hierarchy, in that objects are being combined to solve n-process consensus, even though no single copy can do so individually. We show how the ideas in the combination protocol appear even in situations where objects are not explicitly being combined with one another; we also consider the general question of resource bounds in several known consensus protocols. We analyze two such protocols that use seemingly similar primitives, achieving a substantial improvement in one case and showing a tight lower bound in the other.

url: http://hdl.handle.net/1813/6122

date: 2007-04-23
creator: Wimmers, Ed;Vardi, Moshe;Kozen, Dexter;Aiken, Alexander
viewed: 20
title: The Complexity of Set Constraints
abstract: Set constraints are relations between sets of terms. They have been used extensively in various applications in program analysis and type inference. We present several results on the computational complexity of solving systems of set constraints. The systems we study form a natural complexity hierarchy depending on the form of the language.

url: http://hdl.handle.net/1813/6123
date: 2007-04-23
creator: Budhiraja, Navin
viewed: 17
title: The Primary-Backup Approach: Lower and Upper Bounds
abstract: The most widely used approach to building replicated, fault-tolerant services is the primary-backup approach. In this approach, the state of the service is replicated across multiple servers, with one server designated as the primary and the rest as backups. Clients send requests only to the primary. However, in case the primary fails, one of the backups takes over as the new primary. Ever since it was introduced in 1976 by Alsberg and Day, the primary-backup approach has become the basis for building many practical fault-tolerant services. However, despite the widespread use, the approach has not been studied systematically, and little is known of the fundamental costs and tradeoffs of using the approach under various kinds of failures. Thus, there is a gap between theory and practice. In order to close this gap, this thesis analyzes the primary-backup approach, both from the theoretical perspective of specification, lower bounds and upper bounds, as well as from the practical viewpoint of performance tradeoffs in protocols. We identify three key cost metrics of primary-backup protocols--degree of replication, blocking time and failover time--and then show lower and upper bounds on these metrics for a hierarchy of failure models. We then implement an important subclass of our primary-backup protocols, called 0-blocking protocols, and give performance figures. In addition to leading to the development of new, more efficient protocols, we believe that the work in this thesis has resulted in a better understanding of the properties of existing primary-backup protocols.

url: http://hdl.handle.net/1813/6124
date: 2007-04-23
creator: Van Renesse, Robbert;Birman, Kenneth P.;Reiter, Michael K.
viewed: 32
title: A Security Architecture for Fault-Tolerant Systems
abstract: Process groups are a common abstraction for fault-tolerant computing in distributed systems. We present a security architecture that extends the process group into a security abstraction. Integral parts of this architecture are services that securely and fault-tolerantly support cryptographic key distribution using novel techniques. We detail the design and implementation of these services and the secure process group abstraction they support. We also give performance figures for some common group operations.

url: http://hdl.handle.net/1813/6125
date: 2007-04-23
creator: Birman, Kenneth P.;Schiper, Andre;Ricciardi, Aleta M.
viewed: 90
title: Understanding Partitions and the “No Partition” Assumption
abstract: The paper discusses partitions in asynchronous message-passing systems. In such systems slow processes and slow links can lead to virtual partitions that are indistinguishable from real ones. This raises

the following question: what is a "partition" in an asynchronous system? To overcome the impossibility of detecting crashed processes in an asynchronous system, our system model incorporates a failure suspector to detect (possibly erroneously) process failures. Based on failure suspicions we give a definition of partitions that acccounts for real partitions as well as virtual ones. We show that under certain assumptions about the process behavior, any incorrect failure suspicion inevitably partitions the system. We then show how to interpret the "absence of partition" assumption.

url: http://hdl.handle.net/1813/6126
date: 2007-04-23
creator: Panconesi, Alessandro
viewed: 27
title: Locality in Distributed Computing
abstract: The topic of this thesis is the issue of locality in distributed computing. A first set of results in this thesis concerns the Δ-vertex coloring problem. They are all based on the following result. Let G be a graph such that $\Delta \geq 3, G$ is not a complete graph, and such that all of G except one vertex v is Δ-colored. Then, it is possible to extend this Δ-coloring to all of G by recoloring a path originating from v of length at most $O(\log_{\Delta}n)$. This property allows us to develop several efficient algorithms for Δ-coloring. In particular, but not exclusively, in the distributed and PRAM models of computation. It also implies a well-known result of Brooks as a corollary. Another set of results concerns network decomposition - a basic notion in distributed graph algorithms. We improve the bounds for computing a network decomposition distributively and deterministically. Our algorithm computes an $(n^{\epsilon(n)},n^{\epsilon(n)})$-decomposition in $O(n^{\epsilon(n)})$ time, where $\epsilon(n) = O(1/\sqrt{\log n})$. We also show that the class of graphs $\cal G$ whose maximum degree is $O(n^{\delta(n)}$, where $\delta(n) = O(1/\log \log n)$, is complete for the task of computing a ($\log n, \log n)$-decomposition, in polylogarithmic in n time. Completeness is to be intended in the following sense: if we have an algorithm $\cal A$ that computes a $(\log n, \log n)$-decomposition in polylogarithmic in n time for graphs in $\cal G$, then we can compute a $(\log n, \log n)$-decomposition in polylogarithmic in n time for all graphs. A last set of results concerns the edge coloring problem. We give a randomized distributed algorithm to compute an edge coloring of a given network G, that uses at most $1.6\Delta + \log^{2+\delta} n$ colors, for any $\delta greater than 0$. The running time is $O(\log n)$ and the failure probability is at most ϵ, for any fixed $\epsilon greater than 0$. The algorithm is quite simple but requires an interesting probabilistic analysis. At the core of the analysis is an extension of the Chernoff-Hoeffding bounds, which are fundamental tools used in estimating the tail probabilities of the sum of Bernoulli-like trials.

url: http://hdl.handle.net/1813/6127
date: 2007-04-23
creator: Srinivasan, Aravind;Panconesi, Alessandro
viewed: 79
title: Randomized Distributed Edge Coloring via an Extension of the Chernoff-Hoeffding Bounds
abstract: Certain types of routing, scheduling and resource allocation problems in a distributed setting can be modeled as edge coloring problems. We present fast and simple randomized algorithms for edge coloring a graph, in the synchronous distributed point-to-point model of computation. Our algorithms compute an edge-coloring of a graph G with n nodes and maximum degree Δ with at most $(1.6 + \epsilon)\Delta + \log^{2+\delta} n$ colors with high probability (arbitrarily close to 1), for any fixed $\epsilon,\delta greater than 0$. To analyze the performance of our algorithms, we introduce an extension of the Chernoff-Hoeffding bounds, which are fundamental tools that are used very frequently in estimating tail probabilities. However, they assume stochastic independence among certain random variables, which may not always hold. Our results extend the Chernoff-Hoeffding bounds to certain types of random variables which are

not stochastically independent. We believe that these results are of independent interest, and merit further study.

url: http://hdl.handle.net/1813/6128
date: 2007-04-23
creator: Srinivasan, Aravind;Panconesi, Alessandro
viewed: 29
title: On the Complexity of Distributed Network Decomposition
abstract: In this paper, we improve the bounds for computing a network decomposition, which is a basic notion in distributed graph algorithms, distributively and deterministically. Our algorithm computes an $(n^{\epsilon(n)},(n^{\epsilon(n)})$-decomposition in $O(n^{\epsilon(n)})$ time, where $\epsilon(n)=O(1/ \sqrt{\log n})$. As a corollary we obtain improved deterministic bounds for distributively computing several graph structures such as maximal independent sets and Δ-vertex colorings. We also show that the class of graphs $\cal G$ whose maximum degree is $O(n^{\delta(n)})$, where $\delta(n)=O(1/\log \log n)$, is complete for the task of computing a near-optimal decomposition, i.e., a $(\log n \log n)$-decomposition, in $O($polylog$(n))$ time. This is a corollary of a more general characterization, which pinpoints the weak points of existing network decomposition algorithms. Completeness is to be intended in the following sense: if we have an algorithm $\cal A$ that computes an optimal decomposition in $O($polylog$(n))$ time for graphs in $\cal G$, then we can compute an optimal decomposition in $O($polylog $(n))$ time for all graphs.

url: http://hdl.handle.net/1813/6129
date: 2007-04-23
creator: Srinivasan, Aravind;Rohatgi, Pankaj;Chari, Suresh
viewed: 33
title: Randomness-Optimal Unique Element Isolation, With Applications to Perfect Matching and Related Problems
abstract: In this paper, we precisely characterize the randomness complexity of the unique element isolation problem, a crucial step in the RNC algorithm for perfect matching due to Mulmuley, Vazirani and Vazirani[21] and in several other applications. Given a set S and an unknown family $\cal F \subseteq$ 2^{S} with $|\cal F| \leq$ Z, we present a scheme to assign polynomially bounded weights to the elements of S, using only $O(\log Z + \log |S|)$ ransom bits, such that the minimum weight set in $\cal F$ is unique with high probability. This generalizes and improves the results of Mulmuley, Vazirani and Vazirani who give a scheme which uses $O(S \log S)$ random bits independent of Z. We also prove a matching lower bound for the randomness complexity of this problem. This new weight assignment scheme yields a randomness-efficient RNC^{2} algorithm for perfect matching which uses $O(\log Z + \log n)$ random bits where Z is any given upper bound on the number of perfect matchings in the input graph. This generalizes the result of Grigoriev and Karpinski[11] who present an NC^{3} algorithm when Z is polynomially bounded and also gives an improvement on the running time in this case. The worst-case randomness complexity of our algorithm is $O(n \log (m/n))$ random bits, as opposed to the previous bound of $O(m \log n)$ bits. Our technique also gives randomness-efficient solutions for several problems in which the unique element isolation tool is used, such as RNC algorithms for variants of matching and basic problems on linear matroids such as matroid intersection and matroid matching. We also obtain a randomness-efficient alternative to the random reduction from SAT to $USAT$, the language of uniquely satisfiable formulas, due to Valiant and Vazirani[32]. This reduction can be derandomized in the case of languages in $F ew P$ to yield new proofs of the results $F ew P \subseteq \oplus P$ and $F ew P \subseteq C_{=} P$.

url: http://hdl.handle.net/1813/6130
date: 2007-04-23

creator: Trefethen, Lloyd N.;Toh, Kim-Chuan
viewed: 37
title: Pseudozeros of Polynomials and Pseudospectra of Companion Matrices
abstract: It is well known that the zeros of a polynomial p are equal to the eigenvalues of the associated companion matrix A. In this paper, we take a geometric view of the conditioning of these two problems and of the stability of algorithms for polynomial zerofinding. The ϵ-pseudozero set $Z_{\epsilon}(p)$ is the set of zeros of all polynomials $\hat{p}$ obtained by coefficientwise perturbations of p of size $\leq \epsilon$; this is a subset of the complex plane considered earlier by Mosier, and is bounded by a certain generalized lemniscate. The ϵ-pseudospectrum $\Lambda_{\epsilon}(A)$ is another subset of C defined as the set of eigenvalues of matrices $\hat{A}=A+E$ with $||E|| \leq\epsilon$; it is bounded by a level curve of the resolvent of A. We find that if A is first balanced in the usual EISPACK sense, then $Z_{\epsilon||p||}(p)$ and $\Lambda_{\epsilon||A||}(A)$ are usually quite close to one another. It follows that the Matlab ROOTS algorithm of balancing the companion matrix, then computing its eigenvalues, is a stable algorithm for polynomial zerofinding. Experimental comparisons with the Jenkins-Traub (IMSL) and Madsen-Reid (Harwell) Fortran codes confirm that these three algorithms have roughly similar stability properties. Key words: polynomial zeros, comapnion matrix, pseudospectrum.

url: http://hdl.handle.net/1813/6131
date: 2007-04-23
creator: Ressler, Gene K.
viewed: 16
title: Alex - A Paradigm for Expressing and Compiling Matrix Functions
abstract: This work presents formal and practical tools to support the Alex paradigm for expressing and compiling matrix functions. Alex programs are recursive definitions over matrices with the same flavor as the elegant FP languages of Backus. Many useful matrix algorithms can be expressed in both FP and Alex without any explicit index arithmetic. While FP is very difficult to compile to fast numerical codes, we show that Alex functions admit compile-time analyses and code generation techniques with efficient results. In particular, we give a type system that expresses matrix sizes and shapes, a sound and complete inference algorithm for these types, and a code generation algorithm that is space-efficient--storage is allocated only for user function parameters and results. Finally, we give an algorithm that determines when it is safe to replace call by value array parameters in the compiled code with call by reference. A compiler using these techniques generates C code from Alex programs which is at least as fast as code one would write by hand for some small problems. We conclude with discussion of how the fundamental techniques given here relate to previous work and how they should be extended to a general functional language or incorporated as a feature of an existing one.

url: http://hdl.handle.net/1813/6132
date: 2007-04-23
creator: Wimmers, Ed;Kozen, Dexter;Aiken, Alexander
viewed: 30
title: Decidability of Systems of Set Constraints with Negative Constraints
abstract: Set constraints are relations between sets of terms. They have been used extensively in various applications in program analysis and type inference. Recently, several algorithms for solving general systems of positive set constraints have appeared. In this paper, we consider systems of mixed positive and negative constraints, which are considerably more expressive than positive constraints alone. We show that it is decidable whether a given such system has a solution. The proof involves a reduction to a number-theoretic decision problem that may be of independent interest.

url: http://hdl.handle.net/1813/6133
date: 2007-04-23
creator: Webber, Adam Brooks
viewed: 16
title: Principled Optimization of Functional Programs
abstract: Automatic optimizers for computer programs work with a fixed list of rote transformations, while human programmers can go on to derive new optimizations from broad and intuitive principles if known transformations prove inadequate. This dissertation investigates the possibility that principled optimization can be automated, focusing on a single principle (the principle that programs should not do anything unnecessary) and a single program domain (the domain of purely functional, first-order programs). Three questions are explored: How can the principle be formalized? How can violations of the principle be detected? How can violations be repaired? The trace grammar is a new representation for first-order functional programs. It permits a simple formal statement of the optimizing principle. A trace grammar is a kind of graph grammar. An individual graph represents a path of execution through the program, without any loops or conditionals. The grammar for a program generates a language of graphs representing the possible paths of execution through that program. Trace grammars provide unique leverage for the twin problems of identifying and repairing violations of the principle. Detecting violations of the principle is a problem in semantic analysis. A new method of inference, the relational constraint method, helps make this tractable. The method treats a trace graph as a system of constraints on a lattice of binary relations, and uses those constraints to develop the strongest relation it can find for each pair of values in the graph. Repairing violations is not easy: given an example of an unnecessary computation performed by the program, one wants to modify the program so that it never makes that mistake. This grammar thinning problem for trace grammars corresponds to an interesting open problem on context-free grammars. An (approximate) solution to this CFG problem yields an optimization technique for trace grammars. An optimizer called Thinner is the proof-of-concept for these ideas. Using the techniques outlined above, Thinner rediscovers a variety of common compiler optimizations. It also finds other, more exotic transformations, including the well-known Fibonacci reformulation. Thinner demonstrates the potential of the principled approach as a high-powered optimizing tool.

url: http://hdl.handle.net/1813/6134
date: 2007-04-23
creator: Vavasis, Stephen A.
viewed: 16
title: Stable Finite Elements for Problems With Wild Coefficients
abstract: We consider solving an elliptic boundary value problem in the case that the coefficients vary by many orders of magnitude over the domain. A linear finite element method is used. It is shown that the standard method for solving the resulting linear equations in finite-precision arithmetic can give an arbitrarily inaccurate answer because of ill-conditioning in the stiffness matrix. A new method for solving the linear equations is proposed. This method is based on a "mixed formulation" and gives a numerically accurate answer independent of the variation in the coefficients. The numerical error in the solution of the linear system for the new method is shown to depend on the aspect ratio of the triangulation.

url: http://hdl.handle.net/1813/6135
date: 2007-04-23
creator: Pingali, Keshav;Pearson, David;Johnson, Richard C.
viewed: 23
title: Finding Regions Fast: Single Entry Single Exit and Control Regions in Linear Time
abstract: Many compilation problems require computing the control dependence equivalence relation which

divides nodes in a control flow graph into equivalence classes such that nodes are in the same class if and only if they have the same set of control dependences. In this paper, we show that this relation can be computed in $O(E)$ time by reducing it to a naturally stated graph problem: in a strongly connected component, divide nodes into equivalence classes such that every cycle passes through all or none of the nodes in an equivalence class. Our algorithm does not require the computation of the control dependence relation or of the postdominator relation - in fact, it runs faster in practice than the best algorithms for either of these problems. We also show that our algorithm can be used to determine the single entry single exit regions of a control flow graph in $O(E)$ time.

url: http://hdl.handle.net/1813/6136
date: 2007-04-23
creator: Allan, James;Salton, Gerard
viewed: 25
title: Selective Text Utilization and Text Traversal
abstract: Many large collections of full-text documents are currently stored in machine-readable form and processed automatically in various ways. These collections may include different types of documents, such as messages, research articles, and books, and the subject matter may vary widely. To process such collections, robust text analysis methods must be used, capable of handling materials in arbitrary subject areas, and flexible access must be provided to texts and text excerpts of varying size. In this study, global text comparison methods are used to identify similarities between text elements, followed by local context-checking operations that resolve ambiguities and distinguish superficially similar texts from texts that actually cover identical topics. A linked text structure is then created that relates similar texts at various levels of detail. In particular, text links are available for full texts, as well as text sections, paragraphs, and sentence groups. The linked structures are usable to identify important text packages, to traverse texts selectively both within particular documents and between documents, and to provide flexible text access to large text collections in response to various kinds of user needs. An automated 29-volume encyclopedia is used as an example to illustrate the text accessing and traversal operations.

url: http://hdl.handle.net/1813/6137
date: 2007-04-23
creator: Srinivasan, Aravind;Siegel, Alan;Schmidt, Jeanette P.
viewed: 15
title: Chernoff-Hoeffding Bounds for Applications with Limited Independence
abstract: Chernoff-Hoeffding bounds are fundamental tools used in bounding the tail probabilities of the sums of bounded and independent random variables. We present a simple technique which gives slightly better bounds than these and which, more importantly, requires only limited independence among the random variables, thereby importing a variety of standard results to the case of limited independence for free. Additional methods are also presented, and the aggregate results are very sharp and provide a better understanding of the proof techniques behind these bounds. They also yield improved bounds for various tail probability distributions and enable improved approximation algorithms for jobshop scheduling. The "limited independence" result implies that weaker sources of randomness are sufficient for randomized algorithms whose analyses use the Chernoff-Hoeffding bounds; further, it leads to algorithms that require a reduced amount of randomness for any analysis which uses the Chernoff-Hoeffding bounds, e.g., the analysis of randomized algorithms for random sampling and oblivious packet routing.

url: http://hdl.handle.net/1813/6138
date: 2007-04-23
creator: Worona, Steven L.

viewed: 21
title: PL/CT, Another Approach to Two Problems in Interactive PL/I
abstract: NO ABSTRACT SUPPLIED

url: http://hdl.handle.net/1813/6139
date: 2007-04-23
creator: Ricciardi, Aleta M.
viewed: 34
title: The Group Membership Problem in Asynchronous Systems
abstract: The thesis formally defines the class of Process Group Membership Problems (GMP) for asynchronous systems. These problems involve maintaining a list of processes belonging to the system, and updating it as processes join (are started) and leave (terminate or fail). We investigate closely the strongest member of the GMP class. Strong GMP presents this list in a consistent manner to all processes using it: the sequence of joins and leaves are identical. We show that despite prevalent beliefs, strong consistency and efficiency are not conflicting goals. This should have significant implications for distributed systems since the need for process membership agreement arises in many canonical problems in distributed computing. We present an inexpensive means (the S-GMP algorithm) of assuring complete, system-wide agreement on process membership. We discuss the role of process membership in distributed systems and how to use S-GMP to build a Membership Resource Manager (MRM). The thesis also examines whether any weaker member of the GMP class suffices to specify an MRM. In doing so we justify using Strong GMP over two much weaker GMP instances in three important ways. First, by comparing Strong GMP and its minimal solution with the weaker instances and their minimal solutions, we arrive at the surprising result that Strong GMP is often less expensive than the others, notably in executions in which membership changes are frequent. Second, we show that a membership service defined by Strong GMP is more robust, more responsive and more adaptable than a membership service defined by weaker GMP instances. Third, we compare membership services defined by the various GMPs according to the utility each service provides higher-level, distributed applications. That is, ignoring implementation costs, how useful are the different GMP consistency guarantees as a platform on which to build distributed solutions to distributed problems? We show that the consistency guarantees of Strong GMP make it (i.e. and the membership service Strong GMP defines) more useful to higher-level distributed applications. Finally, the thesis presents experimental results from implementing S-GMP. The data demonstrate that a centralized Membership Resource Manager is a non-intrusive service around which to design distributed systems and provide system-wide consistency. The data quantify and help clarify the tradeoffs between replication degree, overall system size and process failure frequency. These initial results should guide future MRM design and development.

url: http://hdl.handle.net/1813/6140
date: 2007-04-23
creator: Moore, Douglas W.
viewed: 15
title: Simplical Mesh Generation With Applications
abstract: Many problems in computer graphics and in engineering analysis require for their solution the construction of a mesh of simple polytopal elements that approximately fill the interior of an object or cover its boundary. The simplest polytopes are the simplexes, and simplicial meshes have particular advantages when solving interpolation problems, graphically rendering objects approximated by boundary meshes, and in many other applications. Boxes are often used where simplexes should be considered because the properties of boxes are more familiar. This dissertation develops several techniques that aid in the construction of simplicial meshes in any dimension. It presents the essential combinatorial and geometric properties of simplexes, and presents simple techniques for decomposing simplexes into smaller simple objects. It

describes the simplicial quadtree, a useful representation in the construction of simplicial meshes, and presents a technique for converting an arbitrary simplicial quadtree into a balanced quadtree, then into a triangulation. It also describes mesh displacement, a technique for improving the quality of a boundary triangulation while reducing its size. Several degenerate behaviors can arise from mesh displacement, and the dissertation discusses methods for detecting and compensating for these degeneracies. Simplicial mesh generation techniques can be applied to many kinds of problems. To illustrate this, the final chapters describe the implementation of a polygonalizer for algebraic sets and a system that applies the operations of constructive solid geometry to sets defined algebraically.

url: http://hdl.handle.net/1813/6141
date: 2007-04-23
creator: Reiter, Michael K.
viewed: 27
title: A Security Architecture for Fault-Tolerant Systems
abstract: While there is considerable experience with addressing the needs for security and fault-tolerance individually in distributed systems, much less is understood about how to simultaneously address these needs in a single, integrated solution. Indeed, the goals of security and availability have traditionally been viewed as being in conflict, because replicationg data and services for availability makes them inherently harder to protect. This thesis presents the design and implementation of a security architecture for fault-tolerant systems, including a set of results that underpin this architecture. We first present a methodology for balancing the aforementioned tradeoff between security and availability in distributed services. Using our techniques, a service can be replicated so that it will remain available and correct despite the corruption of some servers and clients by a malicious intruder. These results include the identification and prevention of a new form of attack in which an intruder effects and exploits violations of causality in the sequence of requests processed by the service. Second, we bring this replication methodology and other novel techniques to bear on an issue for which the conflict between security and availability is particularly troublesome, namely cryptographic key distribution via trusted services. We present authentication and time services that can securely and fault-tolerantly support cryptographic key distribution in a wide range of settings. Third, we present the design and implementation of our security architecture, which employs these services. The architecture supports process groups --a common paradigm of fault-tolerant computing--as its primary security abstraction, and provides tools to construct applications that are resilient to benign failures and malicious attacks. We discuss the integration of this architecture in the Horus system and focus on techniques to make group communication secure and efficient. In the final contributions of the thesis, we further explore the importance of detecting causal relationships for security. We present a framework for examining attacks onaattempts to detect causal relationships. We also present several algorithms to prevent these attacks in some situations.

url: http://hdl.handle.net/1813/6142
date: 2007-04-23
creator: Grumberg, Orna;Fix, Limor
viewed: 81
title: Verification of Temporal Properties
abstract: The paper presents a relatively complete deductive system for proving branching time temporal properties of reactive programs. No deductive system for verifying branching time temporal properties has been presented before. Our deductive system enjoys the following advantages. First, given a well-formed specification there is no need to translate it into a normal-form specification since the system can handle any well-formed specification. Second, given a specification to be verified, the proof rule to be applied is easily determined according to the top level operator of the specification. Third, the system reduces temporal

verification to assertional reasoning rather than to temporal reasoning.

url: http://hdl.handle.net/1813/6143
date: 2007-04-23
creator: Bloom, Bard
viewed: 19
title: Proceedings of the North American Process Algebra Workshop 1993 - Ithaca, NY
abstract: This contains the papers presented at the second North American Process Algebra Workshop, August 15, 1993, at Cornell University. Contents: * A Semantic Theory for ML Higher Order Concurrency Primitives (Dominique Bolignano and Mourad Debabi) * An Operational Semantics of Value Passing (Rance Cleaveland) * An Information Flow Security Property for CCS (Riccardo Focardi and Roberto Gorrieri) * Concurrent Kripke Structures (Vineet Gupta) * Specification of Instruction-Level Parallelism (Ed Harcourt and Jon Mauney and Todd Cook) * Specification of Transition Systems with Negation (Remi Lissajoux) * A Comparison of Simulation and Algebraic Techniques for Verifying Concurrent Systems (Nancy Lynch and Roberto Segala) * A note on Model Checking Context Free Processes (S. Purushothaman Iyer) * State Refinement in Process Algebra (Andrew Uselton and Scott Smolka) * Parametric Preorders for Process Description Languages (Daniel Yankelevich)

url: http://hdl.handle.net/1813/6144
date: 2007-04-23
creator: Sundaram, Sridhar
viewed: 84
title: Fast Algorithms for N-body Simulation
abstract: Many physical models require the simulation of a large number (N) of particles interacting through pair-wise inverse square law forces. N-body simulations are employed in fluid-dynamics, biochemistry, astrophysics, electrodynamics and molecular dynamics. The computational problem is intrinsically hard and these simulations are time-intensive. Existing algorithms exploit either the spatial proximity of particles or the temporal proximity of states. In this thesis, we formally combine the two approaches and present an algorithm with sequential time complexity $O(N^{4/3})$ to integrate N uniformly distributed particles in 3D over one crossing time against the $O(N^{8/3})$ complexity of the direct method. Under reasonable assumptions, our algorithm is optimal. The core of the algorithm is the temporal multipole expansion of the field in terms of the space-time coordinates of the field-point. We also present efficient parallel algorithms on the 2D and 3D Mesh and Hypercube which amortize communication costs through temporal multipole expansions. The parallel algorithms offer an order of magnitude improvement over existing algorithms for even 10^{4} particles. A sequential implementation of the algorithm for two-dimensional N-body systems shows the predicted asymptotic scaling. A parallel version on a 16-processor Intel iPSC/860 machine is also in conformance with theoretical expectations.

url: http://hdl.handle.net/1813/6145
date: 2007-04-23
creator: Trefethen, Lloyd N.;Greenbaum, Anne
viewed: 16
title: Do the Pseudospectra of a Matrix Determine its Behavior?
abstract: Let A and B be square matrices. It is shown that the condition $(R) ||(zI-A)^{-1}|| = ||(zI -B)^{-1}||$ for all $z \in \complex$ is equivalent to the condition $(P) ||p(A)|| = ||p(B)||$ for all polynomials p if $|| \cdot ||$ is the Frobenius norm, but not if $|| \cdot ||$ is the 2-norm.

url: http://hdl.handle.net/1813/6146

date: 2007-04-23
creator: Bloom, Bard
viewed: 35
title: Ready, Set, Go: Structural Operational Semantics for Linear-Time Process Algebras
abstract: We investigate the relationship between operational semantics, equational semantics, and ready equivalence (a well-known relative of failure equivalence and testing equivalence) in process algebra. We give a class of structural operational semantic rules, called winterized rules, which define operations respecting ready equivalence. The class of winterized rules is surprisingly broad; it includes some copying operations which would seem to violate ready equivalence. Membership in this class is decidable in $O(n^{2})$ time. We show that for any process algebra defined by such rules has complete equational axiom system. These methods - winterizability in particular - apply mutatis mutandis to other linear-time process equivalences.

url: http://hdl.handle.net/1813/6147
date: 2007-04-23
creator: Bloom, Bard
viewed: 15
title: Structural Operational Semantics for Weak Bisimulations
abstract: In this study, we present rule formats for four main notions of bisimulation with silent moves. Weak bisimulation is a congruence for any process algebra defined by WB cool rules; we have similar results for rooted weak bisimulation (Milner's "observational equivalence"), branching bisimulation, and rooted branching bisimulation. The theorems stating that, say, observational equivalence is an appropriate notion of equality for CCS are corollaries of the results of this paper. We also give sufficient conditions under which equational axiom systems can be generated from operational rules. Indeed, many equational axiom systems appearing in the literature are instances of this general theory.

url: http://hdl.handle.net/1813/6148
date: 2007-04-23
creator: Van Loan, Charles
viewed: 33
title: Lectures in Least Squares
abstract: These lecture notes arose out of the numerical analysis seminar given at Cornell University in the Spring of 1976. The goal of the seminar was to acquaint a variety of researchers and undergraduates with the field of least squares computations. I hope the presentation will neither bore the expert nor discourage the layman.

url: http://hdl.handle.net/1813/6149
date: 2007-04-23
creator: Shapiro, Vadim;Palmer, Richard S.
viewed: 31
title: Chain Models of Physical Behavior for Engineering Analysis and Design
abstract: The relationship between geometry (form) and physical behavior (function) dominates many engineering activities. The lack of uniform and rigorous computational models for this relationship has resulted in a plethora of inconsistent (and thus usually incompatible) computer aided design (CAD) tools and systems, causing unreasonable overhead in time, effort, and cost, and limiting the extent to which CAD tools are used in practice. It seems clear that formalization of the relationship between form and function is a prerequisite to taking full advantage of computers in automating design and analysis of engineering systems. We present a unified computational model of physical behavior that explicitly links geometric and physical representations. The proposed approach characterizes physical systems in terms of their algebraic-

topological properties: cell complexes, chains, and operations on them.

url: http://hdl.handle.net/1813/6150
date: 2007-04-23
creator: Krumvieda, Clifford Dale
viewed: 17
title: Distributed ML: Abstractions for Efficient and Fault-Tolerant Programming
abstract: Despite the availability, inherent parallelism, and potential fault tolerance of networked workstations and microcomputers, most programmers do not write distributed code. Those that do are often overwhelmed by the asynchrony, concurrency, and tricky failure behaviour inherent in such systems. In this thesis, we describe the design and implementation of a new programming language called Distributed ML. Distributed ML provides a programming construct called a port group that hides the sources of complexity listed above and can be implemented efficiently. Port groups are intermachine multicast channels which provide membership and failure information to application programmers. Although inherently asynchronous, port groups guarantee the delivery of data sent through them and can order such data in several different ways, thereby providing many of the assurances of synchronous communication. Port groups are general-purpose communication abstractions that can be used to transfer information between machines, between processes on the same machine, and between threads within the same process. In this thesis, we demonstrate that efficient distributed programs-even highly available and fault-tolerant distributed programs-can be quickly developed, easily reasoned about, and properly coded in a well-designed high level programming language. First, we provide an implementation and description of port groups in the context of the Concurrent ML concurrent programming language, which is a superset of the Standard ML general-purpose programming language. Second, we introduce a formal theory for relating the membership and ordering properties of port groups. Finally, we argue that our implementation matches the formal specification.

url: http://hdl.handle.net/1813/6151
date: 2007-04-23
creator: Chandra, Tushar Deepak
viewed: 27
title: Unreliable Failure Detectors for Asynchronous Distributed Systems
abstract: It is well-known that several fundamental problems of fault-tolerant distributed computing, such as Consensus and Atomic Broadcast, cannot be solved in asynchronous systems with crash failures. These impossibility results stem from the lack of reliable failure detection in such systems. To circumvent such impossibility results, we introduce the concept of unreliable failure detectors that can make mistakes, and study the problem of using them to solve Consensus (and Atomic Broadcast). It is easy to solve Consensus using a "perfect" failure detector (one that does not make mistakes). But is perfect failure detection necessary to solve Consensus? We show that Consensus is solvable with unreliable failure detectors, even if they make an infinite number of mistakes. This leads to the following question: What is the "weakest" failure detector for solving Consensus? We introduce a notion of algorithmic reducibility that allows us to compare seemingly incomparable failure detectors. Using this concept, we show that one of the failure detectors that we introduce here is indeed the weakest failure detector for solving Consensus in asynchronous systems with a majority of correct processes. We also show that Consensus and Atomic Broadcast are equivalent in asynchronous systems. Thus all our results regarding the solvability of Consensus using failure detectors, apply to Atomic Broadcast as well. The work in this thesis was funded by an IBM graduate fellowship and grants from NSF, DARPA/NASA, the IBM Endicott Programming Laboratory, Siemens Corp. and the Natural Sciences and Engineering Research Council of Canada.

url: http://hdl.handle.net/1813/6152

date: 2007-04-23
creator: Srinivasan, Aravind
viewed: 62
title: Techniques for Probabilistic Analysis and Randomness-Efficient Computation
abstract: Randomness is well-recognized as an important computational resource in theoretical computer science. Not only are there classical problems for which the only known "efficient" solutions are randomized, but there are problems for which randomness can be used to circumvent deterministic lower bounds. However, standard tools available for probabilistic analysis such as the Chernoff-Hoeffding bounds are not sufficiently powerful in all situations; second, since there are no known "true" sources of randomness, there is a need to develop general techniques for reducing/removing randomness from randomized algorithms. This thesis addresses these two issues. Certain types of scheduling and resource allocation problems in a distributed setting can be modeled as edge coloring problems. In Chapter 2, we present a fast and simple randomized algorithm for edge coloring a graph, in the synchronous distributed point-to-point model of computation. Our algorithm computes an edge-coloring of a graph G with n nodes and maximum degree Δ with at most $(1.6 + \epsilon) \Delta + O(\log^{2+\delta} n)$ colors with high probability, for any fixed $\epsilon, \delta, greater than 0$. To analyze our algorithm, we introduce techniques for proving upper bounds on the tails of random variables, extending the Chernoff-Hoeffding (CH) bounds to some types of dependent random variables. This is joint work with A. Panconesi [91]. In Chapter 3, we show that the CH bounds for the tails of the sums of bounded and independent random variables $X_{1}, \ldots, X_{n}$ require only limited independence among the X_{i}s. We show that if $X_{1}, \ldots, X_{n}$ lie in [0,1] and are k-wise independent, then $Pr(X \geq E[\sum_{i}X_{i}](1 + \delta))$ can be upper bounded by the CH bound, if $k \geq \mu \cdot min\{\delta,\delta^{2}\}$. This leads to algorithms that require a reduced amount of randomness for any analysis which uses the CH bounds. This is joint work with J.P. Schmidt and A. Siegel [108]. In Chapter 4, we present an RNC^{2} algorithm for the perfect matching problem which uses $O(\log Z)$ random bits where Z is any given upper bound on the number of perfect matchings in the graph, generalizing results of Grigoriev and Karpinski. Underlying our algorithm is a randomness-optimal generalization of the Isolating Lemma of Mulmuley, Vazirani and Vazirani, which also leads to other applications. This is joint work with S. Chari and P. Rohatgi [26].

url: http://hdl.handle.net/1813/6153
date: 2007-04-23
creator: Vassiliadis, Stamatis;Pingali, Keshav;Moudgill, Mayan
viewed: 16
title: Register Renaming and Dynamic Speculation: an Alternative Approach
abstract: In this paper, we present a novel mechanism that implements register renaming, dynamic speculation and precise interrupts. Renaming of registers is performed during the instruction fetch stage instead of the decode stage, and the mechanism is designed to operate in parallel with the tag match logic used by most cache designs. It is estimated that the critical path of the mechanism requires approximately the same number of logic levels as the tag match logic, and therefore should not impact cycle time.

url: http://hdl.handle.net/1813/6154
date: 2007-04-23
creator: Stefansson, Kjartan
viewed: 27
title: Systems of Set Constraints with Negative Constraints are NEXPTIME-Complete
abstract: A system of set constraints is a system of expressions $E\subseteq F$ where E and F describe sets of ground terms over a ranked alphabet. Aiken et al. [AKVW93] classified the complexity of such systems. In [AKW93] it was shown that if negative constraints $E\not\subseteq F$ were allowed, then the

problem is decidable. This was done by reduction to a Diophantine problem, the Nonlinear Reachability Problem, which was shown to be decidable. We show that nonlinear reachability is NP-complete. By bounding the reduction of [AKW93] we conclude that systems of set constraints, allowing negative constraints, is NEXPTIME-complete.

url: http://hdl.handle.net/1813/6155
date: 2007-04-23
creator: Trefethen, Lloyd N.
viewed: 35
title: Schwarz-Christoffel Mapping in the 1980's
abstract: An informal survey is presented of the numerical computation of Schwarz-Christoffel maps (i.e., conformal maps from a disk in the complex plane to a polygon) and their applications in science and engineering. It is shown that many superficially different problems of conformal mapping and potential theory can be reduced to Schwarz-Christoffel maps and then solved by software such as the Fortran package SCPACK. This report, not for publication, is a reproduction of a 1989 technical report from the Department of Mathematics at the Massachusetts Institute of Technology.

url: http://hdl.handle.net/1813/6156
date: 2007-04-23
creator: Forester, Max B.
viewed: 13
title: Formalizing Constructive Real Analysis
abstract: This paper arises from a project with the Nuprl Proof Development System which involved formalizing parts of real analysis, up through the intermediate value theorem. Extensive development of the rational library was required as the real library was being built, resulting in the addition of about 125 rational theorems. The real library now contains about 150 theorems and includes enough basic results that further extensions of the library should be quite feasible. This paper aims to illustrate how higher mathematics can be implemented in a system like Nuprl, and also to introduce system users to the library.

url: http://hdl.handle.net/1813/6157
date: 2007-04-23
creator: Rus, Daniela;Jennings, James;Donald, Bruce Randall
viewed: 25
title: Towards a Theory of Information Invariants for Cooperating Autonomous Mobile Robots
abstract: In [Don4], we described a manipulation task for cooperating mobile robots that can push large, heavy objects. There, we asked whether explicit local and global communication between the agents can be removed from a family of pushing protocols. In this paper, we answer in the affirmative. We do so by using the general methods of [Don4] analyzing information invariants. We discuss several measures for the information complexity of the task: (a) How much internal state should the robot retain? (b) How many cooperating agents are required, and how much communication between them is necessary? (c) How can the robot change (side-effect) the environment in order to record state or sensory information to perform a task? (d) How much information is provided by sensors? and (e) How much computation is required by the robot? To answer these questions, we develop a notion of information invariants. We develop a technique whereby one sensor can be constructed from others by adding, deleting, and reallocating (a) - (e) among collaborating autonomous agents. We add a resource to (a) - (e) and ask: (f) How much information is provided by the task mechanics? By answering this question, we hope to develop information invariants that explicitly trade-off resource (f) with resources (a) - (e). The protocols we describe here have been implemented in several different forms, and we will show a video reporting on experiments to measure and analyze information invariants

using a pair of cooperating mobile robots for manipulation experiments in our laboratory.

url: http://hdl.handle.net/1813/6158
date: 2007-04-23
creator: Teitelbaum, Tim;Liu, Yanhong A.
viewed: 24
title: Deriving Incremental Programs
abstract: A systematic transformational approach is given for deriving incremental programs from non-incremental programs. We exploit partial evaluation, other static analysis and transformation techniques, and domain-specific knowledge in order to provide a degree of incrementality not otherwise achievable by a generic incremental evaluator. Illustrative examples using the transformation approach are given.

url: http://hdl.handle.net/1813/6159
date: 2007-04-23
creator: Li, Yuying
viewed: 18
title: Centering, Trust Region, Reflective Techniques for Nonlinear Minimization Subject to Bounds
abstract: Bound-constrained nonlinear minimization problems occur frequently in practice. Most existing methods belong to an active set type which can be slow for large scale problems. Recently, we proposed a new approach [7,6,8] which generates iterates within the strictly feasible region. The method in [8] is a trust region type and, unlike the existing trust region method for bound-constrained problems, the conditions for its strong convergence properties are consistent with algorithm implementation. A reflective technique can be included in the method. In this paper, we motivate techniques which are important for our new approach. Numerical experience on some medium size problems is included.

url: http://hdl.handle.net/1813/6160
date: 2007-04-23
creator: Rohatgi, Pankaj
viewed: 13
title: On Properties of Random Reductions
abstract: Randomness is widely accepted as a powerful computational resource because the most elegant and efficient solutions to several computational problems are randomized. A recurrent theme in the theory of randomized computation is the notion of a random reduction. Random reductions are similar to many-one ($\leq^{P}_{m}$) reductions except for the fact that they are carried out by probablistic transducers which may make errors with small probability. Such reductions are used explicitly in many basic results in complexity theory and implicitly in several randomized algorithms. This thesis investigates the properties of random reductions as a tool towards understanding the power and limitations of randomness. We first prove some startling results which indicate that random reductions can be quite successful in reducing harder problems to simpler ones. We then propose the thesis that in many situations there is a sharp {\em probability threshold} which governs just how successful random reductions can be in this regard. As evidence, we prove that for several complexity classes ${\cal C}$, under standard assumptions, there exist corresponding {\em probability thresholds\/} ${\cal C}_T$, such that random reductions with success probability below ${\cal C}_T$ can reduce the hardest languages in ${\cal C}$ to simpler ones but reductions with success probability above ${\cal C}_T$ cannot do so. Based on these thresholds, we then propose a meaningful definition of completeness under random reductions which resolves several anomalies caused by the traditional definitions which did not place much emphasis on the success probability. The results described above depend on standard but unproven complexity-theoretic assumptions. In order to show that such behavior is inherent to random reductions and not an artifact introduced by these assumptions, we also prove that it is present in very high

complexity classes {\em without any assumptions}. In this thesis we also examine other basic aspects of random reducibility. We prove several {\em absolute} separation results between the notions of completeness under various polynomial-time random reductions with different success probabilities and between various random reductions and deterministic polynomial-time reductions. In addition, we also prove new results on the consequences of having random reductions from NP-complete sets to sparse sets.

url: http://hdl.handle.net/1813/6161
date: 2007-04-23
creator: Sudan, Madhu;Rubinfeld, Ronitt
viewed: 15
title: Robust Characterizations of Polynomials and Their Applications to Program Testing
abstract: The study of self-testing and self-correcting programs leads to the search for robust characterizations of functions. Here we make this notion precise and show such a characterization for polynomials. From this characterization, we get the following three applications: First, we can construct simple and efficient self-testers for polynomial functions. Secondly, it provides results in the area of coding theory, by giving extremely fast and efficient error-detecting schemes for some well known codes. Thirdly, this error-detection scheme plays a crucial role in recent results on hardness of approximating some NP-optimization problems.

url: http://hdl.handle.net/1813/6162
date: 2007-04-23
creator: Srinivasan, Aravind;Panconesi, Alessandro
viewed: 21
title: The Local Nature of Δ-Coloring and Its Algorithmic Applications
abstract: Given a connected graph G = (V,E) with $\mid$V$\mid$ = n and maximum degree Δ such that G is neither a complete graph nor an odd cycle, Brooks' theorem states that G can be colored with Δ colors. We generalize this as follows: let G - v be Δ-colored; then, v can be colored by considering the vertices in an O(log$_{\Delta} n$) radius around v and by recoloring an O(log$_{\Delta} n$) length "augmenting path" inside it. Using this, we show that Δ-coloring G is reducible in O(log^{3} n/log Δ) time to (Δ + 1)-vertex coloring G in a distributed model of computation. This leads to fast distributed algorithms and a linear-processor NC algorithm for Δ-coloring.

url: http://hdl.handle.net/1813/6163
date: 2007-04-23
creator: Trefethen, Lloyd N.
viewed: 28
title: The Definition of Numerical Analysis
abstract: This is a brief essay discussing perceptions and misperceptions of numerical analysis. A common misperception is that numerical analysis is the study of rounding errors. Even numerical analysts have been misled by this view.

url: http://hdl.handle.net/1813/6164
date: 2007-04-23
creator: Li, Yuying;Coleman, Thomas F.
viewed: 24
title: On The Convergence of Reflective Newton Methods for Large-Scale Nonlinear Minimization Subject to Bounds
abstract: We consider a new algorithm, a reflective Newton method, for the problem of minimizing a smooth

nonlinear function of many variables, subject to upper and/or lower bounds on some of the variables. This approach generates strictly feasible iterates by following piecewise linear paths ("reflection" paths) to generate improved iterates. The reflective Newton approach does not require identification of an "activity set". In this report we establish that the reflective Newton approach is globally and quadratically convergent. Moreover, we develop a specific example of this general reflective path approach suitable for large-scale and sparse problems.

url: http://hdl.handle.net/1813/6165
date: 2007-04-23
creator: Rucklidge, William J.;Huttenlocher, Daniel P.
viewed: 37
title: A Multi-Resolution Technique for Comparing Images Using the Hausdorff Distance
abstract: The Hausdorff distance measures the extent to which each point of a "model" set lies near some point of an "image" set and vice versa. In this paper we describe an efficient method of computing this distance, based on a multi-resolution tessallation of the space of possible transformations of the model set. We focus on the case in which the model is allowed to translate and scale with respect to the image. This four-dimensional transformation space (two translation and two scale dimensions) is searched rapidly, while guaranteeing that no match will be missed. We present some examples of identifying an object in a cluttered scene, including cases where the object is partially hidden from view.

url: http://hdl.handle.net/1813/6166
date: 2007-04-23
creator: Liu, Jianguo;Coleman, Thomas F.
viewed: 13
title: An Interior Newton Method for Quadratic Programming
abstract: Quadratic programming represents an extremely important class of optimization problem. In this paper, we propose a new (interior) approach for the general quadratic programming problem. We establish that our new method is globally and quadratically convergent - published alternative interior approaches do not share such strong convergence properties for the nonconvex case. We also report on the results of preliminary numerical experiments: the results indicate that the proposed method has considerable practical potential.

url: http://hdl.handle.net/1813/6167
date: 2007-04-23
creator: Gries, David;Efremidis, Sofoklis G.
viewed: 22
title: An Algorithm for Processing Program Transformations
abstract: An algorithm for processing program transformations as described by the transform construct is presented. The algorithm constructs a coordinate transformation of an abstract program based on a set of transforms and transform directives applied to it.

url: http://hdl.handle.net/1813/6168
date: 2007-04-23
creator: Birman, Kenneth P.
viewed: 24
title: A Response to Cheriton and Skeen's Criticism of Causal and Totally Ordered Communication
abstract: No abstract supplied.

url: http://hdl.handle.net/1813/6169
date: 2007-04-23
creator: Ye, Yinyu;Vavasis, Stephen A.
viewed: 72
title: An Accelerated Interior Point Method Whose Running Time Depends Only on A
abstract: We propose a "layered-step" interior point (LIP) algorithm for linear programming. This algorithm follows the central path, either with short steps or with a new type of step called a "layered least squares" (LLS) step. The algorithm returns the exact global minimum after a finite number of steps-in particular, after $O(n^{3.5}c(A))$ iterations, where $c(A)$ is a function of the coefficient matrix. The LLS steps can be thought of as accelerating a path-following interior point method whenever near-degeneracies occur. One consequence of the new method is a new characterization of the central path: we show that it composed of at most n^2 alternating straight and curved segments. If the LIP algorithm is applied to integer data, we get as another corollary a new proof of a well-known theorem by Tardos that linear programming can be solved in strongly polynomial time provided that A contains small-integer entries.

url: http://hdl.handle.net/1813/6170
date: 2007-04-23
creator: Stefansson, Kjartan;Kozen, Dexter
viewed: 15
title: Computing the Newtonian Graph (Extended abstract)
abstract: A polynomial $f\in \complex[z]$ defines a vector field $N_f(z) = -f(z)/f'(z)$ on $\complex$. Certain degenerate curves of flow in N_f give the edges of the Newtonian graph, as defined by \cite{Sma85}. These give a relation between the roots of f and f', much similar to the linear order, when f has real roots only. We give a purely algebraic algorithm to compute the Newtonian graph and the basins of attraction in the Newtonian field. The resulting structure can be used to query whether two points in $\complex$ are within the same basin of attraction. This gives us an algebraic approach to root-finding using Newton's method. This method extends to rational functions and more generally to any functions on $\complex$ whose flow is algebraic over $\complex(e)$.

url: http://hdl.handle.net/1813/6171
date: 2007-04-23
creator: Zippel, Richard;Dean, Dawson
viewed: 32
title: Implementing File Systems and Object Databases in a Microstorage Architecture
abstract: A microstorage architecture consists of a microstorage kernel and several storage servers. Each storage server implements a storage model that defines a client's view of all the data in the system, how it is stored, retrieved and manipulated. The storage servers are built on top of the microstorage kernel and rely on it to perform the actual data storage and retrieval. The microstorage kernel implements a mechanism and the storage servers each implement specific policies defined by their storage models. Several different storage servers, each implementing a different storage model, may run concurrently over the microstorage kernel and all data in the system is concurrently visible to all the different storage servers. Different application programs, or different parts of the same application program, can use different storage models to manipulate the same data. Microstorage architectures provide a flexible interface and a smooth transition from traditional file systems to more powerful object oriented storage models. Existing applications continue to work correctly unchanged because they use a storage server that implements a traditional file model while new applications may gradually adopt more powerful storage models.

url: http://hdl.handle.net/1813/6172

date: 2007-04-23
creator: Pedersen, Paul;Canny, John
viewed: 29
title: An Algorithm for the Newton Resultant
abstract: Given a system of $n+1$ generic Laurent polynomials, for $i \,=\, 1, \ldots, n+1$, $$\eqlabel(\ InputSystem) f_i(\x) \quad = \quad \sum_{q\in \A_i} c_{iq} \,x^q; \qquad q \,=\, (q_1,\ldots,q_n); \qquad \x^q \,=\, x_1^{q_1}x_2^{q_2}\cdots x_n^{q_n}; \eqno(\InputSystem) $$ with (finite) support sets $\A_i \ subset L$, where L is some affine lattice isomorphic to $\Z^n$; we consider algorithms for the {\it Newton resultant} $R(f_1,f_2, \ldots, f_{n+1})$. This is the unique (up to sign) irreducible polynomial with coefficients in $\Z$ and monomials in the c_{iq} which determines whether or not system~(\InputSystem) has common roots in the {\it algebraic torus} $(\C-\{0\})^n$. The resultant depends only on the {\it Newton polytopes} $N_i \,:=\, conv(\A_i) \subset \R^n$ of the sets $\A_i$. Our terminology emphasizes the dependence on the combinatorics of the Newton polytopes. The algebraic torus is the natural setting for us because we are interested in the properties of systems of polynomials which are invariant under symmetries of the affine lattice L, and translation by $q\in L$ corresponds to multiplication by x^q at the level of polynomials. Since x^q may have negative exponents, we restrict to points none of whose coordinates are zero.

url: http://hdl.handle.net/1813/6173
date: 2007-04-23
creator: Novins, Kevin L.
viewed: 20
title: Towards Accurate and Efficient Volume Rendering
abstract: This thesis is concerned with improvements to algorithms for volume rendering; a technique that provides scientists with the means for visual exploration of three-dimensional data. Despite its numerous successes, and its increasing use within the scientific community, state-of-the-art volume rendering algorithms have many shortcomings. Difficulties include: ensuring the accuracy of the rendered images, producing images with modest computational resources, and rendering the diverse types of data that are currently being produced. The work in this thesis was motivated by the demands of an ongoing visualization project in four-dimensional cardiac visualization. We present solutions to some key problems in ensuring accuracy and in producing algorithms that can scale to handle large datasets. Although the theoretical work in this thesis applies to arbitrary data topologies, our implementations have assumed that the data is defined by sample points on a regular rectilinear grid. In the area of accuracy, we focus on the error that is introduced during volume projection. This phase of the volume rendering process involves the evaluation of the emission-absorption volume rendering line integral. This thesis presents four techniques for controlled precision volume integration. These schema depart from existing approaches in that they provide error bounds along with the solutions they generate. In each case, the error analysis leads to an algorithm for evaluating the integral to any specified tolerance. Our investigations into efficiency issues have resulted in two advances. First, an adaptive error bracketing scheme is presented that builds on the controlled precision volume integration methods. Using adaptive error bracketing, the solution for a viewing ray is continually refined until a user-specified error tolerance is met. The algorithm allows processing of the data without imposing a strict front-to-back or back-to-front evaluation order. Second, a suite of tools are presented that can be used to efficiently compute perspective projections of volume data. These include a paging strategy that is useful when a dataset is too large to fit into RAM memory and a ray splitting technique for adaptive supersampling. The latter technique ensures that all data features contribute to the final image while avoiding overcomputation in regions close to the eyepoint.

url: http://hdl.handle.net/1813/6174
date: 2007-04-23

creator: Poetzsch-Heffter, Arnd
viewed: 16
title: Developing Efficient Interpreters Based on Formal Language Specifications
abstract: The paper reports on extensions to the MAX system enabling the generation and refinement of interpreters based on formal language specifications. In these specifications, static semantics is defined by an attribution mechanism that allows to enrich syntax trees by control flow graphs. The dynamic semantics is defined by evolving algebras, a framework that has been successfully used to specify realistic programming languages. We apply the combined framework to a non-trivial example language and show how the resulting language specification can be refined in order to improve the efficiency of the generated interpreters. The framework provides enough modularity and flexibility so that such refinements can be carried out by local changes. We explain the implementation of the extensions to MAX and discuss applications of the system.

url: http://hdl.handle.net/1813/6175
date: 2007-04-23
creator: Poetzsch-Heffter, Arnd
viewed: 16
title: Interprocedural Data Flow Analysis Based on Temporal Specifications
abstract: This paper investigates the specification of data flow problems by temporal logic formulas and proves fixpoint analyses correct. Temporal formulas are interpreted w.r.t. programming language semantics given in the framework of evolving algebras. This enables very high-level specifications, in particular for history sensitive problems. E.g. the classical bit vector analyses can be refined by using information about conditions in branches without having to change their specifications. The general semantics framework makes the approach directly applicable to realistic programming languages. We use the specifications to prove fixpoint implementations of data flow analyses correct. As an example, we develop a powerful interprocedural deadness analysis that uses constant information depending on the context where the active procedure was called. By proving such a combination of backward and forward analyses correct, we illustrate the use of specifications in correctness proofs.

url: http://hdl.handle.net/1813/6176
date: 2007-04-23
creator: Ye, Yinyu;Vavasis, Stephen A.
viewed: 26
title: Condition Numbers for Polyhedra with Real Number Data
abstract: We develop a condition-based complexity analysis for homogenous polyhedra with real number data. We analyze the dependency of primal-dual interior point algorithm efficiency on this condition number for finding a point in a polyhedron. Key Words: polyhedron, interior point algorithms, condition-based complexity.

url: http://hdl.handle.net/1813/6177
date: 2007-04-23
creator: Tomasi, Carlo;Shi, Jianbo
viewed: 57
title: Good Features to Track
abstract: No feature-based vision system can work until good features can be identified and tracked from frame to frame. Although tracking itself is by and large a solved problem, selecting features that can be tracked well and correspond to physical points in the world is still an open problem. We propose a feature selection criterion that is optimal by construction because it is based on how the tracker works, as well as a

feature monitoring method that can detect occlusions, disocclusions, and features that do not correspond to points in the world. These methods are based on a new tracking algorithm that extends previous Newton-Raphson style search methods to work under affine image transformations. We test performance with several simulations and experiments on real images.

url: http://hdl.handle.net/1813/6178
date: 2007-04-23
creator: Tomasi, Carlo
viewed: 16
title: Pictures and Trails: A New Framework for the Computation of Shape and Motion from Perspective Image Sequences
abstract: This report presents a new framework for the computation of shape and motion from a sequence of images taken under perspective projection. The framework is based on two abstractions, the picture and trail loci, that represent respectively the set of all pictures of the same scene and the set of all trails that a point in the world can leave on the image for a given camera trajectory. These abstractions lead to a remarkably clean relation between perspective and orthography. Furthermore, image motion is described in terms of angles between projection rays, thereby eliminating the need to model camera rotation and leading to more stable results. A numerically sound, global minimization method is developed, based on this framework, for the case of a two-dimensional world, but all concepts also hold in three dimensions. Experiments show that the method is rather immune to noise but critically dependent on camera calibration.

url: http://hdl.handle.net/1813/6179
date: 2007-04-23
creator: Reppy, John H.;Mughal, Kahlid A.;Efremidis, Sofoklis G.
viewed: 24
title: AML: Attribute Grammars in ML
abstract: Attribute grammars are a valuable tool for constructing compilers and building user interfaces. This paper reports on a system we are developing, called AML (for Attribution in ML), which is an attribute grammar toolkit for building such applications as language-based programming environments using SML. This system builds on the proven technology of efficient attribute evaluation, while using a higher-level foundation for the implementation of interactive systems. It supports a general and uniform platform for building applications that can manipulate attributed terms and allow access to attribute values. We describe the design of the AML system, its current implementation status, and our plans for the future.

url: http://hdl.handle.net/1813/6180
date: 2007-04-23
creator: Chari, Suresh;Hartmanis, Juris
viewed: 17
title: On the Intellectual Terrain Around NP
abstract: In this paper, we view $P \stackrel{?}{=} NP$ as the problem which symbolizes the attempt to understand what is and what is not feasibly computable. The paper shortly reviews the history of the developments from Godel's 1956 letter asking for the computational complexity of finding proofs of theorems, through computational complexity, the exploration of complete problems for NP and PSPACE, through the results of structural complexity to the recent insights about interactive proofs.

url: http://hdl.handle.net/1813/6181
date: 2007-04-23
creator: Henzinger, Thomas A.;Alur, Rajeev

viewed: 29
title: Real-Time System = Discrete System + Clock Variables
abstract: How can we take a programming language off the shelf and upgrade it into a real-time programming language? Programs such as device drivers and plant controllers must explicitly refer and react to time. For this purpose, a variety of language constructs-including delays, timeouts, and watchdogs-has been put forward. We advocate an alternative answer, namely, to designate certain program variables as clock variables. The value of a clock variable changes as time advances. Timing constraints can be expressed, then, by conditions on clock values. A single new language construct-the guarded wait statement-suffices to enforce the timely progress of a program. Our presentation proceeds in two steps. First, we extend untimed systems (Section 1) with clock variables (Section 2); then we introduce the guarded wait statement (Section 3). The usage of clock variables and the guarded wait statement is illustrated with real-time applications such as round-robin (timeout-driven) scheduling, priority (interrupt-driven) scheduling, and embedded process control (Section 4). Indeed, clock variables generalize naturally to variables that measure environment parameters other than time (Section 5). In keeping with an expository style, all references are clustered in bibliographic remarks at the end of each section. We conclude by pointing to selected literature on formal methods and support tools for our approach to real-time programming (Section 6).

url: http://hdl.handle.net/1813/6182
date: 2007-04-23
creator: Yovine, Sergio;Sifakis, Joseph;Nicollin, Xavier;Henzinger, Thomas A.
viewed: 32
title: Symbolic Model Checking for Real-Time Systems
abstract: We describe finite-state programs over real-numbered time in a guarded-command language with real-valued clocks or, equivalently, as finite automata with real-valued clocks. Model checking answers the question which states of a real-time program satisfy a branching-time specification (given in an extension of CTL with clock variables). We develop an algorithm that computes this set of states symbolically as a fixpoint of a functional on state predicates, without constructing the state space. For this purpose, we introduce a μ-calculus on computation trees over real-numbered time. Unfortunately, many standard program properties, such as response for all nonzero execution sequences (during which time diverges), cannot be characterized by fixpoints: we show that the expressiveness of the timed μ-calculus is incomparable to the expressiveness of timed CTL. Fortunately, this result does not impair the symbolic verification of "implementable" real-time programs-those whose safety constraints are machine-closed with respect to diverging time and whose fairness constraints are restricted to finite upper bounds on clock values. All timed CTL properties of such programs are shown to be computable as finitely approximable fixpoints in a simple decidable theory.

url: http://hdl.handle.net/1813/6183
date: 2007-04-23
creator: Jaquith, Eric W.;Huttenlocher, Daniel P.
viewed: 27
title: Detecting Moving Objects With a Moving Camera by Comparing Edge Contours
abstract: This paper introduces a method for detecting moving objects in a monocular image sequence that is obtained using a moving camera. The method first estimates the motion of the edge contours in a given image frame, by recovering a transformation that best matches each edge contour with the edges in the subsequent frame. Any contour that is not well accounted for by a single transformation is split into subparts. The transformation of each edge contour together with the relative spatial locations of the contours is used to partition the image into regions with similar motions. Hypotheses about the locations of possible moving objects are then made based on these motion regions. One of the key aspects of the approach is that it is based

on estimating the motion of entire edge contours, as opposed to recovering a velocity field that measures the motion of individual points. We present some examples for image sequences taken of animate objects using a hand-held video camera. Keywords: Motion estimation, motion segmentation, edge matching.

url: http://hdl.handle.net/1813/6184
date: 2007-04-23
creator: Palmer, Richard S.
viewed: 29
title: Chain Models and Finite Element Analysis
abstract: Algebraic-topological chains defined over finite cell complexes have been proposed as a uniform computational means of representing physical objects, systems and properties. In this article, we introduce CHAINS, an algebraic-topological computer language for representing and computing the properties of a wide variety physical systems. In particular, we develop a CHAINS program that implements a finite element approximation to linear elasticity. In the process we illustrate the relationship between finite element analysis and the chain models methodology, showing that while finite element analysis is a specific numerical approximation scheme, CHAINS is a computer language for specifying and representing a variety of physical systems and approximations, of which finite element computations are one example.

url: http://hdl.handle.net/1813/6185
date: 2007-04-23
creator: Rucklidge, William J.;Leventon, Michael E.;Huttenlocher, Daniel P.
viewed: 25
title: Visually-Guided Navigation by Comparing Two-Dimensional Edge Images
abstract: We present a method for navigating a robot from an initial position to a specified landmark in its visual field, using a sequence of monocular images. The location of the landmark with respect to the robot is determined using the change in size and location of the landmark in the image, as a function of the motion of the robot. The landmark location is estimated after the first three images are taken, and this estimate is refined as the robot moves. The method can correct for errors in the robot motion, as well as navigate around obstacles. The obstacle avoidance is done using bump sensors, sonar and dead reckoning, rather than visual servoing. The method does not require prior calibration of the camera. We show some examples of the operation of the system.

url: http://hdl.handle.net/1813/6186
date: 2007-04-23
creator: Raman, T.V.
viewed: 23
title: Audio System for Technical Readings
abstract: The advent of electronic documents makes information available in more than its visual form - electronic information can now be display-independent. We describe a computing system, ASTER, that audio formats electronic documents to produce audio documents. ASTER can speak both literary texts and highly technical documents (presently in LaTeX) that contain complex mathematics. Visual communication is characterized by the eye's ability to actively access parts of a two-dimensional display. The reader is active, while the display is passive. This active-passive role is reversed by the temporal nature of oral communication: information flows actively past a passive listener. This prohibits multiple views - it is impossible to first obtain a high-level view and then "look" at details. These shortcomings become severe when presenting complex mathematics orally. Audio formatting, which renders information structure in a manner attuned to an auditory display, overcomes these problems. ASTER is interactive, and the ability to browse information structure and obtain multiple views enables active listening.

url: http://hdl.handle.net/1813/6187
date: 2007-04-23
creator: Dubhashi, Devdatt P.
viewed: 19
title: Algorithmic Investigations in P-Adic Fields
abstract: This thesis is concerned with algorithmic investigations in p-adically closed fields, of which Hensel's field of p-adic numbers is prototypical. The well known analogies between the field of real numbers and the field of p-adic numbers are supplemented from a computational standpoint. We resolve the complexity of the Decision Problem for Fields in the p-adic case. We work in the new nth power formalism for p-adic fields where the correspondence to the reals is most transparent. First we give an alternating exponential time algorithm for deciding linear sentences in the theory of p-adically closed fields. This also translates into a deterministic algorithm running in exponential space or double exponential time. A deterministic quantifier-elimination procedure for the linear fragment running in double exponential time and space is also presented. Next we employ a quantitative version of a Cell Decomposition Lemma due to Denef to give an alternating exponential time decision procedure for the full theory. As usual this also yields a deterministic decision procedure running in double exponential time or in exponential space, and a quantifier elimination procedure running in double exponential time and space. These complexity bounds are demonstrated to be essentially optimal by proving matching lower bounds on the respective problems. We give a simple algorithm to determine all roots among the p-adic integers of a given polynomial equation. This algorithm is a purely symbolic (as opposed to numerical) p-adic version of the classical Newton and Horner iteration methods and has a natural parallel implementation. We also give algorithms for some problems in valued fields and in p-adic semi-algebraic geometry. Finally we give some additional elementary evidence to support the thesis that certain cosets of nth powers are the proper p-adic analogues to signs in the real case. This is done by showing that these coset representatives display similar behavior with respect to functions and their derivatives, as do the signs in the real case.

url: http://hdl.handle.net/1813/6188
date: 2007-04-23
creator: Srinivasan, Aravind
viewed: 74
title: A Generalization of Brooks' Theorem
abstract: Given a connected graph $G = (V, E)$ with n vertices and maximum degree Δ such that $\Delta \geq$ 3 and G is not a complete graph, Brooks' theorem shows that G is Δ-colorable. We prove a generalization of this theorem: assume inductively that all but one vertex v is colored; then, v can be colored by considering the vertices (and their colors) in just an O (log n) radius around v. Our proof uses a probabilistic technique to link the connectivity and diameter of "almost-regular" graphs, which could have other applications too.

url: http://hdl.handle.net/1813/6189
date: 2007-04-23
creator: Li, Yuying;Coleman, Thomas F.
viewed: 13
title: A Reflective Newton Method for Minimizing a Quadratic FunctionSubject to Bounds on Some of The Variables.
abstract: We propose a new algorithm, a reflective Newton method, for the minimization of a quadratic function of many variables subject to upper and lower bounds on some of the variables. The method applies to a general (indefinite) quadratic function, for which a local minimizer subject to bounds is required, and

is particularly suitable for the large-scale problem. Our new method exhibits strong convergence properties, global and quadratic convergence, and appears to have significant practical potential. Strictly feasible points are generated. Experimental results on moderately large and sparse problems support the claim of practicality for large-scale problems.

url: http://hdl.handle.net/1813/6190
date: 2007-04-23
creator: Rucklidge, William J.;Noh, Jae J.;Huttenlocher, Daniel P.
viewed: 26
title: Tracking Non-Rigid Objects in Complex Scenes
abstract: We consider the problem of tracking non-rigid objects moving in a complex scene. We describe a model-based tracking method, in which two-dimensional geometric models are used to localize an object in each frame of an image sequence. The basic idea is to decompose the image of a solid object moving in space into two components: a two-dimensional motion and a two-dimensional shape change. The motion component is factored out, and the shape change is represented by explicitly storing a sequence of two-dimensional models, one corresponding to each image frame. The major assumption underlying the method is that the two-dimensional shape of an object will change slowly from one frame to the next. There is no assumption, however, that the two-dimensional image motion in successive frames will be small. Thus, the method can track objects that move arbitrarily far in the image from one frame to the next.

url: http://hdl.handle.net/1813/6191
date: 2007-04-23
creator: Schneider, Fred B.;Fix, Limor
viewed: 25
title: Reasoning About Programs by Exploiting the Environment
abstract: A method for making aspects of a computational model explicit in the formulas of a programming logic is given. The method is based on a new notion of environment -- an environment augments the state transitions defined by a program's atomic actions rather than being interleaved with them. Two simple semantic principles are presented for extending a programming logic in order to reason about executions feasible in various environments. The approach is illustrated by (i) discussing a new way to reason in TLA and Hoare-style programming logics about real-time and by (ii) deriving the first TLA and Hoare-style proof rules for reasoning about schedulers.

url: http://hdl.handle.net/1813/6192
date: 2007-04-23
creator: Zippel, Richard;Landau, Susan;Kozen, Dexter
viewed: 35
title: Decomposition of Algebraic Functions
abstract: Functional decomposition--whether a function $f(x)$ can be written as a composition of functions $g(h(x))$ in a nontrivial way--is an important primitive in symbolic computation systems. The problem of univariate polynomial decomposition was shown to have an efficient solution by Kozen and Landau [8]. Dickerson [5] and von zur Gathen [11] gave algorithms for certain multivariate cases. Zippel [13] showed how to decompose rational functions. In this paper, we address the issue of decomposition of algebraic functions. We show that the problem is related to univariate resultants in algebraic function fields, and in fact can be reformulated as a problem of resultant decomposition. We give an algorithm for finding a nontrivial decomposition of a given algebraic function if it exists. The algorithm involves genus calculations and constructing transcendental generators of fields of genus zero.

url: http://hdl.handle.net/1813/6193
date: 2007-04-23
creator: Schneider, Fred B.;Gries, David
viewed: 24
title: A New Approach to Teaching Mathematics
abstract: We propose a new approach to teaching discrete math: First, teach logic as a powerful and versatile tool for discovering and communicating truths; then use this tool in all other topics of the course. We spend 6 weeks teaching an equational style of propositional and predicate calculus, thereby ensuring that students gain a fluency in logical notation and some skill in its use. We teach basic heuristics for developing proofs, and we relate such proofs to more common informal proofs in mathematics. Then, we use logic extensively and rigorously in teaching topics like set theory, relations and functions, a theory of integers, induction, combinatorics, and solving recurrence relations. Success in teaching logic as a tool means that students lose their fear of mathematics and formalism, gain a positive view of rigorous proofs, learn to appreciate the use of syntactic manipulation, and begin using logic in other areas of study. Our experiences in teaching discrete math at Cornell shows that such success is possible.

url: http://hdl.handle.net/1813/6194
date: 2007-04-23
creator: Rauch, Monika H.
viewed: 17
title: Improved Data Structures for Fully Dynamic Biconnectivity
abstract: We present fully dynamic algorithms for maintaining the biconnected components in general and plane graphs. A fully dynamic algorithm maintains a graph during a sequence of insertions and and deletions of edges or isolated vertices. Let m be the number of edges and n be the number of vertices in a graph. The time per operation of the best known algorithms are $O(\sqrt{n})$ in general graphs and $O(\log n)$ in plane graphs for fully dynamic connectivity and $O(\min\{m^{2/3}, n\})$ in general graphs and $O(\sqrt{n})$ in plane graphs for fully dynamic biconnectivity. We improve the later running times to $(\min\{\sqrt{m}\log n, n \})$ in general graphs and $O(\log^{2}n)$ in plane graphs. Our algorithm for general graphs can also find the biconnected components of all vertices in time $O(n)$. The update times in general graphs are amortized. This shows that the biconnected components of a graph can be dynamically maintained almost as efficiently as the connected components.

url: http://hdl.handle.net/1813/6195
date: 2007-04-23
creator: Marzullo, Keith;Sabel, Laura S.
viewed: 35
title: Simulating Fail-Stop in Asynchronous Distributed Systems
abstract: The fail-stop failure model appears frequently in the distributed systems literature. However, in an asynchronous distributed system, the fail-stop model cannot be implemented. In particular, it is impossible to reliably detect crash failures in an asynchronous system. In this paper, we show that it is possible to specify and implement a failure model that is indistinguishable from the fail-stop model from the point of view of any process within an asynchronous system. We give necessary conditions for a failure model to be indistinguishable from the fail-stop model, and derive lower bounds on the amount of process replication needed to implement such a failure model. We present a simple one-round protocol for implementing one such failure model, which we call simulated fail-stop.

url: http://hdl.handle.net/1813/6196
date: 2007-04-23

creator: Bau, David
viewed: 36
title: Faster SVD for Matrices with Small m/n
abstract: The singular values of a matrix are conventionally computed using either the bidiagonalization algorithm by Golub and Reinsch (1970) when $m/n less than 5/3$, or the algorithm by Lawson and Hanson (1974) and Chan (1982) when $m/n greater than 5/3.$ However, there is an algorithm that is faster and that does not involve a discontinuous choice, as follows: in all cases, perform a QR factorization as in Lawson-Hanson-Chan, but rather than do this right at the beginning, do it after zeros have already been introduced in the first $j = 2n - m$ rows and columns. The same technique applies when computing singular vectors, with one small modification. If left singular vectors are needed, the new algorithm becomes advantageous only when $m greater than 1.2661n$, and the best j in this case is $3n - m$. The benefits of the new algorithm appear in terms of classical scalar floating-point operation counts; the effects of locality and parallelization are not considered in the analysis.

url: http://hdl.handle.net/1813/6197
date: 2007-04-23
creator: Schneider, Fred B.;Gries, David
viewed: 79
title: Teaching Math More Effectively, Through the Design of Calculational Proofs
abstract: Lower-level college math courses usually avoid using formalism, in both definitions and proofs. Later, when students have mastered definitions and proofs written largely in English, they may be shown how informal reasoning could be formalized, but the impression is left that such formalization would not be worth the effort. The design of proofs is also not taught. Students see proofs and may be asked to develop a few themselves, but there is little or no discussion of principles or strategies for designing proofs. Few are happy with the results of these courses. Generally, students' reasoning abilities are poor, even after several math courses. Many students still fear math and notation, and the development of proofs remains a mystery to most. In short, students are not being equipped with the tools needed to employ mathematics in solving new problems. We believe that this statee of affairs can be improved. This article describes our approach.

url: http://hdl.handle.net/1813/6198
date: 2007-04-23
creator: Pechanek, Gerald G.;Pitsianis, Nikos P.;Vassiliadis, Stamatis
viewed: 16
title: Empirical Evidence of the Chaotic Behavior of the Hopfield-Tank TSP Model
abstract: Since its introduction, the Hopfield-Tank model for the Traveling Salesman Problem (TSP) has been surrounded by controversial evidence regarding its viability as a model and its capabilities to produce good results to this hard optimization problem. In this paper we investigate the reasons behind the difficulty of obtaining verifiable results and the viability of the model, by investigating the behavior the Hopfield-Tank neural network for the TSP has in circumstances when it is expected to produce identical tours. Our investigations strongly suggest that, when it is expected from the network to converge in a predetermined tour, the neural network converges to almost all possible tours when an insignificant perturbation to the initial conditions is applied. The overall consequence of our findings regarding the viability of the Hopfield-Tank model and the cause of the controversy surrounding the Hopffield-Tank model for the TSP can be summarized by the following: The cause of the Hopfield-Tank neural network for the TSP controversy and the difficulties in reproducing results is the chaotic behavior of the model. The finding of useful results for the TSP using the Hopfield-Tank network are purely casual and not to be attributed to the viability of the model. In essence the Hopfield-Tank neural network for the TSP is as viable as chaotic systems can be.

url: http://hdl.handle.net/1813/6199
date: 2007-04-23
creator: Dehn, Jon;Schneider, Fred B.;Marzullo, Keith
viewed: 15
title: Refinement for Fault-Tolerance: An Aircraft Hand-off Protocol
abstract: Part of the Advanced Automation System (AAS) for air-traffic control is a protocol to permit flight hand-off from one air-traffic controller to another. The protocol must be fault-tolerant and, therefore, is subtle--an ideal candidate for the application of formal methods. This paper describes a formal method for deriving fault-tolerant protocols that is based on refinement and proof outlines. The AAS hand-off protocol was actually derived using this method; that derivation is given.

url: http://hdl.handle.net/1813/6200
date: 2007-04-23
creator: Lagoze, Carl;Davis, James R.
viewed: 28
title: A protocol and server for a distributed digital technical reportlibrary
abstract: This paper describes {\bf Dienst} -- a Distributed Interactive Extensible Network Server for Techreports. The Dienst protocol is based on the World Wide Web protocol HTTP, and provides an object-oriented interface to a document model. The document model allows one to access the document as a whole or by named sub-parts and it supports multiple formats for the document. We have also implemented a gateway from a Web server that supports the Dienst protocol. Using a World Wide Web client (e.g. Mosaic), a user may search for documents at distributed sites, browse "thumbnail" (very small page) images, view the full documents, and print them.

url: http://hdl.handle.net/1813/6201
date: 2007-04-23
creator: Zippel, Richard
viewed: 34
title: Systems Research in the Age of On-Line Coffee Houses
abstract: For years, we have spoken of a golden era where high performance "super-computers" will be available in local department stores and we will be able to communicate with anyone and any organization we want via computer networks. In the past, we have whimsically said that in this era, computing systems will be used in dramatically different fashion than they are today. That era is here now, with 60-80Mips computers available in local computer shops, "on-line" coffee houses springing up in trendy neighborhoods and National Public Radio broadcasting on the Internet for almost a year. And yet, the way we used computers has not changed dramatically. Clearly, improved speech understanding and generation systems, vision systems and other sophisticated I/O technologies will change our interaction with computers. What will change the content of our interaction with computers? What type of systems research will enable revolutionary changes in the use of computers? In an attempt to provoke discussion about these topics, a talk was presented several times during the spring semester 1994. A slightly different approach to systems research was presented as well as a few new directions that are being undertaken at Cornell. Hopefully, the ideas and questions raised by this presentation will be of use to others. This technical report is rather rough and disorganized, consisting as it does of slides from those talks and textual commentary. I felt it more valuable to make the material available in a timely manner than to wait until the details had been worked out, and the prose polished. It is an experiment and I am interested in the reaction any readers have to this form of presentation. You can also view a World Wide Web version of this document in: http://simlab.cs/cornell.edu/slides/systems/overview/html I am interested in any comments you might have, both on the content of this report and how it is presented. Please send them to: rz@cs.cornell.edu.

url: http://hdl.handle.net/1813/6202
date: 2007-04-23
creator: Rauch, Monika H.;Fredman, Michael L.
viewed: 35
title: Lower Bounds for Dynamic Connectivity Problems in Graphs
abstract: We prove lower bounds on the complexity of maintaining fully dynamic k-edge or k-vertex connectivity in plane graphs and in $(k-1)$-vertex connected graphs. We show an amortized lower bound of $\Omega(\log n/k(\log\log n + \log b))$ per edge insertion or deletion or per query operation in the cell probe model, where b is the word size of the machine and n is the number of vertices in G. We also show an amortized lower bound of $\Omega(\log n/(\log\log n + \log b))$ per operation for fully dynamic planarity testing in embedded graphs. These are the first lower bounds for dynamic connectivity problems.

url: http://hdl.handle.net/1813/6203
date: 2007-04-23
creator: Kozen, Dexter
viewed: 33
title: Logical Aspects of Set Constraints
abstract: Set constraints are inclusion relations between sets of ground terms over a ranked alphabet. They have been used extensively in program analysis and type inference. Here we present an equational axiomatization of the algebra of set constraints. Models of these axioms are called termset algebras. They are related to the Boolean algebras with operators of Jonsson and Tarski. We also define a family of combinatorial models called topological term automata, which are essentially the term automata studied by Kozen, Palsberg, and Schwartzbach endowed with a topology such that all relevant operations are continuous. These models are similar to Kripke frames for modal or dynamic logic. We establish a Stone duality between termset algebras and topological term automata, and use time to derive a completeness theorem for a related multidimensional modal logic. Finally, we prove a small model property by filtration, and argue that this result contains the essence of several algorithms appearing in the literature on set constraints.

url: http://hdl.handle.net/1813/6204
date: 2007-04-23
creator: Driscoll, Tobin A.
viewed: 32
title: Schwarz-Christoffel Toolbox User's Guide
abstract: The Scwarz-Christoffel Toolbox (SC Toolbox) is a collection of files for the interactive computation and visualization of Schwarz-Christoffel conformal maps in MATLAB version 4. The toolbox is a descendant of SCPACK, a Fortran package developed by L. N. Trefethen in the early 1980's [9]. However, the SC Toolbox has been written entirely in the MATLAB language, requires no programming by the user, and has many capabilities not in SCPACK.

url: http://hdl.handle.net/1813/6205
date: 2007-04-23
creator: Schneider, Fred B.;Stoller, Scott D.
viewed: 81
title: Verifying Programs That Use Causally-Ordered Message-Passing
abstract: We give an operational model of causally-ordered message-passing primitives. Based on this model, we formulate a Hoare-style proof system for causally-ordered delivery. To illustrate the use of this proof system and to demonstrate the feasibility of applying invariant-based verification techniques to algorithms

that depend on causally-ordered delivery, we verify an asynchronous variant of the distributed termination detection algorithm of Dijkstra, Feijen, and van Gasteren.

url: http://hdl.handle.net/1813/6206
date: 2007-04-23
creator: Birman, Kenneth P.;Cho, Kenjiro
viewed: 40
title: A Group Communication Approach for Mobile ComputingMobileChannel: an ISIS Tool for Mobile Services
abstract: This paper examines group communication as an infrastructure to support mobility of users, and presents a simple scheme to support user mobility by means of switching a control point between replicated servers. We describe the design and implementation of a set of tools, called MobileChannel, for use with the ISIS system. MobileChannel is based on a combination of the two replication schemes: the primary-backup approach and the state machine approach. MobileChannel implements a reliable one-to-many FIFO channel, in which a mobile client sees a single reliable server; servers, acting as a state machine, see multicast messages from clients. Migrations of mobile clients are handled as an intentional primary switch, and hands-offs or server failures are completely masked to mobile clients. To achieve high performance, servers are replicated at a sliding-window level. Our scheme provides a simple abstraction of migration, eliminates complicated hand-off protocols, provides fault-tolerance and is implemented within the existing group communication mechanism.

url: http://hdl.handle.net/1813/6207
date: 2007-04-23
creator: Toueg, Sam;Hadzilacos, Vassos
viewed: 40
title: A Modular Approach to Fault-Tolerant Broadcasts and Related Problems
abstract: NO ABSTRACT SUPPLIED

url: http://hdl.handle.net/1813/6208
date: 2007-04-23
creator: Toueg, Sam;Hadzilacos, Vassos;Chandra, Tushar Deepak
viewed: 37
title: The Weakest Failure Detector for Solving Consensus
abstract: We determine what information about failures is necessary and sufficient to solve Consensus in asynchronous distributed systems subject to crash failures. In [CT91], we proved that $\Diamond\cal W$, a failure detector that provides surprisingly little information about which processes have crashed, is sufficient to solve Consensus in asynchronous systems with a majority of correct processes. In this paper, we prove that to solve Consensus, any failure detector has to provide at least as much information as $\Diamond\cal W$. Thus, $\Diamond\cal W$ is indeed the weakest failure detector for solving Consensus in asynchronous systems with a majority of correct processes.

url: http://hdl.handle.net/1813/6209
date: 2007-04-23
creator: Han, Shih-Ping
viewed: 21
title: A Globally Convergent Method for Nonlinear Programming
abstract: Recently developd Newton and quasi-Newton methods for nonlinear programming possess only local convergence properties. Adopting the concept of the damped Newton method in unconstrained

optimization, we propose a stepsize procedure to maintain monotone decrease of an exact penalty function. In so doing, the convergence of the method is globalized. Keywords: nonlinear programming, global convergence, exact penalty function.

url: http://hdl.handle.net/1813/6210
date: 2007-04-23
creator: Van Loan, Charles
viewed: 21
title: The Sensitivity of the Matrix Exponential
abstract: In this paper we examine how the matrix exponenetial e^{At} is affected by perterbations in A. Elementary techniques using log norms and the Jordan and Schur factorizations indicate that e^{At} is least sensitive when A is normal. Through the formulation of an exponential condition number, insight is gained into the connection between the condition of the eigensystem of A and the sensitivity of e^{At}.

url: http://hdl.handle.net/1813/6211
date: 2007-04-23
creator: Rus, Daniela;Jennings, James;Donald, Bruce Randall
viewed: 22
title: Analyzing Teams of Cooperating Mobile Robots
abstract: In [Don4], we described a manipulation task for cooperating mobile robots that can push large, heavy objects. There, we asked whether explicit local and global communication between the agents can be removed from a family of pushing protocols. In this paper, we answer in the affirmative. We do so by using the general methods of [Don4] analyzing information invariants. We discuss several measures for the information complexity of the task of pushing with cooperating mobile robots, and we present a methodology for creating new manipulation strategies out of existing ones. We develop and analyze synchronous and asynchronous manipulation protocols for a small team of cooperating mobile robots that can push large boxes. The protocols we describe have been implemented in several forms on the Cornell mobile robots in our laboratory.

url: http://hdl.handle.net/1813/6212
date: 2007-04-23
creator: Toueg, Sam;Schneider, Fred B.;Marzullo, Keith;Budhiraja, Navin
viewed: 17
title: Optimal Primary-Backup Protocols
abstract: We give primary-backup protocols for various models of failure. These protocols are optimal with respect to degree of replication, failover time, and response time to client requests.

url: http://hdl.handle.net/1813/6213
date: 2007-04-23
creator: Buckley, Chris;Allan, James;Salton, Gerard
viewed: 24
title: Selective Use of Full-Text Databases
abstract: Large files of natural-language text are now available for automatic processing in machine readable form. Such text files may include documents of textbook size, medium-size newspaper articles and short messages and mail items, and the subject matter may be effectively unrestricted. Typically, the stored material is not meant to be read sequentially from beginning to end. Instead, a selective, diagonal reading strategy may be preferred which skips among the text sections and paragraphs in accordance with individual user needs. Methods are described in this study for analyzing text files covering arbitrary subject matter,

constructing links among text segments of varying size in accordance with computed similarities between texts and defining text traversal paths that are responsive to particular user needs. Such selective text traversal is useful in retrieving information from textbooks and instruction manuals and in consulting dictionaries, encyclopedias and other collections of text items. Topics: Hypertext construction, automatic text linking, selective text utilization, diagonal text traversal.

url: http://hdl.handle.net/1813/6214
date: 2007-04-23
creator: Kleinberg, Jon M.
viewed: 18
title: Algorithms for On-Line Navigation
abstract: We consider a number of problems faced by a robot trying to navigate inside a simple polygon. Such problems are "on-line"g in the sense that the robot does not have access to the map of the polygon; it must make decisions as it proceeds, based only on what it has seen so far. Specifically, we examine algorithms for the related problems of exploration and search. We present a 5/4-competitive randomized algorithm for exploring a rectilinear polygon; the only privious work here is the deterministic 2-competitive algorithm claimed in Deng, Kameda and Papadimitrou. For the problem of searching for a distinguished point in a polygon, we give a $\sqrt{3}$-competitive algorithm for traversing a street, which improves on a result of Klein by more than a factor of 3. Finally, the techniques we use in exploration and the construction of search patterns are combined to give an algorithm for searching an arbitrary and unknown rectilinear polygon; here, no constant competitive ratio can be achieved, but our algorithm is within a constant factor of optimal in the worst case.

url: http://hdl.handle.net/1813/6215
date: 2007-04-23
creator: Webber, Adam Brooks
viewed: 19
title: Relational Constraint: A Fast Semantic Analysis Technique
abstract: Relational constraint is a new method for fast semantic analysis of computer programs. It starts with a fixed, finite vocabulary of binary relations; for each data type this vocabulary forms a complete lattice. Relational constraint focuses on strengthening relations in this lattice, developing the strongest correct statement it can about the relation between any two objects in its universe. The relational constraint algorithm runs in $O(n^{2})$ time. In this paper, we discuss the motivation for this research, present the algorithm in detail, and show how it fits in the formal framework of abstract interpretation.

url: http://hdl.handle.net/1813/6216
date: 2007-04-23
creator: Rus, Daniela;Jennings, James;Donald, Bruce Randall
viewed: 20
title: Information Invariants for Distributed Manipulation
abstract: In [Don4], we described a manipulation task for cooperating mobile robots that can push large, heavy objects. There, we asked whether explicit local and global communication between the agents can be removed from a family of pushing protocols. In this paper, we answer in the affirmative. We do so by using the general methods of [Don4] analyzing information invariants. We discuss several measures for the information complexity of the task: (a) How much internal state should the robot retain? (b) How many cooperating agents are required, and how much communication between them is necessary? (c) How can the robot change (side-effect) the environment in order to record state or sensory information to perform a task? (d) How much information is provided by sensors? and (e) How much computation is required by the robot?

To answer these questions, we develop a notion of information invariants. We develop a technique whereby one sensor can be constructed from others by adding, deleting, and rellocating (a) - (e) among collaborating autonomous agents. We add a resource to (a) - (e) and ask: (f) How much information is provided by the task mechnics? By answering this question, we hope to develop information invariants that explicitly trade-off resource (f) with resources (a) - (e). The protocols we describe here have been implemented in several different forms, and report on experiments to measure and analyze information invariants using a pair of cooperating mobile robots for manipulation experiments in our laboratory.

url: http://hdl.handle.net/1813/6217
date: 2007-04-23
creator: Pingali, Keshav;Li, Wei
viewed: 86
title: The Lambda Loop Transformation Toolkit (User's Reference Manual)
abstract: Loop transformations are becoming critical to exploiting parallelism and data locality in parallelizing and optimizing compilers. This document describes the Lambda loop transformation toolkit, an implementation of the non-singular matrix transformation theory, which can represent any linear one-to-one transformation. Lambda has a simple interface, and is independent of any compiler intermediate representation. It has been used in parallelizing compilers for multiprocessor machines as well as optimizing compilers for uniprocessor machines. Keywords: Parallel programming, parallelizing compilers, loop transformations, linear transformations, nonsingular transformations.

url: http://hdl.handle.net/1813/6218
date: 2007-04-23
creator: Clark, Timothy;Birman, Kenneth P.
viewed: 16
title: Performance of the ISIS Distributed Computing Toolkit
abstract: The ISIS Toolkit is a programming environment for building process-group structured distributed software. The system is widely used in settings requiring high reliability, strong distributed consistency guarantees, and highspeed communication. In this paper, we describe experimental studies of ISIS performance. Our work explores the impact of hardware support for multicast performance, with a focus on flow control mechanisms. The use of hardware multicast in ISIS has not been discussed elsewhere. One conclusion of the paper is that although ISIS performance is limited primarily by flow control considerations, this type of hardware support can lead to significant performance improvements for certain communication patterns. A second conclusion was that the ISIS flow-control problem is surprisingly difficult. More work in this area, and on the underlying operating system communications layer (UDP), could have significant impact on the system. Keywords and phrases: Distributed computing, performance, process groups, atomic broadcast, causal and total message ordering, cbcast, abcast, multiple process groups, hardware multicast, IP multicast, virtual synchrony, fault- tolerance.

url: http://hdl.handle.net/1813/6219
date: 2007-04-23
creator: Pearson, David
viewed: 16
title: A Polynomial-time Algorithm for the Change-Making Problem
abstract: The change-making problem is the problem of representing a given value with the fewest coins possible from a given set of coin denominations. To solve this problem for arbitrary coin systems is NP-hard [L]. We investigate the problem of determining whether the greedy algorithm always produces the optimal result for a given coin system. Chang and Gill [CG] show that this can be solved in time polynomial in the

size of the largest coin and in the number of coins. Kozen and Zaks [KZ] give a more efficient algorithm, and pose as an open problem whether there is an algorithm to solve this problem which is polynomial in the size of the input. In this paper, we will derive such an algorithm. We first obtain a characterization of the smallest coounterexample (if there is one) for which the greedy algorithm is not optimal. We then derive a set of $O(n^2)$ possible values (where n is the number of coins) which must contain the smallest counterexample. Each can be tested with $O(n)$ arithmetic operations, giving us an $O(n^3)$ algorithm.

url: http://hdl.handle.net/1813/6220
date: 2007-04-23
creator: Efremidis, Sofoklis G.
viewed: 24
title: On Program Transformations
abstract: In understanding complex algorithms, the notions of encapsulation and modularization have played a key role. An algorithm is broken into several parts or modules, and understanding of each part is independent of others. In addition, each part contains details that are not needed by other parts and so can be hidden from them. Programming languages provide support for encapsulation and modularization in many different forms. Early programming languages provided the procedure and function as a means for modularization. Later, files were introduced as a means of modularizing programs. More sophisticated mechanisms were then introduced, like modules, packages, structures, and classes. In all these cases, the interface to a module remained the procedure or function call. Programs that use such modules contain calls to functions and procedures for communicating with a module. Ideally, using the operations that are provided by a module should be done in exactly the same way as using operations that are provided by modules should be easy to intermix. In addition, substituting one module for another that has the same functionality but different implementation should involve a minimal amount of effort. Recently, a new programming language, Polya, has been designed, which attempts to support modularization and at the same time incorporate the operations that are provided by the modules in the programming language itself. This is done by a sophisticated type-definition facility and a mechanism for transforming programs at the source-program level. This thesis studies mechanisms for program transformation at the source program level, in the context of Polya. Program transformation is based on a set of transformation rules that prescribe how a part of a program is to be transformed, and a set of directives that prescribe which program variables are to be transformed. We first give an algorithm for processing program transformations as described by the transform construct. The algorithm constructs a coordinate transformation of an abstract program based on a set of transforms and transform directives for transforming program variables. We then study the problem of transforming expressions that have compound types. Both the type constructor and the component expressions of the original expression may be transformed. No extra rules need be added to the bodies of transforms that transform the type constructor and the component expressions. In the sequel we investigate the problem of transforming procedures and functions that have parameters that need to be transformed. Finally, the problem of transforming program-transformation rules is studied. The program transformation techniques are applied to two well-known algorithms. The algorithms are source programs, which are subsequently transformed to programs of conventional programming languages, and then compiled and run.

url: http://hdl.handle.net/1813/6221
date: 2007-04-23
creator: Rubinfeld, Ronitt
viewed: 14
title: Robust Functional Equations with Applications to Self-Testing/Correcting
abstract: The idea of self-testing/correcting programs, introduced in [BLR90], is a powerful tool for attacking

the problem of program correctness. However, one of the main criticisms of this approach was that it seemed to have limited scope, applying only to linear and low degree polynomial functions. This paper provides results which show that the concept of self-testing/correcting has much broader applications than we previously understood. We concentrate on functions f satisfying functional equations, in particular, those of the form $\forall x,y~~ F[f(x-y), f(x+y), f(x),f(y)]=0$, where F is an algebraic function. We show that self-testers and self-correctors can be found for many such functions, including $\tan{x},{1 \over {1+\ cot{x}}}, {Ax \over {1-Ax}},\cosh{x}$. We make an initial attempt at characterizing properties of functional equations that make them useful for self-testing and self-correcting.

url: http://hdl.handle.net/1813/6222
date: 2007-04-23
creator: Schneider, Fred B.;Fix, Limor
viewed: 31
title: Hybrid Verification by Exploiting the Environment
abstract: A method of verifying hybrid systems is given. Such systems involve state components whose values are changed by continuous (physical) processes. The verification method is based on proving that only those executions that satisfy constraints imposed by an environment also satisfy the property of interest. A suitably expressive logic then allows the environment to model state components that are changed by physical processes.

url: http://hdl.handle.net/1813/6223
date: 2007-04-23
creator: Ho, Pei-Hsin;Henzinger, Thomas A.
viewed: 16
title: Model Checking Strategies for Linear Hybrid Systems
abstract: Linear hybrid systems are dynamical systems whose variables change both discretely and continuously along piecewise linear trajectories; they are useful for modeling digital real-time programs that are embedded in analog environments. Model checking is an algorithmic technique for anlayzing finite- state systems that has recently been extended to certain infinite-state systems, including linear hybrid systems. The method has been implemented in HyTech (The Cornell Hybrid Technology Tool), a symbolic model checker for linear hybrid systems. We report on a new implementation and several experiments with HyTech. The core of HyTech is a semidecision procedure that, given a linear hybrid automaton describing a system and a temporal formula describing a requirement, computes the so-called target region-the linear set of system states that satisfy the requirement. Unfortunately, the verification procedure may not return the target region using a reasonable amount of time and space, or it may not terminate in principle. Thus we have reimplemented the model checker using more efficient data structures that represent linear state sets geometrically, as unions of convex polyhedra, and we have experimented with several strategies that are designed to improve the performance of the model checker further: we (1) simultaneously compute the target region from different directions, (2) encode data as finite-state control, (3) approximate the target region by dropping constraints, and (4) iteratively refine the approximation until sufficient precision is obtained. Interestingly, symbolic model checking (fixpoint computation by iteration) and the polyhedral approximation strategies (3) can be viewed as the abstract interpretation of linear hybrid systems.

url: http://hdl.handle.net/1813/6224
date: 2007-04-23
creator: Singhal, Amit;Salton, Gerard
viewed: 35
title: Automatic Text Theme Generation and the Analysis of Text Structure

abstract: Non-expository texts are not usually read from cover to cover. Readers are helped in such circumstances by providing selective access to text excerpts as needed. Text themes can be identified representing areas of importance in a text, and summaries can be constructed automatically. In this study, text theme generation and text summarization are related to text struture. It is shown that useful text derivatives are obtainable for texts with diverse structural characteristics.

url: http://hdl.handle.net/1813/6225
date: 2007-04-23
creator: Scharstein, Daniel
viewed: 19
title: A Gradient-Based Evidence Measure for Image Matching
abstract: We present a simple yet powerful method to perform point-to-point matching between two images. The method uses an \it{evidence measure}, whose value for a given displacement reflects both the similarity between two locations and the confidence in a correct match. The measure is based on the gradient fields of the images, and can be computed quickly and in parallel. Accumulating the evidence measure for different displacements allows (1) stable computation of correspondences without smoothing across motion boundaries, and (2) detection of dominant motions, which can serve as attention cues in active vision systems. The method works well both on highly textured images and on images containing regions of uniform intensities, and can be used for a variety of applications, including stereo vision, motion segmentation, and object tracking.

url: http://hdl.handle.net/1813/6226
date: 2007-04-23
creator: Moudgill, Mayan
viewed: 26
title: Implementing and Exploiting Static Speculation on Multiple Instruction Issue Processors
abstract: Trends in processor architecture and design suggest that static speculation will become a candidate for implementation on future high-performance processors. In this dissertation, we shall examine issues related to the implementation and exploitation of static speculation. There are four primary results: 1) Precise Exceptions: Prior work in static speculation has not examined the interaction between exception handling and speculative instructions in any great detail. We investigate this interaction, exhibiting certain problematic subtleties that arise, and show how they can be overcome. 2) Speculative Tagging: Earlier proposals for implementing speculative instructions tended to have several drawbacks, including restricted applicability. We introduce speculative tagging, a new, more general, mechanism for specifying static speculation, and show it is possible to optimize exception recovery through this mechanism. 3) Whole-DAG Scheduling: Recently, there has been some work on scheduling regions of acyclic code larger than a basic block so as to take advantage of static speculation. We describe another such algorithm, known as whole-DAG scheduling, that contains innovations that make it more flexible, and allow it to use better heuristics. 4) Dynamic Speculation: The work on static speculation and exceptions suggested an alternative approach to implementing dynamic speculation. This approach results in simpler hardware than prior schemes, and is consequently cheaper to implement and potentially has a lesser impact on cycle-time. Additionally, we report results of experimental studies measuring the effectiveness of whole-DAG scheduling. In it, we show, among other things, that our scheduling technique can result in near-optimal schedules, and that the selection heuristics we adopt are superior to those used in earlier algorithms.

url: http://hdl.handle.net/1813/6227
date: 2007-04-23
creator: Rucklidge, William J.

viewed: 33
title: Lower bounds for the complexity of the Hausdorff distance
abstract: The Hausdorff distance is a similarity measure defined between sets in the plane. Algorithms to find the minimum distance as one set is transformed have been described, but few lower bounds are known. We describe new lower bounds for the complexity of the directed Hausddorff distance. We exhibit lower boundconstructions for both sets of points and sets of points and line segments, under translation, rigid motion, translation and scaling, and affine transformation. The results for point sets can also be extended to the undirected Hausdorff distance. As these lower bounds are for the complexity of the graph of the Hausdorff distance as a function of transformation, they do not necessarily bound functions which search this graph, but do give an indication of how complex the search may be.

url: http://hdl.handle.net/1813/6228
date: 2007-04-23
creator: Birman, Kenneth P.;Hickey, Takako M.;Van Renesse, Robbert
viewed: 25
title: Design and Performance of Horus: A Lightweight Group Communications System
abstract: The Horus project seeks to develop a communication system addressing the requirements of a wide variety of distributed applications. Horus implements the group communications model providing (among others) unreliable or reliable FIFO, causal, or total group multicasts. It is extensively layered and highly reconfigurable allowing applications to only pay for services they use. This architecture enables groups with different communication needs to coexist in a single system. The approach permits experimentation with new communication properties and incremental extension of the system, and enables us to support a variety of application-oriented interfaces. Our initial experiments show good performance.

url: http://hdl.handle.net/1813/6229
date: 2007-04-23
creator: Smits, Brian Edward
viewed: 15
title: Efficient Hierarchical Radiosity in Complex Environments
abstract: This thesis presents methods for speeding up the global illumination computations by using bounds on error to eliminate work that is not needed for a solution of a given accuracy. This work makes the hieerarchical radiosity approach feasible for complex environments. First, a new radiosity algorithm for efficiently computing global solutions with respect to a constrained set of views is presented. Radiosities of directly visible surfaces are computed to high acccuracy, while those of surfaces having only an indirect effect are computed to an accuracy commensurate with their contribution. The algorithm uses an adaptive subdivision scheme that is guided by the interplay between two closely related transport processes: one propagating power from the light sources, and the other propagating importance from the visible surfaces. By simultaneously refining approximate solutions to the dual transport equations, computation is significantly reduced in areas that contribute little to the region of interest. This approach is very effective for complex environments in which only a small fraction is visible at any time. Our statistics show dramatic speedups over the fastest previous radiosity algorithms for diffuse environments with details at a wide range of scales. A new approach for accelerating hierarchical radiosity by clustering objects is also presented. Previous approaches constructed effective hierarchies by subdividing surfaces, but could not exploit a hierarchical grouping on existing surfaces. This limitation resulted in an excessive number of initial links in complex environments. Initial linking is potentially the most expensive portion of hierarchical radiosity algorithms, and constrains the complexity of the environments that can be simulated. The clustering algorithm presented here operates by estimating energy transfers between collections of objects which maintaining reliable error bounds on each transfer. Two methods of bounding the transfers are employed with different tradeoffs

between accuracy and time. In contrast with the $O(s^2)$ time and space complexity of the initial linking in previous hierarchical radiosity algorithms, the new methods have complexities of $O(s$ log $s)$ and $O(s)$ for both time and space. Using these methods we have obtained speedups of two orders of magnitude for environments of moderate complexity while maintaining comparable accuracy. Finally, the thesis describes a method for reconstructing the radiance functions across the visible surfaces given a global solution to the energy balance equations. This approach greatly reduces artifacts resulting from the choice of constant basis functions used for the global solution.

url: http://hdl.handle.net/1813/6230
date: 2007-04-23
creator: Teitelbaum, Tim;Liu, Yanhong A.
viewed: 36
title: Systematic Derivation of Incremental Programs
abstract: A systematic approach is given for deriving incremental programs from non-incremental programs written in a standard functional programming language. We exploit a number of program analysis and transformation techniques and domain-specific knowledge, centered around effective utilization of caching, in order to provide a degree of incrementality not otherwise achievable by a generic incremental evaluator.

url: http://hdl.handle.net/1813/6231
date: 2007-04-23
creator: Kozen, Dexter
viewed: 15
title: Efficient Average-Case Algorithms for the Modular Group
abstract: The modular group occupies a central position in many branches of mathematical sciences. In this paper we give average polynomial-time algorithms for the unbounded and bounded membership problems for finitely generated subgroups of the modular group. The latter result affirms a conjecture of Gurevich [FOCS 1990].

url: http://hdl.handle.net/1813/6232
date: 2007-04-23
creator: Kozen, Dexter
viewed: 14
title: Efficient Resolution of Singularities of Plane Curves
abstract: We give a new algorithm for resolving singularities of plane curves. The algorithm is polynomial time in the bit complexity model, does not require factorization, and works over the rationals or finite fields.

url: http://hdl.handle.net/1813/6233
date: 2007-04-23
creator: Schiper, Andre;Ricciardi, Aleta M.;Birman, Kenneth P.;Malki, Dalia
viewed: 41
title: Uniform Actions in Asynchronous Distributed Systems
abstract: We develop necessary conditions for the development of asynchronous distributed software that will perform {\em uniform} actions (events that if performed by any process, must be performed at all processes). The paper focuses on {\em dynamic uniformity}, which differs from the classical problems in that processes continually leave and join the ongoing computation. Here, we first treat a static version of the problem (lacking joins), and then extend the results so obtained to also include joins. Our results demonstrate that in contrast to Consensus, which cannot be solved in asynchronous systems with even a single faulty process, dynamic uniformity can be solved using a failure detection mechanism that makes bounded numbers of

mistakes. Because dynamic uniformity arises in systems that maintain safety within a "primary partition" of a network, our paper provides a rigorous characterization of the framework upon which several existing distributed programming environments are based.

url: http://hdl.handle.net/1813/6234
date: 2007-04-23
creator: Lischinski, Daniel
viewed: 37
title: Accurate and Reliable Algorithms for Global Illumination
abstract: The simulation of global illumination is one of the most fundamental problems in computer graphics, with applications in a wide variety of areas, such as architecture and lighting design, computer-aided design, and virtual reality. This problem concerns the transport of light energy between reflective surfaces in an environment. During the past decade, radiosity has become the method of choice for simulating global illumination in diffuse environments. Despite much recent progress in efficiency and applicability of radiosity methods, there are several very important open issues remaining: 1) Radiosity images suffer from many visual artifacts, resulting from lack of reliable automatic discretization algorithms; and 2) Current radiosity algorithms do not provide the user with guaranteed bounds or reliable estimates of the approximation errors. As a result, current radiosity systems require very careful and time-consuming user intervention in the discretization process, and the accuracy of the resulting solutions can only be assessed by visual appearance. This thesis presents new radiosity algorithms for diffuse polyhedral environments that address the open problems mentioned above. First, we have improved and combined together two recently developed radiosity approaches: hierarchical radiosity and discontinuity meshing. An improved hierarchical radiosity algorithm that is based on a discontinuity-driven subdivision strategy to achieve better numerical accuracy and faster convergence is used to compute the global distribution of light energy in an environment. Then, a new algorithm based on discontinuity meshing uses the hierarchical solution to reconstruct a visually accurate approximation to the radiance function. Thus, results of high visual quality can be obtained even from coarse global illumination simulations. The solution is performed entirely in object-space, which enables users to "walk" through high-fidelity shaded virtual environments in real time, using appropriate display hardware. Second, we have developed algorithms that compute a posteriori error bounds and estimates for local and total errors in hierarchical radiosity solutions. A conservative algorithm computes guaranteed upper bounds on the errors. A non-conservative algorithm is capable of computing more realistic error estimates more efficiently. These error estimates are used in a new error-driven refinement strategy for hierarchical radiosity, resulting in faster convergence.

url: http://hdl.handle.net/1813/6235
date: 2007-04-23
creator: Chari, Suresh
viewed: 35
title: RANDOMNESS AS A COMPUTATIONAL RESOURCE: ISSUES IN EFFICIENT COMPUTATION
abstract: Probabilistic methods have become an integral part of theoretical computer science. Typically, the use of randomization leads to solutions which are simple, elegant and more efficient than deterministic algorithms. A new research paradigm in randomized computation is to treat random bits as a resource and design algorithms which use random bits efficiently. The motivations for this approach are that algorithms which use fewer random bits are easier to implement. Also, algorithms using very few random bits can be made deterministic. For several problems all known efficient deterministic algorithms are obtained by this process of derandomization. We design new probabilistic techniques that are used to develop randomness--efficient algorithms for combinatorial optimization problems. The first problem we consider is the abstract problem of isolating one of a possibly exponentially sized set of feasible solutions to the input instance. This

tool has been used previously to design algorithms for problems such as perfect matching in graphs, basic problems on matroids and designing random reductions. We design a new technique to solve this problem that is more efficient in the usage of random bits. Using this we derive randomness efficient solutions for the various applications. The randomness complexity of our method is parametrized in terms of the number of feasible solutions. As corollaries we obtain deterministic solutions for special cases of these problems. This new randomness--efficient technique unifies all previously known results for these applications and in many cases gives more efficient algorithms. We prove a strong lower bound which proves that our technique is optimal in the usage of random bits. Another important tool is the concept of random sources whose distribution approximates that of a truly random source. We present a new construction of such sources that is specifically tailored to be easily combined with the algorithmic design method of conditional probabilities. Using this we derive improved deterministic parallel algorithms for several combinatorial optimization problems. We investigate the problem of constructing small sample spaces which satisfy given constraints. For several sets of constraints we present improved constructions of such sample spaces. These have obvious applications to randomness--efficient computation and obtaining deterministic algorithms.

url: http://hdl.handle.net/1813/6236
date: 2007-04-23
creator: Henzinger, Thomas A.;Feder, Tomas;Alur, Rajeev
viewed: 30
title: The Benefits of Relaxing Punctuality
abstract: Abstract

url: http://hdl.handle.net/1813/6237
date: 2007-04-23
creator: Ranjan, Desh
viewed: 39
title: Issues in NP-Optimization and Approximation
abstract: Optimization or finding the best solution for a problem amongst several possible ones is one of the central themes in computing. In particular, NP-optimization (NPO) problems, examples of which include such well-known problems like Integer Programming and Traveling Salesperson Problem, have proved to be of great practical and theoretical importance. Different NPO problems exhibit starkly different properties and understanding the structure of these problems and their classification has been a long- standing goal in theoretical computer science. This thesis investigates the properties of NPO problems in two settings. In the first part of the thesis we investigate how the logical expressibility of NPO problems relates to some of their computational properties like approximability and self-improvement. In the second part we study NPO problems in the context of a relativeloy new model called the counterexample model. This allows us to achieve two objectives: Firstly, it gives us a framework to study and analyze incremental computation of optimal or near-optimal solutions in an abstract setting. This is useful because, in practice, for most of the NPO problems, one has to resort to inexact algorithms which work incrementally towards computing a good solution. Secondly, it gives us a way to precisely formulate and study questions about the structure of these problems which we believe are fundamental from theoretical point of view - for example, how much does the knowledge of one solution of a problem help in computing another solution?

url: http://hdl.handle.net/1813/6238
date: 2007-04-23
creator: Gries, David
viewed: 15
title: Recursion as a Programming Tool

abstract: NO ABSTRACT SUPPLIED

url: http://hdl.handle.net/1813/6239
date: 2007-04-23
creator: Hartmanis, Juris
viewed: 38
title: On Effective Speed-up and Long Proofs of Trivial Theorems in Formal Theories
abstract: In this note we give a very simple proof which shows that in many interesting formal mathematical theories, axiomatizable as well as decidable ones, for every given formalization we can effectively find infinite subsets of trivially true theorems which require as long proofs in the given formalism as the hardest theorems of the theory. Thus showing that for these theories every formalism is doomed to be blind to the triviality of infinite sets of theorems, which can be found effectively. Furthermore, it follows that for all (sufficiently large) constructable tape and time bounds there exists sets whose recognition can be effectively speeded up on infinite subsets and that such sets appear naturally, thus showing that for many concrete problems, every algorithm can be effectively sped-up on infinite subsets.

url: http://hdl.handle.net/1813/6240
date: 2007-04-23
creator: Webber, Adam Brooks
viewed: 14
title: Thinning Context-Free Languages
abstract: A thinning is a kind of transformation suggested by a practical problem in program optimization. We're given a thinning example δ, which is a string with one or more symbols marked. To thin a language with respect to this δ is to edit each word to reflect the observation that the marked symbols of δ are unnecessary and should be omitted. In this paper we'll explore thinnings of context-free languages. When δ is a fully-terminal string we'll define a language $L_{\delta} (G)$ formed by carrying out a thinning procedure on each word in $L(G)$. For a large class of thinning examples--the class for which the language of strings correctly marked for thinning is regular--we will demonstrate that $L_{\delta}(G)$ is a context-free language and that there is an effective procedure for generating a grammar H for which $L(H)$ = $L_{\delta}(G)$. When δ may include non-terminals the problem is more difficult to formalize: we'll define a language $L_{\delta}(G)$ formed by carrying out a thinning procedure on each parse tree generated by G. This yields an extension of the fully-terminal problem which is unsolved and seems very hard. An easier problem follows from defining a language $L_{\Delta}(G)$ formed by thinning the parse trees of G with respect to a set of thinning-tree examples instead of a single thinning-string example. We will develop an effective procedure for generating a grammar H for which $L(H)$ = $L_{\Delta}$$(G)$. By choosing an appropriate thinning set Δ, we can use this method to get an approximate solution to the general problem.

url: http://hdl.handle.net/1813/6241
date: 2007-04-23
creator: Yovine, Sergio;Sifakis, Joseph;Olivero, Alfredo;Nicollin, Xavier;Ho, Pei-Hsin;Henzinger, Thomas A.;Halbwachs, Nicolas;Courcoubetis, Costas;Alur, Rajeev
viewed: 27
title: The Algorithmic Analysis of Hybrid Systems
abstract: We present a general framework for the formal specification and algorithmic analysis of hybrid systems. A hybrid system consists of a discrete program with an analog environment. We model hybrid systems as finite automata equipped with variables that evolve continuously with time according to dynamical laws. For verification purposes, we restrict ourselves to linear hybrid systems, where all variables follow

piecewise-linear trajectories. We provide decidability and undecidability results for classes of linear hybrid systems, and we show that standard program-analysis techniques can be adapted to linear hybrid systems. In particular, we consider symbolic model-checking and minimization procedures that are based on the reachability analysis of an infinite state space. The procedures iteratively compute state sets that are definable as unions of convex polyhedra in multidimensional real space. We also present approximation techniques for dealing with systems for which the iterative procedures do not converge.

url: http://hdl.handle.net/1813/6242
date: 2007-04-23
creator: Summers, Kristen;Rus, Daniela
viewed: 32
title: Using White Space for Automated Document Structuring
abstract: We present and analyze efficient algorithms for the automated recognition and interpretation of layout structures in electronic documents. The key idea is to use the patterns in the distribution of white space in a document to recognize and interpret its components. The recognition algorithm divides the document into a hierarchy of logical elements; the interpretation algorithms classify these divisions as base-text, tables, indented lists, polygonal drawings, and graphs. We present experimental data and discuss an information access application. Our methodology allows the automatic markup of documents\footnote{For instance in the SGML format} and the creation of multi-level indices and browsing tools for electronic libraries.

url: http://hdl.handle.net/1813/6243
date: 2007-04-23
creator: Ergun, Funda
viewed: 31
title: Testing Multivariate Linear Functions:Overcoming the GeneratorBottleneck
abstract: The problem of testing program correctness has received considerable attention in computer science. One approach to this problem is the notion of self-testing programs \cite{BlumLubyRubinfeld}. Self-testing usually becomes more costly in the case of testing multivariate functions. In this paper we present efficient methods for self-testing multivariate linear functions. We then apply these methods to several multivariate linear problems to construct efficient self-testers.

url: http://hdl.handle.net/1813/6244
date: 2007-04-23
creator: Hartmanis, Juris
viewed: 86
title: Observations About the Development of Theoretical Computer Science
abstract: This paper gives a personal account of some developments in automata theory and computational complexity theory. Though the account is subjective and deals primarily with the research areas of direct interest to the author, it discusses the underlying beliefs and philosophy which guided this research as well as the intellectual environment and the ideas and contacts which influenced it. An attempt is also made to draw some general conclusions about computer science research and to discuss the nature of theoretical computer science.

url: http://hdl.handle.net/1813/6245
date: 2007-04-23
creator: Hartmanis, Juris
viewed: 18
title: A Note on Natural Creative Sets and Goedel Numberings

abstract: Creative sets (or the complete recursively enumerable sets) play an important role in logic and mathematics and they are known to be recursively isomorphic. Therefore, on the one hand, all the creative sets can be viewed as equivalent, on the other hand, we intuitively perceive some creative sets as more "natural and simpler" than others. In this note, we try to capture this intuitive concept precisely by defining a creative set to be natural if all other recursively enumerable sets can be reduced to it by computationally simple reductions and show that these natural creative sets are all isomorphic under the same type of computationally simple mappings. The same ideas are also applied to define natural Goedel numberings.

url: http://hdl.handle.net/1813/6246
date: 2007-04-23
creator: Todd, Michael J.;Goldfarb, Donald
viewed: 15
title: Modifications and Implementation of the Shor-Khachian Algorithm for Linear Programming
abstract: We give some modifications of the recent Shor-Khachian algorithm for linear programming and describe a numerically stable implementation. We are concerned with practical problems where user-supplied bounds can usually be provided. Our implementation allows constraint dropping and updates bounds on the optimal value, and should be able to terminate with an indication of infeasibility or with a provably good feasible solution in a moderate number of iterations.

url: http://hdl.handle.net/1813/6247
date: 2007-04-23
creator: Leivant, Daniel
viewed: 22
title: Implicational Complexity in Intuitionistic Arithmetic
abstract: NO ABSTRACT SUPPLIED

url: http://hdl.handle.net/1813/6248
date: 2007-04-23
creator: Leivant, Daniel
viewed: 12
title: Proof Theoretic Maximality of Logical Calculi
abstract: NO ABSTRACT SUPPLIED

url: http://hdl.handle.net/1813/6249
date: 2007-04-23
creator: Schneider, Fred B.;Denning, Dorothy E.
viewed: 14
title: Personal Keys, Group Keys and Master Keys
abstract: NO ABSTRACT SUPPLIED

url: http://hdl.handle.net/1813/6250
date: 2007-04-23
creator: Immerman, Neil
viewed: 40
title: Number of Quantifiers is Better than Number of Tape Cells
abstract: We introduce a new complexity measure, $QN[f(n)]$, which clocks the size of sentences from predicate calculus needed to express a given property. Techniques from logic are used to prove sharp lower bounds in the measure. These results demonstrate space requirements for computations and may provide

techniques for separating Time and Space complexity classes because we show that: $NSPACE [f(n)] \ subseteq QN[f(n)^{2}/log(n)] \subseteq DSPACE[f(n)^{2}].$

url: http://hdl.handle.net/1813/6251
date: 2007-04-23
creator: Van Loan, Charles;Golub, Gene H.
viewed: 25
title: An Analysis of the Total Least Squares Problem
abstract: Totla least squares (TLS) is a method of fitting that is appropriate when there are errors in both the observation vector $b (mxl)$ and in the data matrix $A (mxn)$. The technique has been discussed by several authors and amounts to fitting a "best" subspace to the points $(a^{T}_{i},b_{i}), i=1,\ldots,m,$ where a^{T}_{i} is the i-th row of A. In this paper a singular value decomposition analysis of the TLS problem is presented. The sensitivity of the TLS problem as well as its relationship to ordinary least squares regression is explored. Aan algorithm for solving the TLS problem is proposed that utilizes the singular value decomposition and which provides a measure of the underlying problem's sensitivity.

url: http://hdl.handle.net/1813/6252
date: 2007-04-23
creator: Goldfarb, Donald
viewed: 20
title: The Use of Negative Curvature in Minimization Algorithms
abstract: IN this paper we examine existiing algorithms for minimizing a nonlinear function of many variables which make use of negative curvature. These algorithms can all be viewed as modified versions of Newton's method and their merits and drawbacks are discussed to help identify new and more promising methods. The algorithms considered include ones which compute and search along nonascent directions of negative curvature and ones which search along curvi-linear paths generated by these directions and descent directions. Versions of the Goldfield-Quandt-Trotter method, or equivalently, methods based upon a trust region strategy, and gradient path methods are also considered. When combined with the numerically stable Bunch-Parlett factorization of a symmetric indefinite matrix the latter two approaches give rise to new, and what appears to be, efficient and robust minimization methods which can take advantage of negative curvature when it is encountered. Several suggestions are made for further research in this area.

url: http://hdl.handle.net/1813/6253
date: 2007-04-23
creator: Mahaney, Stephen R.;Hartmanis, Juris
viewed: 69
title: Languages Simultaneously Complete for One-Way and Two-Way Log-Tape Automata
abstract: In this paper we study languages accepted by nondeterministic $\log n$-tape automata which scan their input only once and relate their computational power to two-way, $\log n$-tape automata. We show that for the one-way, $\log n$-tape automata the nondeterministic model (1-NL) is computationally much more powerful than the deterministic model (1-L); that under one-way, $\log n$-tape reductions there exist natural complete languages for these automata and that the complete languages cannot be sparse. Furthermore, we show that any language complete for nondeterministic one-way $\log n$-tape automata (under 1-L reductions) is also complete for the computationally more powerful nondeterministic two-way, $\log n$-tape reductions. Therefore, for all bounds $T(n),T(n \geq \log n$, the deterministic and nondeterministic $T(n)$-tape bounded computations collapse if the nondeterministic one-way $\log n$-tape computations can be carried out by two-way deterministic $\log n$-tape automata.

url: http://hdl.handle.net/1813/6254
date: 2007-04-23
creator: Gries, David
viewed: 74
title: Educating the Programmer: Notation, Proofs, and the Development of Programs
abstract: The current state of affairs in programming is discussed. The opinion is expressed that effective programming requires more "mathematical maturity" than most programmers have. Further, education in formal logicc, which is used (often informally) to reason about programs and specifications, and in a theory of programming could do much to increase the programmer's competence. Such education could lead to programming becoming more of a science than just an art. Examples are given throughout to support the opinions presented.

url: http://hdl.handle.net/1813/6255
date: 2007-04-23
creator: Luk, Franklin T.
viewed: 22
title: Computing the Singular Value Decomposition on the Illiac IV
abstract: In this paper, we study the computation of the singular value decomposition of a matrix on the ILLIAC IV computer. We describe the architecture of the machine and explain why the standard Golub-Reinsch algorithm is not applicable to this problem. We then present a one-sided orthogonalization method which makes very efficient use of the parallel computing abilities of the ILLIAC machine. Our method is shown to be Jacobi-like and numerically stable. Finally, a comparison of our method on the ILLIAC IV computer with the Golub-Reinsch algorithm on a conventional machine demonstrates the great potential of parallel computers in the important area of matrix computations. Key Words and Phrases: ILLIAC IV computer, singular value decomposition, Golub-Reinsch algorithm, Jacobi-like method, parallel matrix computations.

url: http://hdl.handle.net/1813/6256
date: 2007-04-23
creator: Mahaney, Stephen R.;Hartmanis, Juris
viewed: 33
title: On Census Complexity and Sparseness of NP Complete Sets
abstract: In this note we show that if there are sparse NP complete sets with a polynomial time computable census function then $P=NP$. We also derive related results about the complexity of the census function for context-sensitive languages and $\log n$-tape bounded languages.

url: http://hdl.handle.net/1813/6257
date: 2007-04-23
creator: Mahaney, Stephen R.
viewed: 28
title: Sparse Complete Sets for NP: Solution of a Conjecture by Berman and Hartmanis
abstract: In this paper we show that if NP has a sparse complete set under many-one reductions, then P=NP. The result is extended to show that if NP is sparse reducible, then P=NP. The main techniques of this paper generalize the NP recognizer for the complement of a sparse complete set with census function to the case where the census function is not known (c.f. [HM]), then a many-one reduction of this language to the sparse set permits a polynomial time bounded tree search as in [B], [F], or [MP]. Even without actual knowledge of the census, the algorithm utilizes the properties of the true census to decide membership in SAT in polynomial time.

url: http://hdl.handle.net/1813/6258
date: 2007-04-23
creator: Yu, C. T.;Salton, Gerard
viewed: 36
title: Effective Information Retrieval Using Term Accuracy
abstract: The performance of information retrieval systems can be evaluated in a number of different ways. Much of the published evaluation work is based on measuring the retrieval performance of an average user query. Unfortunately, formal proofs are difficult to construct for the average case. In the present study, retrieval evaluation is based on optimizing the performance of a specific user query. The concept of query term accuracy is introduced as the probability of occurrence of a query term in the documents relevant to that query. By relating term accuracy to the frequency of occurrence of the term in the documents of a collection it is possible to give formal proofs of the effectiveness with respect to a given user query of a number of automatic indexing systems that have been used successfully in experimental situations. Among these are inverse document frequency weighting, thesaurus construction, and phrase generation.

url: http://hdl.handle.net/1813/6259
date: 2007-04-23
creator: Luk, Franklin T.
viewed: 21
title: The Communality Problem for Stieltjes Matrices
abstract: The Communality Problem in Factor Analysis is that of reducing the diagonal elements of a correlation matrix so that the resulting matrix will be positive semidefinite and of minimum rank. The problem is well studied but no effective solution procedures have been devised. In this paper, we propose a variant problem and give an algorithm for its solution. We prove that a solution to this problem also solves the Communality Problem if the correlation matrix is Stieltjes.

url: http://hdl.handle.net/1813/6260
date: 2007-04-23
creator: Hauser, Carl H.
viewed: 24
title: Specification and Verification of Communication in Parallel Systems
abstract: This thesis develops a verification theory for systems of parallel processes communicating with one another by sending messages. The goal is independent specification of processes in a system, so that the system can be verified from the specifications of its component processes. A process is regarded as a generator of a formal language called its communication language. A specification is written as a first order predicate calculus formula about this formal language. Processes are verified by including assertions in them and proving that the assertions hold, much as is done for sequential programs. An important aspect of the work is its treatment of non-determinism and its effect on the termination, non-termination, and deadlock properties of systems and processes. It is argued that non-determinism should be curtailed if specifications are to accurately reflect the specifier's wishes. Rules relating assertions and statements are similar to those used in Floyd-Hoare logic. However, we deal here with both partial correctness, sometimes called safety in the literature, and liveness, which is a concept analgous to termination of sequential programs. Justification of liveness assertions takes advantage of statements that occur both before and after the assertion, introducing a new kind of proof rule which we prove is correct.

url: http://hdl.handle.net/1813/6261
date: 2007-04-23

creator: Conway, Richard W.;Bishop, T.
viewed: 18
title: User's Guide to Release 2, PL/CS
abstract: NO ABSTRACT SUPPLIED

url: http://hdl.handle.net/1813/6262
date: 2007-04-23
creator: Mahaney, Stephen R.;Hartmanis, Juris
viewed: 29
title: An Essay About Research on Sparse NP Complete Sets
abstract: The purpose of this paper is to review the origins and motivation for the conjecture that sparse NP complete sets do not exist (unless P=NP) and to describe the development of the ideas and techniques which led to the recent solution of this conjecture.

url: http://hdl.handle.net/1813/6263
date: 2007-04-23
creator: Constable, Robert L.
viewed: 16
title: Programs As Types
abstract: Programs are interpreted as types in a constructive type theory. Rules for a logic of programs can then be derived from rules for types. This approach is the basis of nonelementary reasoning in the PL/CV3 (program) verification system. This paper summarizes the type theory and shows how to develop higher order logic and algorithmic (or programming or dynamic) logic in the theory. The theory described here is an evolution from de Bruijn's AUTOMATH and Martin-Lof's Intuitionistic Theory of Types.

url: http://hdl.handle.net/1813/6264
date: 2007-04-23
creator: Constable, Robert L.
viewed: 61
title: The Fundamental Theorem of Arithmetic in PL/CV2
abstract: This document is a section of formal elementary number theory leading up to a complete proof of the fundamental theorem of arithmetic. On the way to this result a large number of simple facts about integer division, prime numbers, greatest common divisors, and the product function, $\prod_{i=1}^{m}a(i)$, are developed. The entire section is written in the formal logic of PL/CV2, and the proof was checked by the PL/CV2 Proof Checker on an IBM 370/168. Readers familiar with the syntax of a high level programming language, like PL/I, and accustomed to highly symbolic mathematical proofs should be able to read this document as a specimen of extremely formal and rigorous mathematics. The following remarks about PL/CV2 notation will simplify reading. 1. The *PROCESS line indicates the beginning of PL/I executable text, the *THEOREM line indicates the beginning of purely declarative text. 2. All proof text is written between PL/I comment delimiters of the form /*/...*/ or /#...#/ depending on context. 3. For the built-in PL/I functions ABS, MOD, SIGN, MAX, MIN, EXP, DIVISION (/) only the properties of the functions are listed, in Section 0 called BUILT-IN FUNCTIONS. No proofs of these properties are supplied (because the operations are provided by the system). Thus proved propositions appear starting in Section 1 (at line 0036). 4. In the listing the negation sign is written ^, thus B ^= 0 reads "B not equal to zero". The PL/I symbol for "or" is the vertical bar, thus line 0037 TRI : B less than 0|B=0|B greater than 0 is labeled by TRI (for trichotomy) and means B is less than or equal to 0 or greater than 0. The justification... BY ARITH... indicates that the conclusion follows from simple arithmetic reasoning, provided by the system, from the list of hypotheses. 5. Every PL/CV2 procedure, such as LOG at line 0049, begins with an ASSUME statement, telling what is

assumed about the input, and with an ATTAIN statement telling what will be proved about it. Also every procedure is proved to terminate. In the case of recursive procedures, the termination proof begins with the line ARBITRARY (integer variable) WHERE (conditon) (see line 0053). It is proved that this integer variable decreases on any recursive call.

url: http://hdl.handle.net/1813/6265
date: 2007-04-23
creator: Schneider, Fred B.;Andrews, Gregory R.
viewed: 24
title: Three Surveys on Operating System Topics
abstract: Recently, we were asked by the Wiley Publishing Company to write survey articles covering some of the important concepts in operating systems for their forthcoming Handbook of Electrical and Computer Engineering. The three brief articles that comprise this report are the results of those efforts. The first was written by Schneider, the latter two by Andrews. We have collected them here in the hope that some may find them of interest. The first article discusses concurrent programming, which is an underlying concern in most operating systems. The use of a kernel or nucleus in constructing an operating system is described in the second article. Lastly, in the third article, the notion of hierarchical organization is developed and some of the advantage of this approach are presented.

url: http://hdl.handle.net/1813/6266
date: 2007-04-23
creator: Luks, Eugene;Hopcroft, John E.;Furst, Merrick
viewed: 32
title: A Subexponential Algorithm for Trivalent Graph Isomorphism
abstract: NO ABSTRACT SUPPLIED

url: http://hdl.handle.net/1813/6267
date: 2007-04-23
creator: Cartwright, Robert
viewed: 19
title: A Constructive Alternative to Axiomatic Data Type Definitions
abstract: Many computer scientists advocate using axiomatic methods (such as algebraic specification) to specify a program data domain - the universe of abstract data objects and operations manipulated by a program. Unfortunately, correct axiomatizations are difficult to write and to understand. Furthermore, their non-constructive nature precludes automatic implementation by a language processor. In this paper, we present a more disciplined, purely constructive alternative to axiomatic data domain specification. Instead of axiomatizing the program data domain, the programmer explicitly constructs it by using four type construction mechanisms: constructor generation, union generation, subset generation, and quotient generation. These mechanisms are rich enough to define all of the abstract data objects that programmers commonly use: integers, sequences, trees, sets, arrays, functions, etc. In contrast to axiomatic definitions, constructive definitions are easy to write and to understand. An unexpected advantage of the constructive approach is a limited capacity to support non-deterministic operations. As an illustration, we define a non-deterministic “choose” operation on sets.

url: http://hdl.handle.net/1813/6268
date: 2007-04-23
creator: Schrag, G.;Cammack, L.
viewed: 39

title: Permutations and the APL Grade Down Function
abstract: The APL gradeup (gradedown) function (denoted by $\uparrow \{respectively \downarrow \}$) aapplied to a vector $v \in R^{n}$ `grades' the elements of v in ascending (descending) order. (Among equal elements of v the ranking is determined by their position). For example, if $v=(2.3,4.7,6.8,0.6,3.7,4.7)$ then $\uparrow v$ is (4,1,5,2,6,3) and $\downarrow v$ is (3,2,6,5,1,4). An immediate consequence of the versatility of this functional form is that the expression $v[\uparrow v] (v[\downarrow v])$ `sorts' the elements of v in ascending (descending) order. The question of characterizing all vectors $v \in R^{n}$ such that $\uparrow v=v$ was answered in a paper by Cooper, Best and Kennedy [see Cooper, et al.(1)]. The results there are essentially determined by scrutinizing the selection property of $\uparrow v$; that is, if $v=(x_{1}, x_{2},\ldots, x_{n})$ then $\uparrow v$ can be visualized as the unique permutation $P \in S_{n}$ such that $x_{P(1)},x_{P(2),\ldots,x_{P(n)}$ is a list of the elements f v in ascending order. Two straightforward consequences of this interpretation are: 1) if $P \in S_{n}$, then $\uparrow P$ is the inverse of P and 2) the `fixed' points of the mapping $\uparrow$ are precisely the involutions of S_{n}. IN this note we continue this investigation for the gradedown function and also resolve the open questions posed in that paper.

url: http://hdl.handle.net/1813/6269
date: 2007-04-23
creator: Cooper, C.;Cammack, L.
viewed: 38
title: A Classroom Note on Topological Ordering
abstract: A partially ordered set (poset) is a pair (S,R) where S is a nonempty set and R is a reflexive, antisymmetric, transitive relation on S. (Equivalently, a pair (S,R') where R' is an irreflexive, transitive relation on S.) Unless otherwise stated the second definition will be the one used in this discussion. (S,R) is a chain if R is a total order on S, that is, given any pair a, b in S, either (a,b) or (b,a) is in R. The notion of embedding a poset in a complete lattice is a well known lattice theoretic result. [see Foulis(1)] In this sequel we consider a special case of that result; namely, the embedding of a poset in a chain. Although the proof in the finite case suggests an intuitively obvious constructive algorithm [see Kahn(2)] it was only recently that an `optimal' solution was discovered which can be implemented in linear time. [see Knuth(3)]. The proof in the infinite case first appeared in print in a paper by Szpilrajn. [see Szpilrajn(4)]. In this presentation the proof in the infinite case is a reasonably `clean' and straightforward application of Zorn's lemma which can be readily understood by the average undergraduate.

url: http://hdl.handle.net/1813/6270
date: 2007-04-23
creator: Donahue, James E.;Demers, Alan J.;Boehm, Hans-J.
viewed: 13
title: An Informal Description of Russell
abstract: NO ABSTRACT SUPPLIED

url: http://hdl.handle.net/1813/6271
date: 2007-04-23
creator: Donahue, James E.;Demers, Alan J.
viewed: 66
title: The Russell Semantics: An Exercise in Abstract Data Types
abstract: NO ABSTRACT SUPPLIED

url: http://hdl.handle.net/1813/6272

date: 2007-04-23
creator: Immerman, Neil
viewed: 35
title: First Order Expressibility as a New Complexity Measure
abstract: NO ABSTRACT SUPPLIED

url: http://hdl.handle.net/1813/6273
date: 2007-04-23
creator: Melville, Robert C.;Hood, Robert T.
viewed: 33
title: Real Time Queue Operations in Pure LISP
abstract: Several methods of implementing a queue in Pure LISP are presented. A technique to distribute the reversal of a list over a number of operations leads to a real-time queue implementation.

url: http://hdl.handle.net/1813/6274
date: 2007-04-23
creator: Melville, Robert C.
viewed: 27
title: Two-Dimensional Turing Machines With Uninitialized Workspaces
abstract: NO ABSTRACT SUPPLIED

url: http://hdl.handle.net/1813/6275
date: 2007-04-23
creator: Levin, Gary Marc
viewed: 16
title: Proof Rules for Communicating Sequential Processes
abstract: This thesis presents proof rules for an extension of Hoare's Communicating Sequential Processes (CSP). CSP is a notation for describing processes that interact through communication, which provides the sole means of synchronizing and passing information between processes. A sending process is delayed until some process is ready to receive the message; a receiving process is delayed until there is a message to be received. It is this delay that provides synchronization. A proof of a program is with respect to pre- and postconditions. A proof of weak correctness shows that execution of the program beginning in a state satisfying the precondition terminates in a state satisfying the postcondition, provided deadlock does not occur. A proof of strong correctness, in addition, shows that deadlock cannot occur. A proof of weak correctness has three stages: a sequential proof, a satisfaction proof, and a non-interference proof. A sequential proof reflects the effects of a process running in isolation. A satisfaction proof combines sequential proofs of processes, reflecting the message passing and synchronization aspects of communication. A non-interference proof shows that no process affects the validity of the proof of another process. The introduction of the satisfaction proof and our symmetric treatment of send and receive are important aspects of this thesis. By treating send and receive on an equal basis, we simplify our rules and allow the inclusion of send in guards. A sufficient condition for freedom from deadlock is given that depends on the proof of weak correctness; this is used to prove strong correctness. In general, freedom from deadlock can be very hard to check. Therefore, we derive special cases in which we can reduce the work needed to verify that a program is free from deadlock. We also present an algorithm for globally synchronizing processes; that is, each process can recognize that all processes are simultaneously in a given state. It works by recognizing a special class of deadlock. Having this algorithm allows us to modify programs that deadlock when the postcondition is established, so that they terminate normally.

url: http://hdl.handle.net/1813/6276
date: 2007-04-23
creator: Holm, John E.
viewed: 12
title: Floating-Point Arithmetic and Program Correctness Proofs
abstract: This thesis develops tight upper and lower bounds on the relative error in various schemes for performing floating-point arithmetic, proposes axioms for characterizing the significant properties embodied by these schemes, and gives examples to illustrate how these axioms may be used to reason about the correctness of floating-point programs. Three addition schemes are considered: (1) chopped addition, (2) addition with both pre and post-adjustment rounding, and (3) addition with pre-adjustment chopping and post-adjustment rounding. Schemes for performing both rounded and chopped multiplication and division are also considered. Our tight bounds are consistent with the commonly held opinion that a binary base minimizes the maximum relative errors in floating-point arithmetic. Also, these bounds show that one guard digit is optimal for minimizing the maximum relative errors in chopped addition. The bounds derived for each of the addition schemes considered are as tight as possible. One guard digit and two guard bits are shown to be sufficient to round the result of an exact addition to the nearest floating-point number. We show how this scheme can be implemented using a single post-adjustment shift, no rounding overflow, and (for certain implementations) requiring no more time than an addition that chops instead of rounds. Two approaches are considered for axiomatizing floating-point arithmetic. In one approach, a set of floating-point numbers is associated with each floating-point expression, and the assignment statement is modeled as a nondeterministic selector of one of the members in the set. In the alternative approach, the floating-point operations are modeled in terms of two cropping functions whose significant properties are characterized by a small set of axioms. In both cases, the axioms characterizing floating-point arithmetic are used with Dijkstra's weakest pre-condition calculus to provide an axiomatic framework for reasoning about floating-point programs. Finally, the commom practice of modelling the floating-point operations by a single function that chops or rounds the result of the corresponding exact operation is shown to be invalid for many implementations of floating-point arithmetic.

url: http://hdl.handle.net/1813/6277
date: 2007-04-23
creator: Silver, Leonard S.;Shore, Andrew I.;Conway, Richard W.;Archer, James E. Jr.
viewed: 18
title: The CORE User Interface
abstract: The distinctive characteristic of the CORE program development environment is its ttolerant user interface. This paper describes that interface. In addition to its unusual response to incomplete and incorrect constructions entered by the user, the interface is "mode-free", unusually frugal in the size of the command set, and unusually consistent in its treatment of statements, immediate statements and commands.

url: http://hdl.handle.net/1813/6278
date: 2007-04-23
creator: Luk, Franklin T.;Gerber, Richard R.
viewed: 34
title: A Generalized Broyden's Method for Solving Simultaneous Linear Equations
abstract: We present a generalized Broyden's method for solving rectangular systems of linear equations. We show that the method computes a least squares solution to the given simultaneous equations and that it posseses a remarkable finite termination property in exact arithmetic.

url: http://hdl.handle.net/1813/6279

date: 2007-04-23
creator: Bergmark, D.;Salton, Gerard
viewed: 37
title: Parallel Computations in Information Retrieval
abstract: Conventional information retrieval processes are largely based on data movement, pointer manipulations and integer arithmetic; more refined retrieval algorithms may in addition benefit from substantial computational power. In the present study a number of parallel processing methods are described that serve to enhance retrieval services. In conventional retrieval environments parallel list processing and parallel search facilities are of greatest interest. In more advanced systems, the use of array processors also proves beneficial. Various information retrieval processes are examined and evidence is given to demonstrate the usefulness of parallel processing and fast computational facilities in information retrieval.

url: http://hdl.handle.net/1813/6280
date: 2007-04-23
creator: Schneider, Fred B.
viewed: 14
title: Broadcasts: A Paradigm for Distributed Programs
abstract: NO ABSTRACT SUPPLIED

url: http://hdl.handle.net/1813/6281
date: 2007-04-23
creator: Todd, Michael J.;Goldfarb, Donald;Bland, Robert G.
viewed: 20
title: The Ellipsoid Method: A Survey
abstract: IN February 1979 a note by L.G. Khachiyan indicated how an ellipsoid method for linear programming can be implemented in polynomial time. This result has caused great excitement and stimulated a flood of technical papers. Ordinarily there would be no need for a survey of work so recent. The current circumstances are obviously exceptional. Word of Khachiyan's result has spread extraordinarily fast, much faster than comprehension of its significance. A variety of issues have in general not been well understood, including the exact character of the ellipsoid method and of Khachiyan's result on polynomiality, its practical significance in linear programming, its implementation, its potential applicability to problems outside of the domain of linear programming, and its relationship to earlier work. Our aim here is to help clarify these important issues in the context of a survey of the ellipsoid method, its historical antecedents, recent developments, and current research.

url: http://hdl.handle.net/1813/6282
date: 2007-04-23
creator: Luks, Eugene;Hopcroft, John E.;Furst, Merrick
viewed: 36
title: Polynomial-Time Algorithms for Permutation Groups
abstract: A permutation group on n letters may always be represented by a small set of generators, even though its size may be exponential in n. We show that it is practical to use such a representation since many problems such as membership testing, equality testing, and inclusion testing are decidable in polynomial time. In addition, we demonstrate that the normal closure of a subgroup can be computed in polynomial time, and that this procedure can be used to test a group for solvability. We also describe an approach to computing the intersection of two groups. The procedures and techniques have wide applicability and have recently been used to improve many graph isomorphism algorithms.

url: http://hdl.handle.net/1813/6283
date: 2007-04-23
creator: Hopcroft, John E.;Cole, Richard
viewed: 25
title: On Edge Coloring Bipartite Graphs
abstract: NO ABSTRACT SUPPLIED

url: http://hdl.handle.net/1813/6284
date: 2007-04-23
creator: Johnson, Scott D.
viewed: 16
title: A Computer System for Checking Proofs
abstract: NO ABSTRACT SUPPLIED

url: http://hdl.handle.net/1813/6285
date: 2007-04-23
creator: Schnabel, Robert B.
viewed: 15
title: Optimal Conditioning in the Convex Class of Rank Two Updates
abstract: Davidson's new quasi-Newton optimization algorithm selects the new inverse Hessian approximation H at each step to be the "optimally conditioned" member of a certain one-parameter class of rank two updates to the last inverse Hessian approximation H. In this paper, we show that virtually the same goals of conditioning can be achieved while restricting H to the convex class of updates. We therefore suggest that Davidson's algorithms using optimal conditioning, restrict the choice of H to members of the convex class.

url: http://hdl.handle.net/1813/6286
date: 2007-04-23
creator: McGraw, James R.;Andrews, Gregory R.
viewed: 75
title: Language Features for Process Interaction
abstract: Language for parallel programming should meet four goals: expressiveness, reliability, security, and verifiability. This paper presents a set of language features for describing processes and process interaction, gives examples of their use, and briefly discusses their relation to the goals. Two constructs, resources and protected variables, are introduced as the mechanisms for describing interaction. Resources are extensions of the monitor concept of Hoare; protected variables are global variables which can only be accessed by one process at a time. Two types of access control are introduced: restrictions on scope rules for static access, and capabilities for dynamic access. Examples include the interface to machine devices, files and virtual devices, device scheduling, device reservation, and buffer allocation.

url: http://hdl.handle.net/1813/6287
date: 2007-04-23
creator: Nodtvedt, Einar
viewed: 18
title: Information Retrieval in the Business Environment
abstract: This paper outlines a possible approach to the use of advanced information storage and retrieval techniques for business correspondence. The present situation in the Office Automation field is surveyed, and the role of information retrieval is an integrated office information system is discussed. Business letter

characteristics that might be useful for analysis and retrieval are described. The idea of a generalized business thesaurus containing standard phrases and locutions as well as synonyms and index phrases is presented. A technical solution to the analysis, storage and retrieval of business letters based on the concepts from the SMART-system is outlined. A description of the experiments performed so far follows. These include decomposition, analysis, storage, automatic classification and utilization of inter-letter references. The results from the experiments show that the use of automatic indexing and retrieval in the office is feasible and provides a viable alternative to existing manual business files. In conclusion, several future experiments are outlined.

url: http://hdl.handle.net/1813/6288
date: 2007-04-23
creator: Chan, Tat-hung
viewed: 15
title: Reversal-Bounded Computations
abstract: IN computations by abstract computing devices such as the Turing machine, head reversals are required for searching the input or retrieving intermediate results. Hence the number of head reversals is a measure of the complexity of a computation. This thesis is a study of reversal-bounded computation on three models of abstract computing devices. The first model is the 1-tape Turing machine with finite bounds on head reversals. It is known that such machines recognize exactly the regular sets so that for recognition purposes, reversals can be eliminated entirely. For transduction purposes, that is, if an output is expected on the tape, a single reversal suffices. Hence these machines are most appropriately called finite automata. Clearly they are among the weakest possible computing devices, and many decision problems about them are solvable. We use this fact and a very simple input-output encoding scheme to obtain greatly simplified proofs of the decidability of some weak mathematical theories, including the weak monadic second-order theory of one successor and Presburger arithmetic. Similar techniques yield linear size bounds as well as linear time complexity bounds (on the multitape Turing machine model) for functions definable in Presburger arithmetic. As corollaries, we find applications in linear diophantine systems and linear integer programming. The second model is the multicounter machine with general bounds on counter reversals. By relating counter reversal to time and space, we show that recursiveness of reversal bounds implies recursiveness of the sets accepted. For bounds that are at least linear, counter reversal is polynomially equivalent to Turing machine time in both the deterministic and the nondeterministic cases. This result leads to a general deterministic reversal hierarchy and a natural formulation fo the P=?NP question on the multicounter machine model. It also suggests that on every reasonable universal computing model, there is a "natural" complexity measure that is polynomially equivalent to Turing machine time. For reversal bounds that grow more slowly than $n^{1/2}$, we show that the nondeterministic 2-way reversal complexity class is not closed under complementation and strictly includes the corresponding deterministic class. In contrast, the analogous questions are open for 2-way 2-tape Turing machines with logarithmic space bounds. Finally, we consider finite bounds on counter reversals. For both the 1-way and the 2-way models, we obtain very sharp upper bounds on the Turing machine time and space complexity of the languages accepted. In the 1-way case, we present a unified account of the known results, interspersed with our contributions, which include (1) equivalence to 1-way simple multihead finite automata, (2) an easy technique for proving nonrecognizability, (3) an abstract characterization of the power of finite reversal-bounded counters, and (4) an application to the theory of program schemes. Lastly, we consider finite reversal-bounded multitape finite automata. We show that over a single-letter alphabet, the languages accepted are exactly the unary encodings of Presburger relations. This result holds whether the model is determinisitic or nondeterministic, and even if it is augmented with, for example, finite reversal-bounded counters and an unrestricted pushdown store, or if the reversals are restricted to rewinds, that is, instructions that simultaneously position all heads at the beginnings of their respective tapes. For both deterministic and nondeterministic rewind automata, we

establish exhaustive hierarchies based on the finite number of rewinds. When restricted to a single-letter alphabet, the deterministic hierarchy stands but the nondeterministic one collapses.

url: http://hdl.handle.net/1813/6289
date: 2007-04-23
creator: Schneider, Fred B.;Lermen, C. W.
viewed: 18
title: Detecting Distributed Termination When Processors Can Fail
abstract: A collection of protocols to facilitate detection of the termination of a computation on a distributed system are developed. Communication is assumed to be accomplished by use of asynchronous broadcasting. It is argued that this is a reasonable assumption for a distributed system in light of advances in local networking. The protocols presented are all robust with respect to processor failures. They differ in their requirements - some make heavy use of the communications network at the end of a computation, while others spread the communications cost out through the computation. Problems of restarting failed processors are also addressed.

url: http://hdl.handle.net/1813/6290
date: 2007-04-23
creator: Leivant, Daniel
viewed: 19
title: The Optimality of Induction as an Axiomatization of Arithmetic
abstract: NO ABSTRACT SUPPLIED

url: http://hdl.handle.net/1813/6291
date: 2007-04-23
creator: Melville, Robert C.
viewed: 13
title: Asymptotic Complexity of Iterative Computations
abstract: NO ABSTRACT SUPPLIED

url: http://hdl.handle.net/1813/6292
date: 2007-04-23
creator: Mills, Harlan;Gries, David
viewed: 28
title: Swapping Sections
abstract: NO ABSTRACT SUPPLIED

url: http://hdl.handle.net/1813/6293
date: 2007-04-23
creator: Reps, Thomas
viewed: 19
title: Optimal-Time Incremental Semantic Analysis for Syntax-Directed Editors
abstract: Attribute grammars permit the specification of static semantics in an applicative and modular fashion, and thus are a good basis for syntax-directed editors. Such editors represent programs as as attributed trees, which are modified by operations such as subtree pruning and grafting. After each modification, a subset of attributes, AFFECTED, requires new values. Membership in AFFECTED is not known a priori; this paper presents an algorithm that identifies attributes in AFFECTED and recomputes their values. The algorithm is time-optimal, its cost is proportional to the size of AFFECTED.

url: http://hdl.handle.net/1813/6294
date: 2007-04-23
creator: Zlatin, Daniel R.;Constable, Robert L.
viewed: 15
title: Report on the Type Theory (V3) of the Programming Logic PL/CV3
abstract: NO ABSTRACT SUPPLIED

url: http://hdl.handle.net/1813/6295
date: 2007-04-23
creator: Bates, Joseph L.
viewed: 19
title: A Logic for Correct Program Development
abstract: Existing verification technology, though theoretically adequate, is not directly applicable to the construction of large software systems. This thesis explores the view that reasoning about code is not the proper paradigm for correct program development. Instead, specifications should be the objects of study and a logic should be formulated for constructively proving that specifications have acceptable implementations; from these proofs code may be extracted. Thus, constructive existence proofs become the programmer's main concern, while executable text is seen as a valuable by-product of correct reasoning which cannot be produced from incorrect reasoning. The thesis captures this view of program development in a logic for the formal refinement of specifications. Specifications are written in an imperative notation of generalized assignment; they allow calculations in integer arithmetic and finite set theory. Classical reasoning techniques are shown inconsistent in this domain (where propositions may claim the constructive existence of programs), hence an alternative logic is developed based on intuitionistic reasoning. Proofs in this constructive refinement logic are trees, stylistically similar to those of Gerhard Gentzen's sequent calculus. It is argued that while linear proofs are appropriate when reasoning is developed and presented on paper, hierarchical proofs are appropriate when reasoning is developed and presented with machine aid. A mechanism is described that extracts correct codes from valid proofs; its existence assures the consistency of the logic. Finally, several code optimization techniques are examined and applied to code extracted from sample proofs. The thesis concludes with a discussion of the expounded view of correct program development, suggestions for a program development system based on this view, and a look at the numerous research problems remaining in this area.

url: http://hdl.handle.net/1813/6296
date: 2007-04-23
creator: Krol, Jerzy S.
viewed: 20
title: Simple Error Recovery Scheme for Optimized LR-Parsers
abstract: A new, simple and effective method for syntactic error recovery in optimized (reduced) LR-parsers is presented. This method, called the Simple Recovery and Correction scheme, is phrase oriented and performs local and some form of global contect correction. The error handling mechanism is driven by information obtainable from an LR-parser decision table. The formal basis for the method is the concept of synchronizing triple. A theoretical characterization of synchronizing triples is given and algorithms for direct extraction of recovery control information are presented. As a part of the SRC scheme a simplified method for the organization of LR-parser forward moves is introduced. In the last part of the paper the performance of the SRC scheme is illustrated in a specific case and implementation problems are discussed.

url: http://hdl.handle.net/1813/6297

date: 2007-04-23
creator: Salton, Gerard;Wu, Harry
viewed: 24
title: A Comparison of Search Term Weighting: Term Relevance vs. Inverse Document Frequency
abstract: The term relevance weighting method has been shown to produce optimal information retrieval queries under well-defined conditions. The parameters needed to generate the term relevance factors cannot unfortunately be estimated accurately in practice; furthermore, in realistic test situations, it appears difficult to obtain improved retrieval results using the term relevance weights over much simpler term weighting systems such as, for example, the inverse document frequency weights. It is shown in this study that the inverse document frequency weights and the term relevance weights are closely related over a wide range of the frequency spectrum. Methods are introduced for estimating the term relevance weights, and experimental results are given comparing the inverse document frequency with the estimated term relevance weights.

url: http://hdl.handle.net/1813/6298
date: 2007-04-23
creator: Demers, Alan J.;Krafft, Dean B.
viewed: 18
title: Determining Logical Dependency in a Decision Procedure for Equality
abstract: Several existing program verification and automated prooff systems make use of similar decision procedures for equality ([Krafft 1978], [Nelson and Oppen 1977] and [Downey, Sethi and Tarjan 1980]). The general method used by these algorithms has been named congruence closure. Given two expressions on uninterpreted function symbols, a congruence closure algorithm determines whether the expressions can be deduced to be equal from a set of previously asserted equalities. The existing congruence closure algorithms do not provide any indication of which previously asserted equalities were required in the deduction. In this paper, we describe an extension to one version of congruence closure. When two expressions are equal, the new algorithm can provide a certificate of their equality: a list of prevviously asserted equalities from which the queried equality can be deduced. This list is minimal, in the sense that if any equality iss removed from the list, the queried equality can no longer be deduced. The running time to produce the certificate is almost-linear in the size of the list.

url: http://hdl.handle.net/1813/6299
date: 2007-04-23
creator: Conway, Richard W.;Archer, James E. Jr.
viewed: 17
title: COPE: A Cooperative Programming Environment
abstract: NO ABSTRACT SUPPLIED

url: http://hdl.handle.net/1813/6300
date: 2007-04-23
creator: Nicks, Hugh
viewed: 24
title: Upson's Familiar Quotations - Second Edition 1974-1981
abstract: This report is a compilation of several hundred examples of context-free language and very irregular expressions. Contributions were submitted over the last five years by numerous computer science graduate students who collected these now immortal words in classes and seminars. We wish to express our gratitude to the faculty, guest lecturers, and students who provided the bulk of this work.

url: http://hdl.handle.net/1813/6301

date: 2007-04-23
creator:
viewed: 15
title: Cornell Local Network (CLONE): Interface Unit, Principles of Operation
abstract: This document describes the architecture and operation of a CLONE Interface Unit. It is the defining document.

url: http://hdl.handle.net/1813/6302
date: 2007-04-23
creator: Van Loan, Charles;Conn, Andrew R.;Cline, A. K.
viewed: 37
title: Generalizing the LINPACK Condition Estimator
abstract: Two generalizations of the Cline-Moler-Stewart-Wilkinson "LINPACK" condition estimator are described. One generalization combines the LINPACK notion of "look-ahead" with a new feature called "look-behind" that results in a more flexibly chosen right-hand side. The other generalization is a "divide-and-conquer" scheme that involves estimating the condition of certain principal submatrices whose dimension repeatedly doubles. Both generalizations require that maximization of simple objective functions. When seeking an L_{1} condition estimate, these functions are convex while inthe L_{2} case they are quadratic. All the algorithms considered appear to be at least as reliable as the LINPACK estimator and are equally efficient.

url: http://hdl.handle.net/1813/6303
date: 2007-04-23
creator: Conway, Richard W.;Archer, James E. Jr.
viewed: 16
title: Display Condensation of Program Text
abstract: NO ABSTRACT SUPPLIED

url: http://hdl.handle.net/1813/6304
date: 2007-04-23
creator: Zlatin, Daniel R.;Constable, Robert L.
viewed: 34
title: The Type Theory of PL/CV3
abstract: The programming logic PL/CV3 is based on the notion of a mathematical type. We present the core of the type theory, from which the full theory for program verification and specification can be derived. Whereas the full theory was designed to be useable, the core theory was selected to be analyzable. This presentation strives to be succinct yet thorough. The last section consists of examples, but the approach here is not tutorial. Key Words and phrases: automated logic, program verification, program specification, semantics of programming languages, type theory, foundations of mathematics.

url: http://hdl.handle.net/1813/6305
date: 2007-04-23
creator: Luk, Franklin T.
viewed: 19
title: On the Minres Method of Factor Analysis
abstract: The minres method is an effective means for estimating factor loadings under the condition that the sum of squares of the off-diagonal residuals be minimized. This paper is addressed to the efficient implementation and the convergence properties of the method. Key words: minres method, factor analysis,

communality.

url: http://hdl.handle.net/1813/6306
date: 2007-04-23
creator: Kadin, Jim
viewed: 29
title: A Note on the Complexity of Goedel Numberings and Isomorphisms
abstract: Some problems involved in looking at recursive function theory and thinking about the complexity of computations are discussed. Complexity classes of Goedel numberings are studied where a Goedel numbering is in a given complexity class if every other Goedel numbering can be translated into it by functions ina given complexity class. In particular, we look at the class of numberings that can be trnslated into by polynomial time mappings (GNP) and the class that can be translated into by linear bounded automation mappings (GNLBA). It is shown that polynomial time isomorphisms and LBA computable isomorphisms between two Goedel numberings relate the complexity of the syntax of the numberings. Since the classes GNP and GNLBA contain Goedel numberings with arbitrarily hard syntax, not all members of these classes are isomorphic by polynomial time or LBA mappings. LBA computable isomorphisms can be found between members of GNLBA whose syntax is LBA recognizable. A similar result holds for polynomial time isomorphisms and GNP if P=NP.

url: http://hdl.handle.net/1813/6307
date: 2007-04-23
creator: Krafft, Dean B.
viewed: 32
title: AVID: A system for the Interactive Development of Verifiably Correct Programs
abstract: The AVID system is designed to Aid Verification through the techniques of Interactive program Development. AVID continues the work in programming logics begun at Cornell University in 1975. It provides a syntax-directed editing environment for the development by stepwise refinement of programs and proofs in the PL/CV2 programming logic. AVID is another step in the continuing effort to provide methods and software tools for developing correct programs. AVID contains a number of important contributions to the area of program/proof development. To allow the full power of the AVID verification facilities to be applied to programs developed by stepwise refinement, we created a new program construct, called an ATTAIN block, that formalizes the concept of a refinement level. This construct allows the independent verification of different refinement levels, and thus of partially developed programs. Using this construct, AVID can guarantee that the refinement in a top-down development actually implements its high-level specification. AVID is the first system to support the interactive display of logical dependency in proofs. We have developed a new algorithm, built on the congruence closure method for deciding the theory of equality, that efficiently determines logical dependency within this theory. This algorithm is independent of the AVID system, and has potential applications wherever the congruence closure method is used. AVID also contains some significant contributions to the area of syntax-directed editor design. AVID makes use of a standard, powerful, and widely available screen-oriented editor as its user interface. The system design gives a strategy for the incorporation of other powerful editors into syntax-directed development systems. AVID is also the first system to make extensive use of derived nonterminals to avoid redundant specification and to guide the user in developing his proof. Perhaps AVID's most important contribution is its demonstration of the feasibility of a system to support and enforce the development by stepwise refinement of provably correct programs. For programs that must be correct, this approach may be one of the most promising. One final contribution of the AVID project is the system itself as a base for future research. The modular design of the AVID system and its facilities for the high-level description of AVID language constructs make the system easy to modify and to build on. There are already several projects planning to use AVID in this fashion.

AVID has been implemented on a DEC VAX 11/780 under the Berkeley UNIX operating system. The current version of the system, which supports the development and verification of the predicate calculus portion of PL/CV2, consists of approximately 20,000 lines of C language source code. When running on the VAX, the current system requires 230K bytes of memory. A version of the system suitable for distribution is expected to be available by January 1982.

url: http://hdl.handle.net/1813/6308
date: 2007-04-23
creator: Archer, James E. Jr.
viewed: 20
title: The Design and Implementation of a Cooperative Program Development Environment
abstract: COPE is a program development environment that provides a highly tolerant user interface specifically designed for novice users. The design and implementation of COPE has been the work of a group which includes the author, Richard Conway, Andrew Shore, and Leonard Silver. In presenting the results of the joint effort, attention has been given to balance the presentation of the author's contribution and the overall context of the system. The author has been involved in all of the development and design phases of the system. The initial system design and architecture were developed jointly with Richard Conway and the sections presenting design, architecture, and user interface represent joint work. Later sections on particular issues (parsing, file system, etc.) are individual contributions.

url: http://hdl.handle.net/1813/6309
date: 2007-04-23
creator: Helle, Oystein
viewed: 14
title: On the Use of Abstract Data Types to Specify the Modules of a System
abstract: NO ABSTRACT SUPPLIED

url: http://hdl.handle.net/1813/6310
date: 2007-04-23
creator: Luk, Franklin T.
viewed: 27
title: Orthogonal Rotation to a Partially Specified Target
abstract: This paper addresses the problem of finding an orthogonal transformation of an arbitrary factor solution that would lead to a least squares fit of a partially specified target matrix. An iterative computing procedure is presented. Key words: orthogonal rotations, factor analysis, least squares, partially specified target, procrustes problem.

url: http://hdl.handle.net/1813/6311
date: 2007-04-23
creator: Pevsner, Charles Dean
viewed: 17
title: Rendezvous Primitives for Operating System Design
abstract: A well chosen, comprehensive set of kernel primitives is essential for the construction of higher levels of a computer's operating system. In particular, although many solutions to the classical operating system problems of interprocess synchronization and communication have been proposed in the past, difficulties with destination naming and language construct symmetry have continued to mar most proposed solutions. This thesis proposes a set of primitives, the Rendezvous primitives, that form the kernel of an operating system. It is argued that the Rendezvous primitives constitute a reasonable and practical set of

operations on which to base an operating system. The Rendezvous primitive itself is presented as a solution to the interprocess synchronization and communication problems. A rendezvous occurs when two processes synchronize and subsequently exchange messages. Rendezvous is symmetric, in that processes that wish to communicate both use the same primitive; and processes invoke Rendezvous with class designations, not procedure names. Rendezvous is presented within the context of the other primitives, which support the restriction of access to Rendezvous, process creation and destruction, process scheduling, and stack resource management. A comparison of Rendezvous and existing primitives and language constructs to solve interprocess synchronization and communication is made. The full syntax and semantics of the Rendezvous primitives are presented, along with a discussion of their design rationale. The Crossbar Switch, a generalized virtual device interconnection and reconfiguration scheme, is presented as an example of the use to which the Rendezvous primitives might be put. A high level program description of the Crossbar Switch is presented as well. The thesis concludes with a description of the implementation of the Rendezvous kernel on a DEC PDP 11/60. The kernel code is given in an appendix.

url: http://hdl.handle.net/1813/6312
date: 2007-04-23
creator: Hopcroft, John E.;Borodin, Allan B.
viewed: 15
title: Merging on Parallel Models of Computation
abstract: A variety of models have been proposed for the study of synchronous parallel computation. We review these models and study further some prototype problems. Within a spectrum of shared memory models, we show that $\log \log n$ is asymtotically optimal for n processors to merge two sorted lists containing n elements.

url: http://hdl.handle.net/1813/6313
date: 2007-04-23
creator: Pritchard, Paul
viewed: 96
title: Fast Compact Prime Number Sieves (Among Others)
abstract: NO ABSTRACT SUPPLIED

url: http://hdl.handle.net/1813/6314
date: 2007-04-23
creator: Joy, William;Babaoglu,Ozalp
viewed: 29
title: Converting a Swap-Based System to do Paging in an Architecture Lacking Page-Referenced Bits
abstract: This paper discusses the modifications made to the UNIX operating system for the VAX-11/780 to convert it from a swap-based segmented system to a paging-based virtual memory system. Of particular interest is that the host machine architecture does not include page-referenced bits. We discuss considerations in the design of page-replacement and load-control policies for such an architecture, and outline current work in modeling the policies employed by the system. We describe our experience with the chosen algorithms based on benchmark-driven studies and production system use.

url: http://hdl.handle.net/1813/6315
date: 2007-04-23
creator: Babaoglu,Ozalp
viewed: 42
title: Efficient Generation of Memory Reference Strings Based on the LRU Stack Model of Program

Behaviour
abstract: We consider the problem of generating memory reference strings that are to be used instead of real program address traces with the generator based on the Least-Recently-Used Stack Model (LRUSM) of program behaviour. A method to transform the stack distance probability mass function that drives the generator is proposed which results in memory reference strings that are a fraction of theoriginal string length while preserving most of its essential performance characteristics. The reduced string can be processed in much the same way as the original string for virtual memory studies that deal with memory sizes greater than k, the parameter of the transformation.

url: http://hdl.handle.net/1813/6316
date: 2007-04-23
creator: Schneider, Fred B.;Conway, Richard W.;Archer, James E. Jr.
viewed: 23
title: User Recovery and Reversal in Interactive Systems
abstract: Interactive systems, such as editors and program development environments, should be explicitly support recovery - facilities that permit a user to reverse the effects of past actions and to restore an object to a prior state. A model for interactive systems is presented that allows recovery to be defined precisely and user and system responsibilities to be delineated. Various implementation techniques for supporting recovery are described. Application of a general recovery facility to support reverse execution is discussed. A program development system (called COPE) with extensive recovery facilities, including reverse execution, is described. Keywords: recovery, reverse execution, undo, checkpoint, editor, programming environments.

url: http://hdl.handle.net/1813/6317
date: 2007-04-23
creator: Hopcroft, John E.;Borodin, Allan B.
viewed: 26
title: Routing in Networks
abstract: NO ABSTRACT SUPPLIED

url: http://hdl.handle.net/1813/6318
date: 2007-04-23
creator: Boehm, Hans-J.
viewed: 24
title: A Logic for Expressions with Side Effects
abstract: This paper presents a simple programming logic LES, which is particularly well suited for reasoning about so-called expression languages, i.e. languages that incorporate imperative features into expressions rather than distinguishing between expressions and statements. An axiomatization of a simple programming language is presented using this formalism. It is shown that this axiomatization is relatively complete, roughly in the sense of [Coo 76].

url: http://hdl.handle.net/1813/6319
date: 2007-04-23
creator: Schneider, Fred B.;Schlichting, Richard D.
viewed: 19
title: An Approach to Designing Fault-Tolerant Computing Systems
abstract: A methodology that facilitates the design of fault-tolerant computing systems is presented. It is based on the notion of a fail-stop processor. Such a processor automatically halts in response to any internal failure and does so before the effects of that failure become visible. The problem of implementing processors

that, with high probability, behave like fail-stop processors is addressed. Axiomatic program verification techniques are described for use in developing provably correct programs for fail-stop processors. The design of a process control system illustrates the use of our methodology.

url: http://hdl.handle.net/1813/6320
date: 2007-04-23
creator: Schlichting, Richard D.
viewed: 86
title: Axiomatic Verification to Enhance Software Reliability
abstract: Techniques that facilitate the design of reliable software are described. Two distinct phenomena that can cause execution of a program to deviate from its specifications are considered. The first is the failure of the computing system on which the program is running. When this occurs, the system might not be capable of following the instructions specified by the program. The second phenomenon is that the program is written so that it will not execute consistently with its specifications, even on a failure-free computing system. A methodology is presented for designing programs that can cope with failures in the underlying system. It is based on the notion of a fail-stop processor - a processor with well-defined failure mode operating characteristics. Axiomatic program verification techniques are extended for use in developing provably correct programs for such processors. The problem of meeting response time goals in light of failures is discussed. Lastly, the problem of implementing processors that, with high probability, behave like fail-stop processors is addressed. Programming logics have already been developed to reason about sequential programs, and parallel programs that use shared memory or synchronous message-passing. That work is extended to facilitate reasoning about programs that use asynchronous message-passing. Two benefits accrue from this. The obvious one is that partial correctness proofs can be written for concurrent programs that use such primitives. This allows such programs to be understood as predicate transformers, instead of by contemplating all possible execution interleavings - often an intractible task. The other benefit is that these proof rules and their derivation shed light onto how this interference can be controlled. In particular, disciplines that make asynchronous message-passing primitives simple and safe to use are explored. A partial correctness proof of the two-phase commit protocol illustrates the application of the new techniques. This protocol, widely used in database applications, ensures that a specified action is performed either at all sites in a distributed system, or at no site, despite failures.

url: http://hdl.handle.net/1813/6321
date: 2007-04-23
creator: Luk, Franklin T.
viewed: 83
title: Oblique Procrustes Rotations in Factor Analysis
abstract: This paper addresses the problem of rotating a factor matrix obliquely to a least squares fit to a target matrix. The target may be fully or partially specified. An iterative computing procedure is presented. Keywords: oblique rotations, procrustes problem, factor analysis, least squares.

url: http://hdl.handle.net/1813/6322
date: 2007-04-23
creator: Non Ymous, A.
viewed: 21
title: Opening Night at Upson Hall (Scripts from Holiday Party Skits)
abstract: Every holiday season comes the time when the thoughts of graduate students at Cornell turn to the fast-approaching A-exams. More precisely, they think, “We’d better get them before they get us.”. Hence, these attempts at theatrical productions. Although they are based on the quirks and idiosyncracies of faculty

members, they should not be taken as criticism. The authors would prefer to think that everyone is laughing together, rather than at anyone in particular. And with this word of caution, we present... 1977, 1978, 1979, 1980, 1981.

url: http://hdl.handle.net/1813/6323
date: 2007-04-23
creator: Skeen, Dale
viewed: 43
title: A Quorum-Based Commit Protocol
abstract: Herein, we propose a commit protocol and an associated recovery protocol that is resilient to site failures, lost messages, and network partitioning. The protocols do not require that a failure be correctly identified or even detected. The only potential effect of undetected failures is a degradation in performance. The protocols use a weighted voting scheme that supports an arbitrary degree of data replication (including none) and allows unilaterally aborts by any site. This last property facilitates the integration of these protocols with concurrency control protocols. Both protocols are centralized protocols with low message overhead.

url: http://hdl.handle.net/1813/6324
date: 2007-04-23
creator: Hartmanis, Juris
viewed: 14
title: On the Structure of Feasible Computations
abstract: This paper discusses the study of computational complexity of feasible computations and surveys some recent insights and results about the structure of NP complete languages and the attempts to separate the classic complexity classes DLOGTAPE, NDLOGTAPE, PTIME, NPTIME,$\ldots,\Sigma^{P}_{k}, \ ldots,$ PTAPE.

url: http://hdl.handle.net/1813/6325
date: 2007-04-23
creator: Hartmanis, Juris
viewed: 20
title: On Goedel Speed-Up and Succinctness of Language Representation
abstract: In this note we discuss the similarities and differences between Goedel's result about non-recursive shortening of proofs of formal systems by additional axioms and the corresponding results about the succinctness of different representations of languages.

url: http://hdl.handle.net/1813/6326
date: 2007-04-23
creator: Whitesides, Sue H.;Joseph, Deborah A.;Hopcroft, John E.
viewed: 15
title: On the Movement of Robot Arms in Two Dimensional Bounded Regions
abstract: The classical mover's problem is the following: can a rigid object in 3-dimensional space be moved from one given position to another while avoiding obstacles? It is known that a more general version of this problem involving objects with movable joints is PSPACE complete, even for a simple tree-like structure moving in a 3-dimensional region. In this paper, we investigate a 2-dimensional mover's problem in which the object is a robot arm with an arbitrary number of joints. In particular, we give a polynomial time algorithm for moving an arm confined within a circle from one given configuration to another. We also give a polynomial time algorithm for moving the arm from its initial position to a position in which the end of the arm reaches a given point within the circle. Keywords: robotics, manipulators, mechanical arms,

algorithms, polynomial time.

url: http://hdl.handle.net/1813/6327
date: 2007-04-23
creator: Hopcroft, John E.;Von zur Gathen, Joachim;Borodin, Allan B.
viewed: 37
title: Fast Parallel Matrix and GCD Computations
abstract: We present parallel algorithms to compute the determinant and characteristic polynomial of n x n-matrices and the gcd of polynomials of degree $\leq$n. The algorithms use parallel time $O(\log^{2}n)$ and a polynomial number of processors. We also give a fast parallel Monte Carlo algorithm for the rank of matrices. All algorithms work over arbitrary fields.

url: http://hdl.handle.net/1813/6328
date: 2007-04-23
creator: Whitesides, Sue H.
viewed: 16
title: A Method for Solving Certain Graph Recognition and Optimization Problems, with Applications to Perfect Graphs
abstract: A polynomial time membership test and solutions to the minimum coloring and maximum weight clique and stable set problems are given for certain families of graphs. In particular, it is shown that for any arbitrary hereditary family of graphs, these problems can be solved quickly for the entire family whenever they can be solved quickly for the clique cutset free members of the family. If the graphs in the family are perfect, then a similar statement holds for the mimimum weight clique and stable set problems. These results are obtained by applying a polynomial time algorithm for determining whether a graph has a clique cutset. Several questions of Gavril concerning "clique separable" perfect graphs are answered, and a polynomial time recognition algorithm for Gallai's "i-triangulated" perfect graphs is given. Keywords: graph algorithms, cliques, stable sets, perfect graphs, clique separable graphs, i-triangulated graphs.

url: http://hdl.handle.net/1813/6329
date: 2007-04-23
creator: Cosnard, Michel Yves
viewed: 18
title: A Comparison of Four Methods for Solving Systems of Nonlinear Equations
abstract: In this thesis, Brent's method and the Brent-Gay version of Brown's method for solving systems of nonlinear equations are studied. A comparison is then made between these two methods, Powell's hybrid method and Brown's original method. The numerical results show that the Brent-Gay version is an improvement of the method and that in the average Brent's method is the best. Finally, listings of the two studied algorithms and of the test functions are given in the appendices.

url: http://hdl.handle.net/1813/6330
date: 2007-04-23
creator: Schneider, Fred B.;Lamport, Leslie
viewed: 27
title: The "Hoare Logic" of CSP, and All That
abstract: Generalized Hoare Logic is a formal logical system for deriving invariance properties of programs. It provides a uniform way to describe a variety of methods for reasoning about concurrent programs, including noninterference, satisfaction, and cooperation proofs. We describe a simple meta-rule of the Generalized Hoare-Logic - the Decomposition Principle - and show how all these methods can be derived using it.

url: http://hdl.handle.net/1813/6331
date: 2007-04-23
creator: Schneider, Fred B.;Schlichting, Richard D.
viewed: 34
title: Using Message Passing for Distributed Programming: Proof Rules and Disciplines
abstract: Inference rules are derived for proving partial correctness of concurrent programs that use message passing. These rules extend the notion of a satisfaction proof, first proposed for proving correctness of programs that use synchronous message-passing, to asynchronous message-passing, rendezvous, and remote procedures. Two types of asynchronous message-passing are considered: unreliable datagrams and reliable virtual circuits. The proof rules show how interference can arise and be controlled.

url: http://hdl.handle.net/1813/6332
date: 2007-04-23
creator: Constable, Robert L.;Bates, Joseph L.
viewed: 24
title: The Definition of μPRL
abstract: NO ABSTRACT SUPPLIED

url: http://hdl.handle.net/1813/6333
date: 2007-04-23
creator: Gries, David
viewed: 16
title: The 711 Problem
abstract: NO ABSTRACT SUPPLIED

url: http://hdl.handle.net/1813/6334
date: 2007-04-23
creator: Van Loan, Charles
viewed: 34
title: A Symplectic Method for Approximating All the Eigenvalues of a Hamiltonian Matrix
abstract: A fast method for computing all the eigenvalues of a Hamiltonian matrix M is given. The method relies on orthogonal symplectic similarity transformations which preserve structure and have desirable numerical properties. The algorithm is about four times faster than the standard Q-R algorithm. The computed eigenvalues are shown to be the exact eigenvalues of a matrix M+E where $\Vert E \Vert$ depends on the square root of the machine precision. The accuracy of a computed eigenvalue depends on its condition and its magnitude, larger eigenvalues typically being more accurate.

url: http://hdl.handle.net/1813/6335
date: 2007-04-23
creator: Clarke, Edmund Melson, Jr.
viewed: 14
title: Programming Language Constructs for Which it is Impossible to Obtain Good Hoare-Like Axioms
abstract: Programming Language Constructs for Which it is Impossible to Obtain Good Hoare-Like Axioms

url: http://hdl.handle.net/1813/6336
date: 2007-04-23

creator: Skeen, Dale
viewed: 16
title: Determining the Last Process to Fail
abstract: A total failure occurs whenever all processes cooperatively executing a distributed task fail before the task's completion. A frequent prerequisite for recovery from a total failure is the identification of the last group (LAST) of processes concurrently failing. Herein, we derive necessary and sufficient conditions for computing LAST from the local failure data of recovered processes. These conditions are easily translated into decision procedures for LAST membership using either complete or incomplete failure data. The choice of failure data itself is dictated by two requirements: (1) it can be cheaply maintained, and (2) maximum fault-tolerance is afforded in the sense that the expected number of recoveries required for identifying LAST is minimized.

url: http://hdl.handle.net/1813/6337
date: 2007-04-23
creator: Whitesides, Sue H.
viewed: 15
title: A Classification of Certain Graphs with Minimal Imperfection Properties
abstract: The family of $(\alpha \omega)$-graphs are of interest for several reasons. For example, any minimal counter-example to Berge's Strong Perfect Graph Conjecture belongs to this family. This paper accounts for all (4,3)-graphs. One of these is not attainable by existing techniques for generating $(\alpha +1,\omega)$-graphs from (α, ω)-graphs. Keywords: perfect graphs, minimal imperfect graphs, (α,ω)-graphs.

url: http://hdl.handle.net/1813/6338
date: 2007-04-23
creator: Wong, A.;Salton, Gerard
viewed: 20
title: On the Role of Words and Phrases in Automatic Text Analysis
abstract: One of the most crucial operations in automatic information retrieval is the assignment to written texts and documents of appropriate identifiers, capable of representing information content for search and retrieval purposes. This operation known as automatic indexing normally consists in assigning to the documents either single terms, or more specific entities such as phrases, or more general entities such as term classes. A model, known as discrimination value analysis is introduced which assigns an appropriate role in the indexing operation to the terms, term phrases, and thesaurus classes. The model is used to determine effectiveness criteria for the content identifiers and to generate useful indexing policies. Experimental evidence is given to validate the theory.

url: http://hdl.handle.net/1813/6339
date: 2007-04-23
creator: Han, Shih-Ping
viewed: 20
title: Dual Variable Metric Algorithms for Constrained Optimization
abstract: We present a class of algorithms for solving constrained optimization problems. In the algorithm non-negatively constrained quadratic programming subproblems are iteratively solved to obtain estimates of Lagrange multipliers and with these estimates a sequence of points which converges to the solution is generated. To achieve a superlinear rate of convergence the matrix appearing in the subproblem is required to be an approximate inverse of the Hessian of the Lagrangian. Some well-known variable metric updates such as the BFGS update are employed to generate the matrix and the resulting algorithm converges locally

with a superlinear rate. When the penalty Lagrangian developed by Hestenes, Powell and Rockafellar is incorporated in the algorithm, it turns out to be closely related to the recently developed the method of multipliers. Unlike the method of multipliers, our algorithm possesses a superlinear rate of convergence even without requiring a penalty parameter goint to infinity and therefore avoids the numerical instability so caused.

url: http://hdl.handle.net/1813/6340
date: 2007-04-23
creator: Joseph, Deborah A.
viewed: 20
title: Polynomial Time Computations in Models of ET
abstract: We investigate formal notions of computations in nonstandard models of the weak arithmetic theory ET - the theory of exponential time. It is shown that ET is a sufficiently weak theory that many of the natural notions are not preserved.

url: http://hdl.handle.net/1813/6341
date: 2007-04-23
creator: Young, P. R.;Joseph, Deborah A.
viewed: 27
title: A Survey of Some Recent Results on Computational Complexity in Weak Theories of Arithmetic
abstract: In spite of the fact that a great deal of effort has been expended trying to prove lower bounds for algorithms and trying to solve the P = NP question, only limited progress has been made. Although most computer scientists remain convinced that solutions will be found, others (Hartmanis and Hopcroft, Fortune, Leivant and O'Donnell and Phillips) have questioned the adequacy of Peano arithmetic for computer science. This uncertainty has only been increased by the recent work of Paris and Harrington, showing that certain simple, finistic, combinatorial statements are in fact independent of Peano Arithmetic. In this paper we survey complexity theoretic statements that are known to be independent of arithmetic theories. In addition, we survey recent results analyzing the arithmetic quantifier structure of computational problems. Keywords: Independence results, NP=?coNP, P=?NP, Peano arithmetic.

url: http://hdl.handle.net/1813/6342
date: 2007-04-23
creator: More, Jorge J.;Coleman, Thomas F.
viewed: 16
title: Software for Estimating Sparse Jacobian Matrices
abstract: In many nonlinear problems it is necessary to estimate the Jacobian matrix of a nonlinear mapping F. In large scale problems the Jacobian of F is usually sparse, and then estimation by differences is attractive because the number of differences can be small compared to the dimension of the problem. For example, if the Jacobian matrix is banded then the number of differences needed to estimate the Jacobian matrix is, at most, the width of the band. In this paper we describe a set of subroutines whose purpose is to estimate the Jacobian matrix of a mapping F with the least possible number of function evaluations.

url: http://hdl.handle.net/1813/6343
date: 2007-04-23
creator: Hood, Robert T.
viewed: 17
title: The Efficient Implementation of Very-High-Level Programming Language Constructs
abstract: An investigation is made into efficiently-implementable very-high-level programming language

constructs. In a manner analogous to ALGOL 60's abstraction away from GOTO's, an abstract replacement for pointers (the path) is proposed. The use of paths instead of pointers in unshared recursive data structures greatly simplifies the process of reasoning about programs. The existence of an efficient implementation of paths makes their use palatable as well as desirable. Also investigated is the integration of paths with existing very-high-level programming language implementation techniques, such as hash-consing. Several real-time programs in Pure LISP are presented. Building on the foundation of a real-time queue and a real-time double-ended queue, a real-time implementation of paths is given. This leads to the surprising negative result that the addition of paths does not increase the "power" of Pure LISP.

url: http://hdl.handle.net/1813/6344
date: 2007-04-23
creator: Pritchard, Paul
viewed: 32
title: A Case Study of Number-Theoretic Computation: Searching for Primes in Arithmetic Progression
abstract: NO ABSTRACT SUPPLIED

url: http://hdl.handle.net/1813/6345
date: 2007-04-23
creator: Gries, David;Misra, Jayadev
viewed: 21
title: Finding Repeated Elements
abstract: Two algorithms are presented for finding the values that occur more than $n \div k$ times in array b[O:n-1]. The second algorithm requires time $O(n \log(k))$ and extra space $O(k)$. We prove that $O(n \log(k))$ is a lower bound on the time required for any algorithm based on comparing array elements, so that the second algorithm is optimal. As special cases, determining whether a value occurs more than $n \div 2$ times requires linear time, but determining whether there are duplicates - the case $k=n$ - requires time $O(n \log(n))$. The algorithms may be interesting from a standpoint of programming methodology; each was developed as an extension of an algorithm for the simple case $k=2$.

url: http://hdl.handle.net/1813/6346
date: 2007-04-23
creator: Tarjan, Robert Endre;Hutchinson, Joan P.;Gilbert, John R.
viewed: 27
title: A Separator Theorem for Graphs of Bounded Genus
abstract: Many divide-and-conquer algorithms on graphs are based on finding a small set of vertices or edges whose removal divides the graph roughly in half. Most graphs do not have the necessary small separators, but some useful classes do. One such class is planar graphs: If we can draw an n-vertex graph on the plane, then we can bisect it by removing $O(\sqrt{n})$ vertices [Lipt79b]. The main result of this paper is that if we can draw a graph on a surface of genus g, then we can bisect it by removing $O(\sqrt{gn})$ vertices. This bound is best possible to within a constant factor. We give an algorithm for finding the separator that takes time linear in the number of edges in the graph, given an embedding of the graph in its genus surface. We discuss some extensions and applications of these results.

url: http://hdl.handle.net/1813/6347
date: 2007-04-23
creator: Skeen, Dale;Haggard, Gary
viewed: 36
title: Extensions of the Reduction Process in the Wong-Youssefi Strategy for Query Processing

abstract: NO ABSTRACT SUPPLIED

url: http://hdl.handle.net/1813/6348
date: 2007-04-23
creator: Hartmanis, Juris
viewed: 15
title: On Sparse Sets in NP-P
abstract: The main result of this note shows that there exist sparse sets in NP that are not in P if and only if NEXPTIME differs from EXPTIME. Several other results are derived about the complexity of very sparse sets in $NP-P$ and an interpretation of the meaning of these results is given in terms of the complexity of solving "individual instances" of problems in $NP-P$.

url: http://hdl.handle.net/1813/6349
date: 2007-04-23
creator: Conn, Andrew R.;Coleman, Thomas F.
viewed: 14
title: On the Local Convergence of a Quasi-Newton Method for the Nonlinear Programming Problem
abstract: In this paper we propose a new local quasi-Newton method to solve the equality constrained non-linear programming problem. The pivotal feature of the algorithm is that a projection of the Hessian of the Lagrangian is approximated by a sequence of symmetric positive definitive matrices. The matrix approximation is updated at every iteration by a projected version of the DFP or BFGS formula. We establish that the method is locally convergent and the sequence of x-values converges to the solution at a 2-step Q-superlinear rate.

url: http://hdl.handle.net/1813/6350
date: 2007-04-23
creator: Sorensen, Danny C.;Coleman, Thomas F.
viewed: 27
title: A Note on the Computation of an Orthonormal Basis for the Null Space of a Matrix
abstract: A highly regarded method to obtain an orthonormal basis, Z, for the null space of a matrix A^{T} is the QR decomposition of A, where Q is the product of Householder matrices. In several optimization contexts $A(x)$ varies continuously with x and it is desirable the $Z(x)$ vary continuously also. In this note we demonstrate that the standard implementation of the QR decomposition does not yield an orthonormal basis $Z(x)$ whose elements vary continuously with x. We suggest three possible remedies.

url: http://hdl.handle.net/1813/6351
date: 2007-04-23
creator: Wu, Harry;Fox, Edward A.;Salton, Gerard
viewed: 42
title: Extended Boolean Information Retrieval
abstract: In conventional information retrieval Boolean combinations of index terms are used to formulate the users' information requests. While any document is in principle retrievable by a Boolean query, the amount of output obtainable by Boolean processing is difficult to control, and the retrieved items are not ranked in any presumed order of importance to the user population. In the vector processing model of retrieval, the retrieved items are easily ranked in decreasing order of the query-record similarity, but the queries themselves are unstructured and expressed as simple sets of weighted index terms. A new, extended Boolean information retrieval system is introduced which is intermediate between the Boolean system of query processing and

the vector processing model. The query structure inherent in the Boolean system is preserved, while at the same time weighted terms may be incorporated into both queries and stored documents; the retrieved output can also be ranked in strict similarity order with the user queries. A conventional retrieval system can be modified to make use of the extended system. Laboratory tests indicate that the extended system produces better retrieval output than either the Boolean or the vector processing systems.

url: http://hdl.handle.net/1813/6352
date: 2007-04-23
creator: Ferrari, Domenico;Babaoglu, Ozalp
viewed: 31
title: Hierarchical Replacement Decisions in Hierarchical Stores
abstract: One of the primary motivations for implementing virtual memory is its ability to automatically manage a hierarchy of storage systems with different characteristics. The composite system behaves as if it were a single-level system having the more desirable characteristics of each of its constituent levels. In this paper, we extend the virtual memory concept to within each of the levels of the hierarchy. Each level is thought of as containing two additional levels within it. This hierarchy is not a physical one, but rather an artificial one arising from the employment of two different replacement algorithms. Given two replacement algorithms, one of which has good performance but high implementation cost and the other poor performance but low implementation cost, we propose and analyze schemes that result in an overall algorithm having the performance characteristics of the former and the cost characteristics of the latter. We discuss the suitability of such schemes in the management of storage hierarchies that lack page reference bits.

url: http://hdl.handle.net/1813/6353
date: 2007-04-23
creator: Schneider, Fred B.;Alpern, Bowen
viewed: 90
title: Key Exchange Using Keyless Cryptography
abstract: Protocols to generate and distribute secret keys in a computer network are described. They are based on keyless cryptography, a new cryptographic technique where information is hidden by keeping only the originator of a message, and not its contents, secret.

url: http://hdl.handle.net/1813/6354
date: 2007-04-23
creator: Reps, Thomas
viewed: 29
title: Generating Language-Based Environments
abstract: This thesis concerns the design of interactive, language-based programming environments that use knowledge of a programming language to provide functions based on the structure and meaning of programs. The goal of the research is a system-constructor to enable editors for different languages to be created easily. The most challenging aspect of such a system is the design of the semantic component, because a language-based editor performs static semantic analysis when a program is altered in order to detect erroneous constructions or to prevent illegal modifications. For efficiency, this should be performed incrementally, re-using as much old information as possible; therefore, a major focus of my research concerns a model of editing for which it is possible to perform incremental semantic analysis efficiently. In this model, a program is represented as an attributed tree in which all attributes have consistent values; programs are modified by tree operations such as pruning, grafting, and deriving. After each modification, some of the attributes require new values; incremental semantic analysis is performed by updating attribute values to again make them all consistent. The thesis presents several algorithms for this process that are asymptotically optimal

in time. The chief disadvantage of attribute grammars is that they use large amounts of storage. The thesis discusses three aspects of utilizing storage efficiently in such systems. One way to reduce the amount of storage used is to reduce the number of atttribute values retained at any stage of attribute evaluation. The thesis establishes two results concerning this idea: it presents one algorithm for evaluating an n-attribute tree that never saves more than $O(\sqrt{n}$ attribute values, and it presents a second algorithm that never saves more than $O(\log n)$ attribute values. A second method for reducing the amount of storage is to share the space used for storing attributes whose values are complex data structures; the thesis presents a very general method for such sharing that can be applied to attributes of many types. Finally, the thesis describes how, by restricting the class of attribute grammars, it is possible to reduce the amount of storage overhead required for updating trees in optimal time.

url: http://hdl.handle.net/1813/6355
date: 2007-04-23
creator: Whitesides, Sue H.;Joseph, Deborah A.;Hopcroft, John E.
viewed: 31
title: Movement Problems for 2-Dimensional Linkages
abstract: NO ABSTRACT SUPPLIED

url: http://hdl.handle.net/1813/6356
date: 2007-04-23
creator: Whitesides, Sue H.;Joseph, Deborah A.;Hopcroft, John E.
viewed: 20
title: Determining Points of a Circular Region Reachable by Joints of a Robot Arm
abstract: An "arm" is a sequence of links whose endpoints are connected consecutively by movable joints. The location of the first endpoint is fixed. This report gives a polynomial time algorithm for determining the regions that each joint can reach when the arm is restricted to a circular region of the plane.

url: http://hdl.handle.net/1813/6357
date: 2007-04-23
creator: Cole, Richard
viewed: 24
title: Graph Rigidity
abstract: The relationship between graph isomorphism and graph rigidity is studied. Although in general it is not known if these problems are equivalent under polynomial time Turing reductions, equivalence is shown for a subclass of graphs with abelian automorphism groups.

url: http://hdl.handle.net/1813/6358
date: 2007-04-23
creator: Gaulle, Al;Nicks, Hugh
viewed: 23
title: Upson's Familiar Quotations - Third Edition
abstract: This report is a compilation of several hundred examples of context-free language and very irregular expressions. Contributions were submitted over the past several years by numerous computer science graduate students who collected these now immortal words in classes and seminars. We wish to express our gratitude to the faculty, guest lecturers, and students who provided the bulk of this work.

url: http://hdl.handle.net/1813/6359
date: 2007-04-23

creator: Schneider, Fred B.;Andrews, Gregory R.
viewed: 21
title: Concepts and Notations for Concurrent Programming
abstract: Much has been learned in the last decade about concurrent programming. This paper identifies the major concepts and describes some of the more important language notations for writing concurrent programs. The roles of processes, communication and syhchronization are discussed from both an operational and an axiomatic viewpoint. Language notations for expressing concurrent execution and for specifying process interaction are surveyed. Synchronization primitives based on shared variables and on message passing are described. Finally, three general classes of concurrent programming languages are identified and compared.

url: http://hdl.handle.net/1813/6360
date: 2007-04-23
creator: Luk, Franklin T.;Brent, Richard P.
viewed: 27
title: Computing the Cholesky Factorization Using a Systolic Architecture
abstract: This note concerns the computation of the Cholesky factorization of a symmetric and positive definite matrix on a systolic array. We use the special properties of the matrix to simplify the algorithm and the corresponding architecture given by Kung and Leiserson.

url: http://hdl.handle.net/1813/6361
date: 2007-04-23
creator: Luk, Franklin T.;Brent, Richard P.
viewed: 95
title: A Systolic Architecture for the Singular Value Decomposition
abstract: We propose a systolic architecture for computing a singular value decomposition of an m x n matrix, where $m \geq n$. Our algorithm is stable and requires only $O(mn)$ time on a linear array of $O(n)$ processors. Extensions to algorithms for two-dimensional arrays are also discussed. Key Words and Phrases: Systolic arrays, singular value decomposition, Hestenes method, threshold Jacobi method, real-time computation.

url: http://hdl.handle.net/1813/6362
date: 2007-04-23
creator: Rose, Donald J.;Gilbert, John R.
viewed: 15
title: A Separator Theorem for Chordal Graphs
abstract: Chordal graphs are undirected graphs in which every cycle of length at least four has a chord. They are sometimes called rigid circuit graphs or perfect elimination graphs; the last name reflects their utility in modelling Gaussian elimination on sparse matrices. The main result of this paper is that a chordal graph with n vertices and m edges can be cut in half by removing $O(\sqrt{m})$ vertices. A similar result holds if the vertices have non-negative weights and we want to bisect the graph by weight, or even if we want to bisect the graph simultaneously by several unrelated sets of weights.

url: http://hdl.handle.net/1813/6363
date: 2007-04-23
creator: Fox, Edward A.;Buckley, Chris;Salton, Gerard
viewed: 31
title: Automatic Query Formulations in Information Retrieval

abstract: Modern information retrieval systems are designed to supply relevant information in response to requests received from the user population. In most retrieval environments the search requests consist of keywords, or index terms, interrelated by appropriate Boolean operators. Since it is difficult for untrained users to generate effective Boolean search requests, trained search intermediaries are normally used to translate original statements of user need into useful Boolean search formulations. Methods are introduced in this study which reduce the role of the search intermediaries by making it possible to generate Boolean search formulations completely automatically from natural language statements provided by the system patrons. Frequency considerations are used automatically to generate appropriate term combinations as well as Boolean connectives relating the terms. Methods are covered to produce automatic query formulations both in a standard Boolean logic system, as well as in an extended Boolean system in which the strict interpretation of the connectives is relaxed. Experimental results are supplied to evaluate the effectiveness of the automatic query formulation process in practice.

url: http://hdl.handle.net/1813/6364
date: 2007-04-23
creator: Luk, Franklin T.;Brent, Richard P.
viewed: 80
title: A Systolic Architecture for Almost Linear-Time Solution of the Symmetric Eigenvalue Problem
abstract: An algorithm is presented for computing the eigenvalues and eigenvectors of an n x n real symmetric matrix. The algorithm is essentially a Jacobi method implemented on a two-dimensional systolic array of $O(n^{2})$ processors with nearest-neighbor communication between processors. The speedup over the serial Jacobi method is $\Theta(n^{2})$, so the algorithm converges to working accuracy in time $O(nS))$, where S is the number of sweeps (typically $S \leq 10)$. Key Words and Phrases: Eigenvalue decomposition, real symmetric matrices, Hermitian matrices, Jacobi method, linear-time computation, systolic arrays, VLSI, real-time computation.

url: http://hdl.handle.net/1813/6365
date: 2007-04-23
creator: Luk, Franklin T.;Brent, Richard P.
viewed: 87
title: A Systolic Array for the Linear-Time Solution of Toeplitz Systems of Equations
abstract: The solution of an (n+1)x(n+1) Toeplitz system of linear equations on a one-dimensional systolic architecture is studied. Our implementation of an algorithm due to Bareiss is shown to require only $O(n)$ time and $O(n)$ storage, i.e. constant storage per systolic processor. Key words and phrases: Systolic arrays, Toeplitz matrices, linear equations, Bareiss algorithm, VLSI.

url: http://hdl.handle.net/1813/6366
date: 2007-04-23
creator: Van Loan, Charles;Cybenko, George
viewed: 21
title: Computing the Minimum Eigenvalue of a Symmetric Positive Definite Toeplitz Matrix
abstract: A method for computing the smallest eigenvalue of a symmetric positive definite Toeplitz matrix is given. It relies solely upon the Levinson-Durbin algorithm. The procedure involves a combination of bisection and Newton's method. Good starting values are also shown to be obtainable from the Levinson-Durbin algorithm.

url: http://hdl.handle.net/1813/6367
date: 2007-04-23

creator: Van Loan, Charles;Luk, Franklin T.;Brent, Richard P.
viewed: 33
title: Computation of the Singular Value Decomposition Using Mesh-Connected Processors
abstract: A cyclic Jacobi method for computing the singular value decomposition of an mxn matrix $(m \geq n)$ using systolic arrays is proposed. The algorithm requires $O(n^{2})$ processors and $O(m + n \log n)$ units of time.

url: http://hdl.handle.net/1813/6368
date: 2007-04-23
creator: Birman, Kenneth P.
viewed: 24
title: Using $\cal SEEK$ for Multi-Channel Pattern Recognition
abstract: Our work on computerized analysis of the 2-channel, 24-hr electrocardiogram has resulted in the development of multi-channel signal processing systems that learn by observation. In this paper a new tool for implementing such algorithms is described: the pattern recognition language $\cal SEEK$. Programs written in $\cal SEEK$ build a knowledge base containing tree-like data structures, each of which stores acquired information about a particular multi-channel waveform. Input data is interpreted by performing an efficient parallel evaluation of the structures in the knowledge base. Our work is applicable to a wide variety of pattern recognition problems that arise in medical signal processing. The approach is illustrated with examples drawn from ECG analysis.

url: http://hdl.handle.net/1813/6369
date: 2007-04-23
creator: Constable, Robert L.;Bates, Joseph L.
viewed: 18
title: Proofs as Programs
abstract: The significant intellectual cost of programming is for problem solving and explaining and not for coding. Yet, programming systems offer mechanical assistance exclusively with the coding process. Here we describe an implemented program development system, called PRL ("pearl"), that provides automated assistance with the hard part. The program and its explanation are seen as formal objects in a constructive logic of the data domains. These formal explanations can be executed at various stages of completion. The most incomplete explanations resemble applicative programs, the most complete are formal proofs.

url: http://hdl.handle.net/1813/6370
date: 2007-04-23
creator: Gries, David
viewed: 33
title: A Note on the Standard Strategy for Developing Loop Invariants and Loops
abstract: The by-now-standard strategy for developing a loop invariant and loop was developed in [1] and explained [2]. Nevertheless, its use still poses problems for some. The purpose of this note is to provide further explanation. Two problems are solved that, without this further explanation, seem difficult.

url: http://hdl.handle.net/1813/6371
date: 2007-04-23
creator: Constable, Robert L.
viewed: 17
title: Programs as Proofs
abstract: Programs are like constructive proofs of their specifications. This analogy is a precise equivalence

for certain classes of programs. The connection between formal logic and programs is a foundation for programming methodology superior to that usually adopted. Moreover, this equivalence suggests programming languages which are far richer than all others currently in use. These claims are established in this paper introducing parts of the PL/CV programming logics as a source of precision and examples. Key Words and Phrases: Algorithmic logic, automated logic, axiomatic semantics, constructive mathematics, program correctness, PL/CV, programming logic, programming methodology, realizability, while rule.

url: http://hdl.handle.net/1813/6373
date: 2007-04-23
creator: Donahue, James E.;Demers, Alan J.
viewed: 73
title: Making Variables Abstract: An Equational Theory for Russell
abstract: NO ABSTRACT SUPPLIED

url: http://hdl.handle.net/1813/6374
date: 2007-04-23
creator: More, Jorge J.;Coleman, Thomas F.
viewed: 17
title: Estimation of Sparse Hessian Matrices and Graph Coloring Problems
abstract: Large scale optimization problems often require an approximation to the Hessian matrix. If the Hessian matrix is sparse then estimation by differences of gradients is attractive because the number of required differences is usually small compared to the dimension of the problem. The problem of estimating Hessian matrices by diferences can be phrased as follows: Given the sparsity structure of a symmetric matrix A, obtain vectors $d_{1},d_{2},\ldots,d_{p}$ such that $Ad_{1},Ad_{2},\ldots,Ad_{p}$ determine A uniquely with p as small as possible. We approach this problem from a graph theoretic point of view and show that both direct and indirect approaches to this problem have a natural graph coloring interpretation. The complexity of the problem is analyzed and efficient practical heuristic procedures are developed. Numerical results illustrate the differences between the various approaches.

url: http://hdl.handle.net/1813/6375
date: 2007-04-23
creator: Worona, Steven L.;Conway, Richard W.
viewed: 26
title: COFE: A Prototype Memo and Mail System for Non-Programmers
abstract: NO ABSTRACT SUPPLIED

url: http://hdl.handle.net/1813/6376
date: 2007-04-23
creator: Skeen, Dale;Dwork, Cynthia
viewed: 19
title: The Inherent Cost of Nonblocking Commitment
abstract: A commitment protocol orchestrates the execution of a distributed transaction, allowing each participant to "vote" on the transaction and then applying a pre-specified rule to decide the outcome (commit or abort). A nonblocking is able to correctly terminate a transaction at all operational participants in the presence of any number of benign processor failures. Herein, we derive strong lower bounds for both non-blocking protocols and their less fault-tolerant blocking counterparts. Results on message complexity are both surprising and encouraging: the message complexities of the two classes of protocols are identical. Results on time complexity were less encouraging: nonblocking protocols are approximately 50% more expensive.

However, we show how to overlap non-blocking executions of interfering transactions and thereby reduce their extra cost.

url: http://hdl.handle.net/1813/6377
date: 2007-04-23
creator: Schlichting, Richard D.;Gries, David;Schneider, Fred B.
viewed: 28
title: Fault-Tolerant Broadcasts
abstract: A distributed program is presented that ensures delivery of a message to the functioning processors in a computer network, despite the fact that processors may fail at any time. All processor failures are assumedd to be detected and to result in halting the offending processor. A reliable communications network is assumed.

url: http://hdl.handle.net/1813/6378
date: 2007-04-23
creator: Dwork, Cynthia
viewed: 19
title: Bounds on Oblivious, Conservative Matrix Transposition Networks
abstract: A matrix transposition network of depth k is shown to require $\theta (kn^{1+1/k})$ edges.

url: http://hdl.handle.net/1813/6379
date: 2007-04-23
creator: Voorhees, Ellen M.;Buckley, Chris;Fox, Edward A.;Salton, Gerard
viewed: 28
title: Boolean Query Formulation with Relevance Feedback
abstract: The well-known relevance feedback process uses information extracted from previously retrieved relevant documents to generate improved search formulations for subsequent search iterations. Methods are outlined in this study for the automatic generation of Boolean search statements based on the natural language texts of initially available search requests and of previously retrieved document excerpts identified as relevant by the user population. The search requests are generated both in a conventional Boolean system and in an extended system in which the normal interpretation of the Boolean connectives is relaxed. Experimental output is included which shows that substantial improvements in retrieval effectiveness are obtainable using the automatic relevance feedback methods.

url: http://hdl.handle.net/1813/6380
date: 2007-04-23
creator: Murtagh, Thomas Peter
viewed: 71
title: A Data Abstraction Language for Concurrent Programming
abstract: No Abstract Supplied

url: http://hdl.handle.net/1813/6381
date: 2007-04-23
creator: Luk, Franklin T.;Kung, H. T.;Brent, Richard P.
viewed: 25
title: Some Linear-Time Algorithms for Systolic Arrays
abstract: We survey some recent results on linear-time and almost linear-time algorithms for one and two-dimensional systolic arrays. In particular, we show how the greatest common divisor (GCD) of two

polynomials of degree n over a finite field can be computed in time $O(n)$ on a linear systolic array of $O(n)$ cells; similarly for the GCD of two n-bit binary numbers. Assuming that the systolic cells can perform floating-point arithmetic, we show how n by n Toeplitz systems of linear equations can be solved in time $O(n)$ on a linear array of $O(n)$ cells, each of which has constant memory size (independent of n). Finally, we outline how a two-dimensional array of $O(n)$ by $O(n)$ cells with nearest-neighbor interconnections can be used to solve (to working accuracy) the eigenvalue problem for a symmetric real n by n matrix in time $O(nS(n))$. Here $S(n)$ is a slowly-growing function of n; for practical purposes $S(n)$ can be regarded as a constant. In addition to their theoretical interest, these results can be implemented relatively easily and have potential applications in the areas of error-correcting codes, symbolic and algebraic computation, signal processing and image processing. For example, systolic GCD arrays for error correction have been implemented with the microprogrammable "PSC" chip.

url: http://hdl.handle.net/1813/6382
date: 2007-04-23
creator: Pritchard, Paul
viewed: 21
title: Some Negative Results Concerning Prime Number Generators
abstract: Programs due to Wirth and Misra for generating the prime numbers up to a specified limit are investigated. It is shown that Wirth's program is incorrect according to three increasingly weak criteria, and a composite number is exhibited that the program accepts as prime. This is the smallest known counter-example, and could not have been found by the usual method of program testing - the program would run for trillions of years on the fastest computer before reaching it! Closely related counter-examples are given to a conjecture of Misra concerning his program.

url: http://hdl.handle.net/1813/6383
date: 2007-04-23
creator: Salton, Gerard;Lam, K.;Buckley, Chris;Yu, C. T.
viewed: 32
title: A Generalized Term Dependence Model in Information Retrieval
abstract: The tree dependence model has been used successfully to incorporate dependencies between certain term pairs on the information retrieval process, while the Bahadur Lazarsfeld Expansion (BLE) which specifies dependencies between all subsets of terms has been used to identify productive clusters of items in a clustered data base environment. The successes of these models are unlikely to be accidental; it is of interest therefore to examine the similarities between the two models. The disadvantage of the BLE model is the exponential number of terms appearings in the full expression, while a truncated BLE system may produce negative probability values. The disadvantage of the tree dependence model is the restriction to dependencies between certain term pairs only and the exclusion of higher-order dependencies. A generalized term dependence model is introduced in this study which does not carry the disadvantages of either the tree dependence or the BLE models. Sample evaluation results are included to demonstrate the usefulness of the generalized system.

url: http://hdl.handle.net/1813/6384
date: 2007-04-23
creator: Immerman, Neil;Sewelson, Vivian;Hartmanis, Juris
viewed: 35
title: Sparse Sets in NP-P: EXPTIME Versus NEXPTIME
abstract: This paper investigates the structural properties of sets in NP-P and shows that the computational difficulty of lower density sets in NP depends explicitly on the relations between higher deterministic and

nondeterministic time-bounded complexity classes. The paper exploits the recently discovered upward sparation method, which shows for example that there exist sparse sets in NP-P if and only if EXPTIME $\neq$ NEXPTIME. In addition, the paper uses relativization techniques to determine logical possibilities, limitations of these proof techniques, and, for the first time, to exhibit structural differences between relativized NP and CoNP.

url: http://hdl.handle.net/1813/6385
date: 2007-04-23
creator: Gilbert, John R.;Aspvall, Bengt
viewed: 23
title: Graph Coloring Using Eigenvalue Decomposition
abstract: Determining whether the vertices of a graph can be colored using k different colors so that no two adjacent vertices receive the same color is a well-known NP-complete problem. Graph coloring is also of practical interest (for example, in estimating sparse Jacobians and in scheduling), and many heuristic algorithms have been developed. We present a heuristic algorithm based on the eigenvalue decomposition of the adjacency matrix of a graph. Eigenvectors point out "bipartite-looking" subgraphs that are used to refine the coloring to a valid coloring. The algorithm optimally colors complete k-partite graphs and certain other classes of graphs with regular structure.

url: http://hdl.handle.net/1813/6386
date: 2007-04-23
creator: Babaoglu, Ozalp;Toueg, Sam
viewed: 23
title: On the Optimum Checkpoint Selection Problem
abstract: We consider a model of computation consisting of a sequence of n tasks. In the absence of failures, each task i has a known completion time t_{i}. Checkpoints can be placed between any two consecutive tasks. At a checkpoint, the state of the computation is saved on a reliable storage medium. Establishing a checkpoint immediately before task i is known to cost s_{i}. This is the time spent in saving the state of the computation. When a failure is detected, the computation is restarted at the most recent checkpoint. Restarting the computation at checkpoint i requires restoring the state to the previously saved value. The time necessary for this action is given by r_{i}. We derive an $O(n^{3})$ algorithm to select out of the $n-i$ potential checkpoint locations those that result in the smallest expected time to complete all the tasks. An $O(n^{2})$ algorithm is described for the reasonable case where $s_{i} greater than s_{j}$ implies $r_{i} greater than r_{j}$. These algorithms are applied to two models of failure. In the first one, each task i has a given probability p_{i} of completing without a failure, i.e., in time t_{i}. Furthermore, failures occur independently and are detected at the end of the task during which they occur. The second model admits a continuous time failure mode where the failure intervals are independent and identically distributed random variables drawn from any given distribution. In this model, failures are detected immediately. In both models, the algorithm also gives the expected value of the overall completion time and we show how to derive all the other moments.

url: http://hdl.handle.net/1813/6387
date: 2007-04-23
creator: Skeen, Dale;Wright, David D.
viewed: 26
title: Merging Partitioned Databases
abstract: Partitioning of a distributed data base requires either that update activity be restricted or that a strategy for conflict resolution and partition merging be used once communication is restored. The graph-

theoretic approach used by Davidson follows the latter approach and can be used to show that finding an optimum solution to the general problem is NP-complete. We give several methods of reducing the size of the graphs involved. Two open subproblems are shown to be NP-complete, while an extension of a known polynomial-time subproblem is given. Simulation results are used to study both the amount of compression achieved by the graph reduction techniques and their effects on heuristics for the problem. In addition, some modifications are made to existing heuristics to improve their performance. A probabilistic model is presented and compared with the simulations.

url: http://hdl.handle.net/1813/6388
date: 2007-04-23
creator: Yesha, Yaacov;Hartmanis, Juris
viewed: 22
title: Computation Times of NP Sets of Different Densities
abstract: In this paper, we study the computational complexity of sets of different densities in NP. We show that the deterministic computation time for sets in NP can depend on their density if and only if there is a collapse or partial collapse of the corresponding higher nondeterministic and deterministic time bonded complexity classes. We show also that for NP sets of different densities there exist complete sets of the corresponding density under polynomial time Turing reductions. Finally, we show that these results can be interpreted as results about the complexity of theorem proving and proof presentation in axiomatized mathematical systems. This interpretation relates fundamental questions about the complexity of our intellectual tools to basic structural problems about P, NP, CoNP, and PSPACE, discussed in this paper.

url: http://hdl.handle.net/1813/6389
date: 2007-04-23
creator: Constable, Robert L.
viewed: 20
title: Partial Functions in Constructive Formal Theories
abstract: Partial functions abound in modern computing theory, and so any system which purports to naturally formalize it must treat them. Surprisingly, the most common treatments do not work well for constructive formal systems, i.e., for those with computational content. Since constructive formal systems are significant in computer science, it is important to give an account of partial functions in them. This paper does that by construing a partial function $\phi :N \rightarrow N$ as a total function $f:D_{f}\rightarrow N$ for D_{f} an inductively defined set generated simultaneously with f. This idea has appeared in other guises, at least in the author's previous work, but here it is presented in a pure form. It is compared to Scott's method of using total functions on domains. A formal system of arithmetic is defined to illustrate the ideas. The system is shown consistent relative to constructive type theory; from this result important corollaries are drawn about using the theory as a programming language. KEY WORDS AND PHRASES: automated logic, Heyting arithmetic, constructivity, intuitionistic predicate calculus, partial functions, recursive functions, programming logics, program verification, type theory, type checking.

url: http://hdl.handle.net/1813/6390
date: 2007-04-23
creator: Gries, David
viewed: 30
title: Current Ideas on Programming Methodology
abstract: NO ABSTRACT SUPPLIED

url: http://hdl.handle.net/1813/6391

date: 2007-04-23
creator: Bates, Joseph L.;Constable, Robert L.
viewed: 33
title: The Nearly Ultimate Pearl
abstract: The PRL ("pearl") system is an environment providing computer assistance in the construction of formal proofs and programs in a particular formal theory, called the object theory. Certain proofs can in fact be considered as programs. The system embodies knowledge about programs in the form of rules of inference and in the form of facts stored in its library. Ultimately PRL may be regarded as an intelligent system for formal constructive problem solving in a large domain of mathematics. The PRL system is evolving in stages. Since our report "The Definition of Micro-PRL" in October 1981, we have had the experience of designing, building and using a complete core version of the system (called λPRL). We have also studied more deeply the theoretical issues raised in that report. We are now prepared to extend the core system closer to the "ultimate" PRL system envisioned earlier. This document describes the mathematical theory of types which is the object theory of that extension (called λPRL) and it is more or less self-contained. The type theory is defined in stages, starting from a constructive theory of integers and lists ("PRL). The development is a main feature of the paper.

url: http://hdl.handle.net/1813/6392
date: 2007-04-23
creator: Mei, Howell Hung-Wei;Dennis, John E., Jr.
viewed: 78
title: An Unconstrained Optimization Algorithm Which Uses Function and Gradient Values
abstract: A new method for unconstrained optimization is presented. It consists of a modification of Powell's 1970 dogleg strategy with the approximate Hessian given by Davidson's 1975 updating scheme which uses the projections of $\triangle x$ and $\triangle g$ in updating H and G and optimizes the condition number of $H^{-1}H_{+}$. This new algorithm performs well without Powell's special iterations and singularity safeguards. Only symmetric and positive definite updates to the Hessian are used.

url: http://hdl.handle.net/1813/6393
date: 2007-04-23
creator: Owicki, Susan S.
viewed: 83
title: Axiomatic Proof Techniques for Parallel Programs
abstract: This thesis presents an axiomatic method for proving certain correctness properties of parallel programs. Axioms and inference rules for partial correctness are given for two parallel programming languages: The General Parallel Language and the Restricted Parallel Language. The General Language is flexible enough to represent most standard synchronizers (e.g. semaphores, events), so that programs using these synchronizers may be verified using the GPL deductive system. However, proofs for GPL programs are in general quite complex. The Restricted Language reduces this complexity by requiring shared variables to be protected by critical sections, so that only one process at a time has access to them. This discipline does not significantly reduce the power of the language, and it greatly simplifies the process of program verification. Although the axioms and inference rules are primarily intended for proofs of partial correctness, there are a number of other important properties of parallel programs. We give some practical techniques which use information obtained from a partial correctness proof to derive other correctness properties, including program termination, mutual exclusion, and freedom from deadlock. A number of examples of such proofs are given. Finally, the axioms and inference rules are shown to be consistent and complete (in a special sense) with respect to an interpretive model of parallel execution. Thus the deductive system gives an accurate description of program execution and is powerful enough to yield a proof of any true partial

correctness formula.

url: http://hdl.handle.net/1813/6394
date: 2007-04-23
creator: Constable, Robert L.
viewed: 15
title: Constructive Mathematics as a Programming Logic I: Some Principles of Theory
abstract: The design of a programming system is guided by certain beliefs, principles, and practical constraints. These considerations are not always manifest from the rules defining the system. In this paper, the author discusses some of the principles which have guided the design of the programming logics built at Cornell in the last decade. Most of the necessarily brief discussion concerns type theory with stress on the concepts of function space and quotient types. Key Words and Phrases: automated logic, combinators, Edinburgh LCF, partial recursive functions, programming languages and logics, PL/CV, PRL, propositions-as-types, quotient types, strong intensionality, type theory.

url: http://hdl.handle.net/1813/6395
date: 2007-04-23
creator: Toueg, Sam;Raeuchle, Thomas
viewed: 35
title: Exposure to Deadlock for Communicating Processes is Hard to Detect
abstract: It is shown that the applicability of global state analysis as a tool for proving correctness of communication protocols is rather limited. Brand, et al. showed that reachability of global deadlock states for protocols with unbounded FIFO channels is undecidable. It is shown, that the same is true for unbounded non-FIFO channels. For bounded FIFO channels the problem is shown to be PSPACE-hard. Protocols with bounded non-FIFO channels are shown to be analyzable in polynomial time.

url: http://hdl.handle.net/1813/6396
date: 2007-04-23
creator: Schneider, Fred B.;Wright, David D.
viewed: 26
title: A Distributed Path Algorithm and Its Correctness Proof
abstract: A distributed program is developed to allow a process in a network to determine a path from itself to any other process, assuming that the topology of the entire network is not known to any process and that each process knows only the names of the processes to which it is directly connected. The solution, written in CSP, is proved correct and deadlock-free.

url: http://hdl.handle.net/1813/6397
date: 2007-04-23
creator: Mei, Howell Hung-Wei
viewed: 17
title: On the Conditioning of DFP ad BFGS Updates for Unconstrained Optimization
abstract: A necessary and sufficient condition on when the conditioning of DFP updates is given and a line search strategy which ensures that the DFP is better conditioned than the BFGS is given.

url: http://hdl.handle.net/1813/6398
date: 2007-04-23
creator: Toueg, Sam;Bracha, Gabriel
viewed: 18

title: A Distributed Algorithm for Generalized Deadlock Detection
abstract: An efficient distributed algorithm to detect deadlocks in distributed and dynamically changing systems is presented. In our model, processes can request any N available resources from a pool of size M. This is a generalization of the well-known AND-OR request model. The algorithm is incrementally derived and proven correct. Its communication, computational, and space complexity compares favorably to those of previously known distributed AND-OR deadlock detection algorithms.

url: http://hdl.handle.net/1813/6399
date: 2007-04-23
creator: Toueg, Sam;Bracha, Gabriel
viewed: 15
title: Asynchronous Consensus and Byzantine Protocols in Faulty Environments
abstract: A consensus protocol enables a system of n aynchronous processes, some of which are faulty, to reach agreement. There are two kinds of faulty processes: fail-stop processes can only die, malicious processes can also send false messages. We investigate consensus protocols that terminate within finite time with probability 1 under certain assumptions on the behavior of the system. With fail-stop processes, we show that $\lceil (n + 1)/2 \rceil$ correct processes are necessary and sufficient to reach agreement. In the malicious case, we show that $\lceil (2n + 1)/3 \rceil$ correct processes are necessary and sufficient to reach agreement. This is contrasted with a recent result that there is no consensus protocol for the fail-stop case that always terminates within a bounded number of steps, even if only one process can fail. We also investigate the possibility of reliable broadcast (Byzantine Agreement) in an asynchronous system. We define the notion of Asynchronous Byzantine Agreement, and show that $\lceil (2n + 1)/3 \rceil$ correct processes are necessary and sufficient to reach Asynchronous Byzantine Agreement.

url: http://hdl.handle.net/1813/6400
date: 2007-04-23
creator: Fox, Edward A.
viewed: 16
title: Some Considerations for Implementing the SMART Information Retrieval System Under UNIX
abstract: Since the early 1960's the SMART project has tested out new ideas in information science aimed at fully automatic document retrieval. Beginning in 1980 development of an enhanced and generalized version of SMART has progresses at Cornell. The current implementation is in the C language and runs under the UNIX operating system on a VAX 11/780 computer. The history of SMART is outlined. Considerations that led to the current design are described. Since SMART now allows multiple concept types to be manipulated in connection with an extended vector representation, storage and processing issues are discussed, including use of INGRES relations. Clustering algorithms are presented and run parameters are given for document clustering and subsequent clustered searching. SMART experiments (e.g. with p-norm queries, or probabilistic methods) can be compared using the evaluation package. The S statistical package can be applied to performing other special analysis and descriptive tasks. Finally, to illustrate the usefulness of these facilities, an outline is given of current SMART activities and of future plans.

url: http://hdl.handle.net/1813/6401
date: 2007-04-23
creator: Fox, Edward A.
viewed: 20
title: Characterization of Two New Experimental Collections in Computer and Information Science Containing Textual and Bibliographic Concepts
abstract: Two new collections are described which are particularly useful for investigating the interaction

between textual and bibliographic data in the automatic indexing and retrieval of documents. An extension to the vector space model has been proposed whereby various types of concepts are included in the representation of such documents. Experiments using an enhanced version of the SMART system have shown such an extended model to perform better than simpler schemes. The CACM and ISI collections developed for this research should be of value for future related studies. The ISI collection has author, title/abstract, and co-citation data for the 1460 most highly cited articles and manuscripts in information science in the 1969-1977 period. The CACM collection contains 7 types of concepts for the 3204 articles published in the Communication of the ACM up through 1979. These collections have 76 and 52 queries, respectively, along with relevance judgments.

url: http://hdl.handle.net/1813/6402
date: 2007-04-23
creator: Luk, Franklin T.;Brent, Richard P.
viewed: 30
title: The Solution of Singular-Value and Symmetric Eigenvalue Problems on Multiprocessor Arrays
abstract: Parallel Jacobi-like algorithms are presented for computing a singular-value decomposition of an mxn matrix $(m \geq n)$ and an eigenvalue decomposition of an $n x n$ symmetric matrix. A linear array of $O(n)$ processors is proposed for the singular-value problem and the associated algorithm requires time $O(mnS)$, where S is the number of sweeps (typically $S \leq 10)$. A square array of $O(n^{2})$ processors with nearest-neighbor communication is proposed for the eigenvalue problem; the associated algorithm requires time $O(nS)$. Key Words And Phrases: Multiprocessor arrays, systolic arrays, singular-value decomposition, eigenvalue decomposition, real symmetric matrices, Hestenes method, Jacobi method, VLSI, real-time computation, parallel algorithms.

url: http://hdl.handle.net/1813/6403
date: 2007-04-23
creator: Van Loan, Charles;Luk, Franklin T.;Brent, Richard P.
viewed: 96
title: Computation of the Generalized Singular Value Decomposition Using Mesh-Connected Processors
abstract: This paper concerns the systolic array computation of the generalized singular value decomposition. Numerical algorithms for both one and two-dimensional systolic architectures are discussed.

url: http://hdl.handle.net/1813/6404
date: 2007-04-23
creator: Voorhees, Ellen M.;Fox, Edward A.;Salton, Gerard
viewed: 28
title: A Comparison of Two Methods for Boolean Query Relevance Feedback
abstract: The relevance feedback process uses information derived from an initially retrieved set of documents to improve subsequent search formulations and retrieval output. In a Boolean query environment this implies that new query terms must be identified and Boolean operators must be chosen automatically to connect the various query terms. In this study, two recently proposed automatic methods for relevance feedback of Boolean queries are evaluated and conclusions are drawn concerning the use of effective feedback methods in a Boolean query environment.

url: http://hdl.handle.net/1813/6405
date: 2007-04-23
creator: Constable, Robert L.
viewed: 25

title: Mathematics as Programming
abstract: In a sufficiently rich programming language it is possible to express a very substantial amount of mathematics in a natural way. I don't mean only that one can write down functions or solve equations, I mean that one can write theorems and proofs. Moreover, expressing mathematics in this way reveals its computational content and makes it available for use with digital computers. This point is illustrated with reference to a programming language which is sufficiently rich in the above sense. I develop parts of Basic Recursive Function Theory and logic to illustrate the way in which doing some rather abstract mathematics is like programming. I chose BRFT in order to make certain points about the programming language by reflecting part of it inside itself. For example, while Church's Thesis can be false inside the language, it is true outside, reflecting in some sense the fact that while we may believe it, we do not expect to prove it. I chose a bit of logic to illustrate that the virtues of model theory (a certain abstractness and notation independence) are sometimes possible without sacrificing computational meaning.

url: http://hdl.handle.net/1813/6406
date: 2007-04-23
creator: Qian, Jiahua
viewed: 35
title: An Assertional Proof of a Byzantine Agreement Protocol
abstract: An assertional proof of a Byzantine Agreement protocol is given. This provides a formal argument for the correctness of the protocol.

url: http://hdl.handle.net/1813/6407
date: 2007-04-23
creator: Misra, Jayadev;Gries, David
viewed: 15
title: A Linear Sieve Algorithm for Finding Prime Numbers
abstract: NO ABSTRACT SUPPLIED

url: http://hdl.handle.net/1813/6408
date: 2007-04-23
creator: Li, Ming;Bajaj, Chanderjit
viewed: 41
title: On the Duality of Intersections and Closest Points
abstract: We call the common intersection of k objects a k-intersection. We address questions of the form: Given n objects in the plane, "Does there exist a k-intersection?", "How many such k-intersections exist?" and "What is the maximum value of k for which there exists a k-intersection?". In answering such questions we utilize a duality that exists between k-intersections and and k-closest points (the k points with the smallest enclosing circle), in that as long as k points are close enough to be enclosed by a circle of radius r, the common intersection of k circles of radius r centered at each of those k points (i.e. their k-intersection) is non-null. A technique, dubbed "rotation sorting" is then developed to provide efficient solutions to dual questions of the form: Given n points in the plane, "Does there exist a set of k points which can be covered by a circle of radius r?", "How many such sets of k points exist?", and "What are the maximum number of points that can be enclosed by a circle of radius r?". A similar duality between the intersection of a line with circles and the proximity of this line to the centers of the circles is exploited to obtain efficient algorithms for the transversals of circles in the plane. Extensions of the above questions to three and higher dimensions are also addressed, along with problems concerning unequal sized objects. Further certain generalizations of k-intersections and of the number of points enclosed by k objects in two dimensions and higher are shown to be NP-complete and D^{p}-complete.

url: http://hdl.handle.net/1813/6409
date: 2007-04-23
creator: Schneider, Fred B.
viewed: 71
title: Byzantine Generals In Action: Implementing Fail-Stop Processors
abstract: A fail-stop processor halts instead of performing an erroneous state transformation that might be visible to other processors, can detect whether another fail-stop processor has halted (due to a failure), and has a predefined portion of its storage that is unaffected by failures and accessible to any other fail-stop processor. Fail-stop processors can simplify construction of fault-tolerant computing systems. In this paper, the problem of approximating fail-stop processors is compared with the state machine approach, another general paradigm for constructing fault-tolerant systems.

url: http://hdl.handle.net/1813/6410
date: 2007-04-23
creator: Voorhees, Ellen M.;Fox, Edward A.;Salton, Gerard
viewed: 36
title: Advanced Feedback Methods in Information Retrieval
abstract: Automatic feedback methods may be used in on-line information retrieval to generate improved query statements based on information contained in previously retrieved documents. In this study automatic relevance feedback techniques are applied to Boolean query statements. The feedback operations are carried out using both the conventional Boolean logic, as well as an extended logic producing improved retrieval effectiveness. Experimental output is included to evaluate the automatic feedback operations.

url: http://hdl.handle.net/1813/6411
date: 2007-04-23
creator: Conway, Richard W.
viewed: 34
title: The Case for PL/I as the Language for Instruction in Programming
abstract: NO ABSTRACT SUPPLIED

url: http://hdl.handle.net/1813/6412
date: 2007-04-23
creator: Wright, David D.
viewed: 35
title: Managing Distributed Databases in Partitioned Networks
abstract: NO ABSTRACT SUPPLIED

url: http://hdl.handle.net/1813/6413
date: 2007-04-23
creator: Hartmanis, Juris
viewed: 27
title: Generalized Kolmogorov Complexity and the Structure of Feasible Computations
abstract: In this paper we define a generalized, two-parameter, Kolmogorov complexity of finite strings which measures how much and how fast a string can be compressed and we show that this string complexity measure is an efficient tool for the study of computational complexity. The advantage of this approach is that it not only classifies strings as random or not random, but measures the amount of randomness detectable in a given time. This permits the study how computations change the amount of randomness of finite

strings and thus establish a direct link between computational complexity and generalized Kolmogorov complexity of strings. This approach gives a new viewpoint for computational complexity theory, yields natural formulations of new problems and yields new results about the structure of feasible computations.

url: http://hdl.handle.net/1813/6414
date: 2007-04-23
creator: Gries, David;Pritchard, Paul
viewed: 28
title: The Seven-Eleven Problem
abstract: NO ABSTRACT SUPPLIED

url: http://hdl.handle.net/1813/6415
date: 2007-04-23
creator: Sewelson, Vivian
viewed: 16
title: A Study of the Structure of NP
abstract: NO ABSTRACT SUPPLIED

url: http://hdl.handle.net/1813/6416
date: 2007-04-23
creator: Hartmanis, Juris
viewed: 14
title: On Non-Isomorphic NP Complete Sets
abstract: In this note we show that if the satisfiability of Boolean formulas of low Kolmogorov complexity can be determined in polynomial-time then there exist NP complete sets that are not polynomial-time isomorphic. Keywords: NP complete sets, isomorphism, Kolmogorov complexity.

url: http://hdl.handle.net/1813/6417
date: 2007-04-23
creator: Seidel, Raimund;Kirkpatrick, David G.
viewed: 89
title: The Ultimate Planar Convex Hull Algorithm ?
abstract: We present a new planar convex hull algorithm with worst case time complexity $O(n \log H)$ where n is the size of the input set and H is the size of the output set, i.e. the number of vertices found to be on the hull. We also show that this algorithm is asymptotically worst case optimal on a rather realistic model of computation even if the complexity of the problem is measured in terms of input as well as output size. The algorithm relies on a variation of the divide-and-conquer paradigm which we call the "marriage-before-conquest" principle and which appears to be interesting in its own right.

url: http://hdl.handle.net/1813/6418
date: 2007-04-23
creator: Gilbert, John R.;Edenbrandt, Anders;Coleman, Thomas F.
viewed: 32
title: Predicting Fill for Sparse Orthogonal Factorization
abstract: In solving large sparse linear least squares problems $Ax \cong b$, several different numeric methods involve computing the same upper triangular factor R of A. It is of interest to be able to compute the nonzero structure of R, given only the structure of A. The solution to this problem comes from the theory of matchings in bipartite graphs. The structure of A is modeled with a bipartite graph and it is

shown how the rows and columns of A can be rearranged into a structure from which the structure of its upper triangular factor can be correctly computed. Also, a new method for solving sparse least squares problems, called block back-substitution, is presented. This method assures that no unnecessary space is allocated for fill, and that no space is needed for intermediate fill.

url: http://hdl.handle.net/1813/6419
date: 2007-04-23
creator: Yesha, Yaacov;Li, Ming
viewed: 21
title: String-Matching Cannot be Done by a Two-Head One-Way Deterministic Finite Automaton
abstract: We show that string-matching cannot be performed by a two-head one-way deterministic finite automaton (or even by a Turing machine with two one-way input heads and o(n) storage space). Thus we answer the special case $k=2$ of the open question, due to Galil and Seiferas [GS], whether a k-head one-way deterministic finite automaton can perform string-matching.

url: http://hdl.handle.net/1813/6420
date: 2007-04-23
creator: Pritchard, Paul
viewed: 38
title: Long Arithmetic Progressions of Primes: Some Old, Some New
abstract: NO ABSTRACT SUPPLIED

url: http://hdl.handle.net/1813/6421
date: 2007-04-23
creator: Wright,David D.;Skeen, Dale
viewed: 24
title: Increasing Availability in Partitioned Database Systems
abstract: NO ABSTRACT SUPPLIED

url: http://hdl.handle.net/1813/6422
date: 2007-04-23
creator: Salton, Gerard
viewed: 34
title: Howard Aiken's Children: The Harvard Computation Laboratory and its Students
abstract: NO ABSTRACT SUPPLIED

url: http://hdl.handle.net/1813/6423
date: 2007-04-23
creator: Schneider, Fred B.;Drummond, Rogerio;Bussan, Mimi;Babaoglu, Ozalp
viewed: 32
title: Documentation for the CHIP Computer System (Version 1.1)
abstract: CHIP (Cornell Hypothetical Instructional Processor) is a computer system that was designed as an educational tool for teaching undergraduate courses in operating systems and machine architecture. This document constitutes the sole reference manual for the CHIP computer system. A simulator for this hypothetical system exists under the UNIX operating system. The CHIP architecture includes dynamic memory mapping suitable for implementing virtual memory, eight interrupt priority levels, memory-mapped input/output and two modes of processor operation. The central processor of CHIP is compatible with the PDP-11 at the user-mode instruction level. Therefore, any non-privileged code written for the PDP-11 can be

executed on CHIP. Several new user and kernel-mode instructions have been added to CHIP for increased efficiency. The CHIP simulator also supports input/output devices such as terminals, drums, disks and printers. All interactions with CHIP take place through an operator's console being simulated on a terminal. Users can examine/alter memory locations, set breakpoints, detect the referencing of specified memory locations, start/stop execution, etc. through a console command language. Program global variables and functions can be referred to by symbolic name with the mapping to absolute addresses being performed automatically by the system. The software support environment for CHIP includes a C compiler, assembler and loader.

url: http://hdl.handle.net/1813/6424
date: 2007-04-23
creator: Schneider, Fred B.;Babaoglu, Ozalp
viewed: 32
title: The HOCA Operating System Specifications
abstract: NO ABSTRACT SUPPLIED

url: http://hdl.handle.net/1813/6425
date: 2007-04-23
creator: Schneider, Fred B.;McCurley, E. Robert
viewed: 24
title: Derivation of a Distributed Algorithm for Finding Paths in Directed Networks
abstract: A distributed algorithm is developed that can be used to compute the topology of a network, given that each site starts with information about sites it is adjacent to, the network is strongly connected, and communication channels are uni-directional. The program is derived and proved correct using assertional reasoning.

url: http://hdl.handle.net/1813/6426
date: 2007-04-23
creator: Toueg, Sam
viewed: 87
title: Randomized Asynchronous Byzantine Agreements
abstract: A randomized protocol for reaching Byzantine Agreement in asynchronous systems with n processes was recently proposed in [Rabi83]. This protocol tolerates up to $\lfloor (n-1)/10 \rfloor$ faulty processes, and agreement is reached within an expected number of phases that is a small constant independent of n and the number of faulty processes t. In this paper, using the same computation model as in [Rabi83], it is shown that no Byzantine Agreement protocol can overcome more than $\lfloor (n-1)/3 \rfloor$ faulty processes in an asynchronous system, and we describe a protocol that achieves this upper bound. Agreement is also reached within an expected number of phases that is a small constant independent of n and t, but the communication complexity is higher than in [Rabi83}.

url: http://hdl.handle.net/1813/6427
date: 2007-04-23
creator: Dwork, Cynthia
viewed: 21
title: Bounds on Fundamental Problems in Parallel and Distributed Computation
abstract: NO ABSTRACT SUPPLIED

url: http://hdl.handle.net/1813/6428

date: 2007-04-23
creator: Salton, Gerard
viewed: 25
title: The Use of Extended Boolean Logic in Information Retrieval
abstract: An extended Boolean retrieval strategy has previously been introduced in which the individual Boolean operators can be treated more or less strictly, depending on the perceived strength of association of the query terms. The extended Boolean system is illustrated by examples and evaluation output is used to demonstrate the effectiveness of the operations.

url: http://hdl.handle.net/1813/6429
date: 2007-04-23
creator: Turbyfill, Carolyn;Bitton, Dina
viewed: 26
title: Design and Analysis of Multi-User Benchmarks for Database Systems
abstract: ABSTRACT NOT SUPPLIED

url: http://hdl.handle.net/1813/6430
date: 2007-04-23
creator: Bracha, Gabriel
viewed: 14
title: An Asynchronous [(n-1)/3]-Resilient Consensus Protocols
abstract: A consensus protocol enables a system of n asynchronous processes, some of them malicious, to reach agreement. No assumptions are made on the behaviour of the processes and the message system; both are capable of colluding to prevent the correct processes from reaching decision. A protocol is t-resilient if in the presence of up to t malicious processes it reaches agreement with probability 1. In a recent paper, t-resilient consensus protocols were presented for $t less than n / 5$. We improve this to $t less than n / 3$, thus matching the lower bound on the number of correct processes necessary for consensus. The protocol restricts the behaviour of the malicious processes to that of merely fail-stop processes, which makes it interesting in other contexts.

url: http://hdl.handle.net/1813/6431
date: 2007-04-23
creator: Li, Ming
viewed: 16
title: On One Tape Versus Two Stacks
abstract: We develop a simple method which enables us to prove three new lower bounds (for both worst and average cases) for on-line computations, answering two open problems summarized in [DGPR]. We give a language that requires $\Omega (n^{2})$ time for any 1-tape deterministic on-line machine, but it can be accepted by a 2-stack 1-reversal bounded deterministic on-line machine in real time. This provides a tight lower bound, closing the gap between $\Omega (n(logn)^{1/2})$ lower bound by [P2] and the trivial $O(n^{2})$ upper bound. We also prove that 1-tape nondeterministic real time is much stronger than its deterministic version. For 1-tape on-line machines, we give language L (L") which is in nondeterministic linear (real) time but requires $\Omega(n^{2})(\Omega (n^{1.5}))$ deterministic time. Finally we give a language which can be accepted by a 2-stack 1-reversal bounded deterministic machine in real time, but it requires $\Omega(n^{1+1/2})$ time for any one tape nondeterministic online machine. This sharply improves an $nlogn$ lower bound in [DGPR].

url: http://hdl.handle.net/1813/6432

date: 2007-04-23
creator: Seidel, Raimund
viewed: 17
title: A Method for Proving Lower Bounds for Certain Geometric Problems
abstract: We prove lower bounds for a number of geometric problems. Our results show that certain types of additional input information cannot possibly permit faster solutions for these problems. The main idea in all our lower bound proofs is the use of the index of a point as an additional coordinate.

url: http://hdl.handle.net/1813/6433
date: 2007-04-23
creator: Boehm, Hans-J.
viewed: 18
title: A Logic for the Russell Programming Language
abstract: We consider a programming language with a number of characteristics detrimental to conventional axiomatic descriptions. These include arbitrary side effects in expressions, aliasing among variables, very general recursive function declarations, and the ability to pass functions as parameters and return them as results. We give an axiomatic definition of this language based on a novel formalism. We prove the axiomatization sound and relatively complete with respect to a (somewhat nonstandard) denotational semantics. In spite of the nonstandard formalism, most conventional techniques for developing and reasoning about programs can be carried over. (ABRIDGED)

url: http://hdl.handle.net/1813/6434
date: 2007-04-23
creator: El Abbadi, Amr;Raeuchle, Thomas;Joseph, Thomas A.;Birman, Kenneth P.
viewed: 35
title: Implementing Fault-Tolerant Distributed Objects
abstract: This paper describes a technique for implementing k-resilient objects - distributed objects that remain available, and whose operations are guaranteed to progress to completion, despite up to k site failures. The implementation is derived from the object specification automatically, and does not require any information beyond what would be required for a non-resilient, non-distributed implementation. It is therefore unnecessary for an appplications programmer to have knowledge of the complex protocols normally employed to implement fault-tolerant objects. Our technique is used in ISIS, a system being developed at Cornell to support resilient objects.

url: http://hdl.handle.net/1813/6435
date: 2007-04-23
creator: Perry, Kenneth J.
viewed: 73
title: Randomized Byzantine Agreement
abstract: A randomized model of distributed computation was presented in [Rabin83]. This model admits a solution to the Byzantine Agreement Problem for systems of n asynchronous processes where no more than t are faulty. The algorithm described in [Rabin83] produces agreement in an expected number of rounds whish is a small constant independent of n and t. Using the same model, we present an algorithm of similar complexity which is able to tolerate a greater proportion of malicious processes. The algorithm is also applicable, with minor changes, to systems of synchronous processes.

url: http://hdl.handle.net/1813/6436
date: 2007-04-23

creator: Conway, Richard W.
viewed: 18
title: A User's Guide to The Factory Modelling System, A Planning and Design Tool for Manufacturing Engineering
abstract: ABSTRACT NOT SUPPLIED

url: http://hdl.handle.net/1813/6437
date: 2007-04-23
creator: Moitra, Abha
viewed: 20
title: Automatic Construction of CSP Programs from Sequential Non-Deterministic Programs
abstract: In this paper we describe a systematic method for transforming a sequential program, written in a guarded command language, into a distributed program, written in CSP. The variables of the sequential program are first partitioned into n disjoint sets, and then the program is transformed into a CSP program of n communicating processes. The two versions of the program are shown to be strongly equivalent, in the sense that they exhibit the properties of reaching the same final states and of either aborting, terminating, or running forever. We also discuss the conditions under which, when compared to the execution of the original sequential program, a speed-up in the execution of the resulting distributed program can be achieved.

url: http://hdl.handle.net/1813/6438
date: 2007-04-23
creator: Pothen, Alex;Coleman, Thomas F.
viewed: 15
title: The Sparse Null Space Basis Problem
abstract: The sparse null space basis problem is the following: $A t \times n$ matrix $A (t less than n)$ is given. Find a matrix N, with the fewest nonzero entries in it, whose columns span the null space of A. This problem arises in the design of practical algorithms for large-scale numerical optimization problems. Surprisingly, this problem can be formulated as a combinatorial optimization problem under a non-degeneracy assumption on A. THe theory of matchings in bipartite graphs - marriage theorems - can then be used to obtain the nonzero positions in N. Numerically stable matrix factorizations are used in the next phase to compute N. We use conformal decompositions to characterize the columns of a sparsest null basis. Matroid theory is used to prove that a greedy algorithm constructs a sparsest null basis. We prove that finding a sparsest null basis is NP-hard by showing that associated matroidal and graph-theoretic problems are NP-complete. We propose two approximation algorithms to construct sparse null bases. Both of them make use of the Dulmage-Mendelsohn decomposition of rectangular matrices. One algorithm is a sparsity exploiting variant of the variable-reduction technique. The second is a locally greedy algorithm that constructs a null basis with an upper triangular submatrix. These results are extended to computing sparse orthogonal null bases. We discuss how this "two-phase" approach can construct sparser null bases than a purely numerical approach; it is also potentially faster than the latter. Finally, we classify all known methods for constructing null bases, and show some unexpected equivalences between some of them.

url: http://hdl.handle.net/1813/6439
date: 2007-04-23
creator: Worona, Steven L.;DeJohn, Dan;Conway, Richard W.
viewed: 25
title: A User's Guide to The COPE Programming Environment
abstract: ABSTRACT NOT SUPPLIED

url: http://hdl.handle.net/1813/6440
date: 2007-04-23
creator: Babaoglu, Ozalp
viewed: 31
title: Buffer Management as Inventory Control
abstract: We consider computer subsystems that use buffering as a mechanism to enhance communication performance between two or more components exhibiting a short-term speed mismatch. Often, a fixed size buffer is inserted in such a communication path since it can improve performance by dampening speed variations. We formalize this buffer management problem within the framework of inventory control theory. We show that among all admissible policies for controlling such communications, the structure of the optimal one is analogous to the reorder point/order up to level policy that arises in the single commodity, continuous review, inventory control problem. This confirms the appropriateness of the intuitive and often-used high water mark/low water mark policy for buffer management. Given this policy structure, we derive expressions for the optimal parameter values. We discuss extensions of these results whereby policy parameters are dynamically estimated based on current observations of the communication characteristics. An algorithm to generate the optimal ordering decisions (and resulting costs) when communication patterns are known a priori is developed as a useful benchmark for evaluating the goodness of on-line policies.

url: http://hdl.handle.net/1813/6441
date: 2007-04-23
creator: Menon, Jaishankar;Hsiao, David K.;DeWitt, David J.;Bitton, Dina
viewed: 85
title: A Taxonomy of Parallel Sorting
abstract: In this paper, we propose a taxonomy of parallel sorting that includes a broad range of array and file sorting algorithms. We analyze the evolution of research on parallel sorting, from the earliest sorting networks to the shared memory algorithms and the VLSI sorters. In the context of sorting networks, we describe two fundamental parallel merging schemes - the odd-even and the bitonic merge. Sorting algorithms have been derived from these merging algorithms for parallel computers where processors communicate through interconnection networks such as the perfect shuffle, the mesh and a number of other sparse networks. After describing the network sorting algorithms, we show that, with a shared memory model of parallel computation, faster algorithms have been derived from parallel enumeration sorting schemes, where keys are first ranked and then rearranged according to their rank. Parallel sorting algorithms are evaluated according to a number of criteria, related not only to their time complexity, but also to their feasibility from a computer architecture point of view. We show that in addition to their attractive communication schemes, network sorting algorithms have non-adaptive schedules that make them suitable for implementation. In particular, they are easily generalized to block-sorting algorithms, that utilize limited parallelism to solve large sorting problems. We also address the problem of sorting large mass-storage files in parallel, using modified disk devices or intelligent bubble memories. Finally, the newer area of VLSI sorting is mentioned as an active and promising direction of research on parallel sorting.

url: http://hdl.handle.net/1813/6442
date: 2007-04-23
creator: Wilfong, Gordon;Hopcroft, John E.
viewed: 15
title: On the Motion of Objects in Contact
abstract: There is an increasing use of computers in the design, manufacture and manipulation of physical objects. An important aspect of reasoning about such actions concerns the motion of objects in contact. The study of problems of this nature requires not only the ability to represent physical objects but the development

of a framework or theory in which to reason about them. In this paper such a development is investigated and a fundamental theorem concerning the motion of objects in contact is proved. The simplest form of this theorem states that if two objects in contact can be moved to another configuration in which they are in contact, then there is a way to move them from the first configuration to the second configuration such that the objects remain in contact throughout the motion. This result is proved when translation and rotation of objects are allowed. The problem dealing with more generalized types of motion is also discussed. This study has obvious applications in compliant motion and in motion planning.

url: http://hdl.handle.net/1813/6443
date: 2007-04-23
creator: Van Loan, Charles
viewed: 24
title: Analysis of Some Matrix Problems Using the CS Decomposition
abstract: The gist of the CS decomposition is that the blocks of a partitioned orthogonal matrix have related singular value decompositions. In this paper we develop a perturbation theory for the CS decomposition and use it to analyze (a) the total least squares problem, (b) the Golub-Klema-Stewart subset selection algorithm, (c) the algebraic Riccati equation, and (d) the generalized singular value decomposition.

url: http://hdl.handle.net/1813/6444
date: 2007-04-23
creator: Van Loan, Charles
viewed: 26
title: On the Method of Weighting for Equality Constrained Least Squares Problems
abstract: The generalized singular value decomposition is used to analyze the problem of minimizing $||Ax - b||_{2}$ subject to the constraint Bx = d. A byproduct of the analysis is a new iterative procedure that can be used to improve an approximate solution obtained via the method of weights. All that is required to implement the procedure is a single QR factorization. These developments turn out to be of interest when A and B are sparse and for the case when systolic architectures are used to carry out the computations.

url: http://hdl.handle.net/1813/6445
date: 2007-04-23
creator: Conway, Richard W.
viewed: 17
title: A User's Guide to PMT - A computer System Performance Modeling Tool
abstract: ABSTRACT NOT SUPPLIED

url: http://hdl.handle.net/1813/6446
date: 2007-04-23
creator: Hartmanis, Juris
viewed: 14
title: Independence Results about Context-Free Languages and Lower Bounds
abstract: We show that for any axiomatizable, sound formal system F there exist instances of natural problems about context-free languages, lower bounds of computations and P versus NP that are not provable in F for any recursive representqation of these problems. Most previous independence results in computer science have been proven for specific representations of the problems, by exploiting the "opaqueness" of Turing machine names. Our results rely on the complexity of the logical structure of the problem and yield independence results which do not depend on the representations of problems. We show, for example, that there exists a non-regular context-free language L_{o} such that for no cf-grammar $G, L(G) = L_{o}$, it

is provable in F that "L(G) is not regular". We also show, among other results P and NP, that there exists a recursive oracle A such that $NP^{A} \neq P^{A}$, and that this fact is not provable in F for any recursive representation of A. The difference of what is and is not provable in F is well illustrated by questions about polynomial time isomorphisms (p-isomorphisms) of NP complete sets. We show that for every NP complete set, L, there is a representation of L by a non-deterministic polynomial time machine for which we can prove that L is NP complete. Furthermore if L is p-isomorphic to SAT then this is also provable in F for some representation of L. On the other hand, if there exist NP complete sets not p-isomorphic to SAT then there exists an NP complete set L for which, independent of its representation, there is no proof in F that L is or is not p-isomorphic to SAT.

url: http://hdl.handle.net/1813/6447
date: 2007-04-23
creator: Bajaj, Chanderjit
viewed: 40
title: Reducibility among Geometric Location-Allocation Optimization Problems
abstract: Three different classes of multiple points location-allocation problems in the Euclidean plane are considered under a discrete optimization criterion which minimizes the maximum cost based on certain interpoint distances. Each of these classes of geometric optimization problems is studied with three different distance metrics (Euclidean, Rectilinear, Infinity) as well as for feasible solution sets in the plane which are both discrete and infinite. All of these problems are shown to be polynomial-time reducible to each other and furthermore D^{p} complete.

url: http://hdl.handle.net/1813/6448
date: 2007-04-23
creator: Voorhees, Ellen M.;Salton, Gerard
viewed: 32
title: Automatic Assignment of Soft Boolean Operators
abstract: The conventional bibliographic retrieval systems are based on Boolean query formulations and inverted file implementations. Such systems provide rapid responses in answer to search queries but they are not easy to use by uninitiated patrons. An extended Boolean retrieval strategy has been devised in which the Boolean operators are treated more or less strictly, depending on the setting of a special parameter, known as the p-value. The extended system is much more forgiving than the conventional system, and provides better retrieval effectiveness. In this study various problems associated with the determination of appropriate p-values are discussed, and suggestions are made for an automatic assignment of p-values. Evaluation output is included to illustrate the operations of the suggested procedures.

url: http://hdl.handle.net/1813/6449
date: 2007-04-23
creator: Salton, Gerard
viewed: 26
title: Some Notions about Information Retrieval in Automated Office Environments
abstract: A substantial portion of the work required in office environments involves the processing of natural language texts. This note contains some ideas relating to the structure of natural language texts in office environments. Certain approaches are also outlined concerning the analysis, storage, search, and retrieval of such items. Attention is paid in particular to the processing of items with mixed representations and the handling of complex information specifications.

url: http://hdl.handle.net/1813/6450

date: 2007-04-23
creator: Toueg, Sam;Perry, Kenneth J.
viewed: 19
title: Distributed Agreement in the Presence of Processor and Communication Faults
abstract: A model of distributed computation is proposed in which processes may fail by not sending or receiving the messages specified by a protocol. The solution to the Byzantine Generals Problem for this model is presented. Our algorithm exhibits early-stopping under conditions of less than maximum failure and is as efficient as the algorithms developed for the more restrictive crash-fault model in terms of time, message, and bit complexity. We show extant models to under-estimate resiliency when faults in the communication medium are considered; the model of this paper is more accurate in this regard.

url: http://hdl.handle.net/1813/6451
date: 2007-04-23
creator: Skeen, Dale;Dwork, Cynthia
viewed: 23
title: Patterns of Communication in Consensus Protocols
abstract: This paper presents a taxonomy of consensus problems, based on their safeness and liveness properties, and then explores the relationships among the different problems in the taxonomy. Each problem is characterized by the communication patterns of protocols solving it. This then becomes the basis for a new notion of reducibility between problems. Formally, problem P_{1} reduces to problem P_{2} whenever each set of communication patterns of a protocol for P_{2} is the set of comunication patterns of a protocol for P_{1}. This means intuitively that any protocol for P_{2} can solve P_{1} by relabeling local states and padding messages. Consequently, the message complexity (measured in number of messages) of P_{1} is not greater than the message complexity of P_{2}. Our method of characterizing and comparing problems is the principal contribution of this paper.

url: http://hdl.handle.net/1813/6452
date: 2007-04-23
creator: Luk, Franklin T.
viewed: 83
title: A Jacobi-like Algorithm for Computing the QR-Decomposition
abstract: A parallel Jacobi-like method for computing the QR-decomposition of an $n \times n$ matrix is proposed. It requires $O(n^{2})$ processors and $O(n)$ units of time. The method can be extended to handle an $m \times n$ matrix $(m \geq n)$. The requirements become $O(n^{2})$ processors and $O(m)$ time.

url: http://hdl.handle.net/1813/6453
date: 2007-04-23
creator: Van Loan, Charles
viewed: 27
title: Computing the CS and the Generalized Singular Value Decompositions
abstract: If the columns of a matrix are orthonormal and it is partitioned into a 2-by-1 block matrix, then the singular value decompositions of the blocks are related. This is the essence of the "CS decomposition". The computation of these related SVD's requires some care. Stewart has given an algorithm that uses the LIN-PACK SVD algorithm together with a Jacobi-type "clean-up" operation on a cross-product matrix. Our technique is equally stable and fast but avoids the cross-product matrix. The simplicity of our technique makes it more amenable to parallel computation on systolic-type computer architectures. These developments are of interest because the best way to compute the generalized singular value decomposition of a matrix pair (A,B) is to compute the CS decomposition of a certain orthogonal column matrix related to A and B.

url: http://hdl.handle.net/1813/6454
date: 2007-04-23
creator: Skeen, Dale;Conway, Richard W.;Schneider, Fred B.
viewed: 15
title: Thrifty Execution of Task Pipelines
abstract: A sequence of tasks that must be performed on a sequential database can be scheduled in various ways. Schedules will differ with respect to the number of accesses made to peripheral storage devices and the amount of memory space consumed by buffers. Buffer requirements are discussed for task schedules that avoid accesses to peripherals storing the sequential database. The relationship between certain thrifty scheduling policies and loop jamming, a standard code optimization technique, is also identified. Application to UNIX pipelines and to file processing is discussed.

url: http://hdl.handle.net/1813/6455
date: 2007-04-23
creator: Wilfong, Gordon;Hopcroft, John E.
viewed: 18
title: Reducing Multiple Object Motion Planning To Graph Searching
abstract: In this paper we study the motion planning problem for multiple objects where an object is a 2-dimensional body whose faces are line segments parallel to the axes of R^{2} and translations are the only motions allowed. Towards this end we analyze the structure of configuration space, the space of points that correspond to positions of the objects. In particular, we consider CONNECTED, the set of all points in configuration space that correspond to configurations of the objects where the objects form one connected component. We show that CONNECTED consists of faces of various dimensions such that if there is a path in CONNECTED between two 0-dimensional faces (vertices) of CONNECTED then there is a path between them along 1-dimensional faces (edges) of CONNECTED. It is known that if there is a motion between the configurations. Thus by the result of this paper the existence of a motion between two vertices of CONNECTED implies a motion corresponding to a path along edges of CONNECTED. Hence we have reduced the motion planning problem from a search of a high dimensional space to a graph searching problem. Searching the graph of vertices and edges of CONNECTED for a path has a prohibitive worse-case complexity because of the large number of vertices and edges. However, if the search generates edges and vertices only as they are needed, a practical and efficient algorithm may be possible using some effective heuristic. From this result it is shown that motion planning for rectangles in a rectangular boundary is in PSPACE. Since it is known that the problem is PSPACE-hard we conclude it is a PSPACE-complete problem.

url: http://hdl.handle.net/1813/6456
date: 2007-04-23
creator: Skeen, Dale;Garcia-Molina, Hector;Davidson, Susan B.
viewed: 22
title: Consistency in a Partitioned Network: A Survey
abstract: Recently, several strategies for transaction processing in partitioned distributed database systems with replicated data have been proposed. We survey these strategies in light of the goal of maintaining reliability. Extensions and combinations are then discussed, and guidelines for the selection of a strategy for a particular application are presented.

url: http://hdl.handle.net/1813/6457
date: 2007-04-23
creator: Moitra, Abha;Mathai, Joseph

viewed: 16
title: Algebraic Specification of a Communication Scheduler
abstract: A distributed programming language normally incorporates one mechanism by which processes communicate with each other. This mechanism can be used to transfer information or to synchronize the flow of control in the program. Different communication mechanisms have been proposed for different languages. In this paper, we provide a common framework in which these mechanisms can be examined independently of the languages in which they may be embedded. Operationally, this framework is a communication scheduler: formally, it is specified algebraically as a data type. A number of different communication mechanisms, such as synchronous and asynchronous message passing, broadcasts and remote procedure calls, are modelled and, as an illustration of how global properties can be analysed, we consider the problem of deadlock detection.

url: http://hdl.handle.net/1813/6458
date: 2007-04-23
creator: Lafon, Jean-Claude;Howell, Thomas D.
viewed: 32
title: The Complexity of the Quaternion Product
abstract: Let X and Y be two quaternions over an arbitrary ring. Eight multiplications are necessary and sufficient for computing the product XY. If the ring is assumed to be commutative, at least seven multiplications are still necessary and eight are sufficient.

url: http://hdl.handle.net/1813/6459
date: 2007-04-23
creator: Toueg, Sam;Perry, Kenneth J.
viewed: 14
title: An Authenticated Byzantine Generals Algorithm with Early Stopping
abstract: A protocol that solves the authenticated Byzantine General's Problem is presented. It is proved correct and shown to exhibit early stopping under the condition that fewer than half the processes are faulty.

url: http://hdl.handle.net/1813/6460
date: 2007-04-23
creator: Srikanth, T. K.;Perry, Kenneth J.;Toueg, Sam
viewed: 16
title: Simple and Efficient Byzantine General Algorithms with Early Stopping
abstract: We describe a Byzantine Agreement algorithm, with early stopping, for systems with arbitrary process failures. The algorithm presented is simpler and more efficient than those previously known. It was derived using a broadcast primitive that provides properties of message authentication and thus restricts the disruptive behavior of faulty processes. This primitive is a general tool for deriving fault-tolerant algorithms in the presence of arbitrary failures.

url: http://hdl.handle.net/1813/6461
date: 2007-04-23
creator: Raeuchle, Thomas;Joseph, Thomas A.;Birman, Kenneth P.
viewed: 42
title: Concurrency Control in Resilient Objects
abstract: Resilient objects are instances of distributed abstract data types that are tolerant to failures. Due to the distributed nature of resilient objects and the use of replicated data, the potential for a high degree of concurrency exists within them. This paper introduces a new concurrency control algorithm which achieves

higher concurrency than conventional methods like two-phase locking. Objects are specified in a high level language. The algorithm uses the specification taking advantage of the structure of resilient objects and exploiting semantic information about operations.

url: http://hdl.handle.net/1813/6462
date: 2007-04-23
creator: Toueg, Sam;Srikanth, T. K.
viewed: 22
title: Simulating Authenticated Broadcasts to Derive Simple Fault-Tolerant Algorithms
abstract: Fault-tolerant algorithms for distributed systems are simpler to develop and prove correct if messages can be authenticated. However, using digital signatures for message authentication usually incurs substantial overhead in communication and computation. To exploit the simplicity provided by authentication without this overhead, we present a broadcast primitive that simulates properties of authenticated broadcasts. This gives a methodology for deriving non-authenticated algorithm. We have applied this approach to various problems and in each case obtained simpler and more efficient solutions than those previously known.

url: http://hdl.handle.net/1813/6463
date: 2007-04-23
creator: Toueg, Sam;Shah, Amitabh
viewed: 16
title: Distributed Snapshots In Spite of Failures
abstract: An extension of the Chandy-Lamport algorithm ([Chan84]) to find global states of distributed systems is presented where benign failures of processes and channels are permitted. The scope of the algorithm in detecting stable properties in distributed systems is discussed. As an application, an algorithm to detect deadlocks in failure-prone distributed systems is presented.

url: http://hdl.handle.net/1813/6464
date: 2007-04-23
creator: Luk, Franklin T.
viewed: 33
title: A Triangular Processor Array for Computing the Singular Value Decomposition
abstract: A triangular processor array for computing a singular value decomposition (SVD) of an $m \times n (m \geq n)$ matrix is proposed. A Jacobi-type algorithm is used to first triangularize the given matrix and then diagonalize the resultant triangular form. The requirements are $O(m)$ time and $1/4 n^{2} + O(n)$ processors.

url: http://hdl.handle.net/1813/6465
date: 2007-04-23
creator: Luk, Franklin T.;Brent, Richard P.
viewed: 25
title: The Solution of Singular Value Problems Using Systolic Arrays
abstract: This paper contains the computation of the singular value decomposition using systolic arrays. Two different linear time algorithms are presented.

url: http://hdl.handle.net/1813/6466
date: 2007-04-23
creator: Nicolau, Alexandru
viewed: 15

title: Disambiguation, Correctness and Flow-Analysis Issues for Trace Scheduling Compilers
abstract: Trace scheduling is a global compaction technique for transforming sequential programs into parallel code. When this investigation began, trace scheduling was unimplemented and many serious questions of appropriateness and effectiveness needed to be solved. This paper addresses questions of its applicability to ordinary programming for Very Long Instruction Word machines. We developed practical methods of exploiting this parallelism (e.g. memory anti-aliasing). To justify and better understand the dynamic interaction between trace scheduling and anti-aliasing, we designed a more formal model in which we proved the correctness of trace scheduling and showed that it terminates. This in turn allowed us to analyze our flow information requirements. Finally we addressed the problem of ambiguous memory references which cannot be resolved at compile time.

url: http://hdl.handle.net/1813/6467
date: 2007-04-23
creator: Dietz, Paul F.
viewed: 19
title: Intersection Graph Algorithms
abstract: An intersection graph for a set of sets C is a graph G together with a bijection from the vertices of G to C such that distinct vertices in G are adjacent if and only if their images under this bijection intersect. Of particular interest have been the classes of chordal graphs, the intersection graphs of sets of subtrees of a tree, and interval graphs, the intersection graphs of sets of intervals of the real line. I examine another class of intersection graphs, the class of directed path graphs: intersection graphs of sets of paths in a directed tree. This class properly contains the class of interval graphs, and is properly contained by the class of chordal graphs. I give a linear time algorithm for recognizing directed path graphs and for constructing intersection representations, and a polynomial time algorithm for deciding directed path graph isomorphism. Both algorithms use a data structure called a partial path tree, which is a kind of skeletal representation of the clique hypergraph of a directed path graph. I present linear time algorithms for finding partial path trees with specific roots and for finding partial path trees with arbitrary roots. I prove that partial path trees with identical roots are identical. Using this fact I develop a polynomial time algorithm for directed path graph isomorphism.

url: http://hdl.handle.net/1813/6468
date: 2007-04-23
creator: Bajaj, Chanderjit
viewed: 33
title: Geometric Optimization and Computational Complexity
abstract: Our purpose here is to study problems involving geometric optimization, namely, questions of the type: Is there at least a minimum or at most a maximum number of certain geometric figures, that are within certain distances of other figures (objects). We are also concerned with the optimization of the size of these geometric figures. These problems arise as geometric reductions from various classes of location-allocation optimization problems and are inherently not pure combinatorial. Our primary aim, then, is to discover techniques of dealing with such geometric optimization problems, while adapting to these problems the older combinatorial design and analysis methods. The task of classifying problems accurately in the polynomial hierarchy is one of increasing importance. To solve an optimization problem deterministically it seems that one must solve both an NP and a $Co-NP$ problem. The significance of the classes NP and $Co-NP$ are that none of the problems they include is known to have a polynomial time solution. We show that if $NP \neq Co-NP$ then there are interesting natural geometric optimization problems (location-allocation problems under minsum) in Δ^{P}_{2} that are in neither NP nor $Co-NP$. Hence, all these problems are shown to belong properly to Δ^{P}_{2}, the second level of

the polynomial hierarchy. We also show that if $NP \neq Co-NP$ then there are again some interesting geometric optimization problems (location-allocation problems under minmaz) properly in Δ^{P}_{2} and furthermore they are complete for a class D^{P} (which is contained in Δ^{P}_{2} and contains $NP \bigcup Co-NP$). Also considered are the above geometric location-allocation optimization problems for the case when the allocation is predetermined. Both efficient algorithms and worst-case lower bounds are derived. Necessary conditions for the existence of mazima and minima in optimization problems are generally tied to the question of solvability of an equation or a system of equations. In calculus these equations are algebraic. By generating the minimal polynomial whose root over the field of rational numbers is the solution of the geometric optimization problem on the real (Euclidean) plane, we are able to prove the non-solvability of certain geometric optimization problems by radicals. The algebraic degree of the optimizing solution, which is the degree of the irreducible minimal polynomial for the problem, correlates with the inherent difficulty of constructing the solution and provides an algebraic complexity measure for these geometric optimization problems.

url: http://hdl.handle.net/1813/6469
date: 2007-04-23
creator: Demers, Alan J.;Reps, Thomas
viewed: 17
title: Sublinear-Space Evaluation Algorithms for Attribute Grammars
abstract: The chief hindrance to the widespread adoption of attribute-grammar-based systems has been that they are profligate consumers of storage. This paper concerns new storage management techniques that reduce the amount of storage used by reducing the number of attribute values retained at any stage of attribute evaluation; it presents one algorithm for evaluating an n-attribute tree that never retains more than $O(\sqrt{n})$ attribute values, and it presents a second algorithm that never retains more than $O(\log n)$ attribute values.

url: http://hdl.handle.net/1813/6470
date: 2007-04-23
creator: Bracha, Gabriel
viewed: 75
title: An O(lg n) Expected Rounds Probabilistic Byzantine Generals Algorithm (The Bigger They Are, The Harder They Fall)
abstract: Byzantine Generals algorithms enable processes to reliably broadcast messages in a system of n processes where up to t of the processes may be faulty. The algorithms are conducted in synchronous rounds of message exchange. For a system where $n = (3 + \delta)t$ we prove the existence of a randomized algorithm whose expected number of rounds is $O(lg n)$. This is an improvement on the lower bound of $t + 1$ rounds required for deterministic algorithms and on the previous result of $t/lg n$ expected number of rounds for randomized algorithms.

url: http://hdl.handle.net/1813/6471
date: 2007-04-23
creator: Karplus, Kevin
viewed: 22
title: Formal Model of MOS Clocking Disciples
abstract: This paper presents a formalization of clocking disciplines used to prevent race conditions in VLSI circuits. A signal-labeling scheme for the two-phase clocking discipline informally described in Mead and Conway [MC] is presented. Rules are given for checking the correct labeling of a circuit consisting of combinatorial logic and memory elements. The signal-labeling conventions are based in part on those of

Noice, Mathews, and Newkirk [NMN]. A formal basis is presented for constructing signal-labeling schemes for multi-phase clocks (both overlapping and non-overlapping) from a definition of the master timing signals. The two-phase scheme is shown to be a special case of this general method. The method is also illustrated for four-phase overlapping clocks.

url: http://hdl.handle.net/1813/6472
date: 2007-04-23
creator: Salton, Gerard
viewed: 22
title: A Note About Information Science Research
abstract: This note deals with the relationship between information science research and practice. The impression that the field is moribund and that the research output is uniformly inferior is not supported by an examination of the information retrieval literature.

url: http://hdl.handle.net/1813/6473
date: 2007-04-23
creator: Nguyen, Van Long
viewed: 15
title: The Incompleteness of Misra and Chandy's Proof Systems
abstract: In this paper we show that Misra and Chandy's proof systems for networks of communicating processes ([1, 2]) are incomplete.

url: http://hdl.handle.net/1813/6474
date: 2007-04-23
creator: Schneider, Fred B.;Lamport, Leslie
viewed: 24
title: Constraints: A Uniform Approach to Aliasing and Typing
abstract: No abstract supplied.

url: http://hdl.handle.net/1813/6475
date: 2007-04-23
creator: Li, Ming
viewed: 81
title: Lower Bounds on String-Matching
abstract: New techniques for obtaining lower bounds on string-matching problems are developed and we prove the following new results. String-matching cannot be performed by a three-head one-way deterministic finite automaton. This answers the $k=3$ case of the open question, due to Galil and Seiferas [GS], whether a k-head one-way deterministic finite automaton can perform string-matching. String-matching by a k-head two-way DFA with k-1 heads blind (can only see two end symbols) is studied, tight upper and lower bounds are provided. Probabilistically moving a string on one tape (requiring n^{2} time) is harder than probabilistically matching two strings on 1 tape. Notice that this is not true for deterministic or even nondeterministic TMs. This is the first result showing that checking is easier than generating.

url: http://hdl.handle.net/1813/6476
date: 2007-04-23
creator: Haggard, Gary;Karplus, Kevin
viewed: 35
title: Finding Minimal Perfect Hash Functions

abstract: A heuristic is given for finding minimal perfect hash functions without extensive searching. The procedure is to construct a set of graph (or hypergraph) models for the dictionary, then choose one of the models for use in constructing the minimal perfect hashing function. The construction of this function relies on a backtracking algorithm for numbering the vertices of the graph. Careful selection of the graph model limits the time spent searching. Good results have been obtained for dictionaries of up to 181 words. Using the same techniques, non-minimal perfect hash functions have been found for sets of up to 667 words.

url: http://hdl.handle.net/1813/6477
date: 2007-04-23
creator: Iyengar, S. Sitharama;Moitra, Abha
viewed: 41
title: Derivation of a Maximally Parallel Algorithm for Balancing Binary Search Trees
abstract: A recent trend in program methodologies is to derive efficient parallel programs from sequential programs. This paper explores the question of transforming a sequential algorithm into an efficient parallel algorithm by considering the problem of balancing binary search trees. The derivation of the parallel algorithm makes use of stepwise refinement. We first derive a new iterative balancing algorithm that exploits the similarity of pointer restructuring required at all the nodes at the same level. From this we derive a parallel algorithm that has time complexity O(1) on an N-processor configuration. This achieves the theoretical limit of speed-up possible in a multi-processor configuration.

url: http://hdl.handle.net/1813/6478
date: 2007-04-23
creator: Stansifer, Ryan
viewed: 15
title: Presburger's Article on Integer Arithmetic: Remarks and Translation
abstract: No abstract supplied.

url: http://hdl.handle.net/1813/6479
date: 2007-04-23
creator: Constable, Robert L.
viewed: 34
title: Universally Closed Classes of Total Computable Functions
abstract: One of the most important characteristics of universal programming languages is that they can express their own semantics, that is universal partial functions, say interpreters, can be defined in the language. A fundamental result of computability theory is that no class of total functions can contain its own universal function. In practical terms this is disappointing, one must give up the advantages of universality to gain those of totality. In this paper the fundamental negative result is circumvented for programming languages with a sufficiently rich type structure. A new method is given for building a universally closed class of total computable functions starting with any class of such functions. These results have direct practical application in programming logics, and they raise new questions for computability theory.

url: http://hdl.handle.net/1813/6480
date: 2007-04-23
creator: Gries, David;Jacobs, Dean
viewed: 83
title: General Correctness: A Unification of Partial and Total Correctness
abstract: General correctness, which subsumes partial and total correctness, is defined for both weakest preconditions and strongest postconditions. Healthiness properties for general-correctness predicate

transformers are more uniform and complete than those for partial-and-total-correctness systems. In fact, the healthiness properties for partial and total correctness are simple restrictions of those for general correctness. General correctness allows simple formulations of the connections between weakest and strongest postconditions and between the notions of weakest precondition under the "demonic" and "angelic" interpretations of nondeterminism. A problem that plagues $sp - sp(P, C)$ is undefined if execution of C begun in some state of P may not terminate - disappears with the generalization. This paper is a study of some simple theory underlying predicate transformer semantics, and as yet has little bearing on current programming practices. The theory uses a relational model of programs.

url: http://hdl.handle.net/1813/6481
date: 2007-04-23
creator: Raeuchle, Thomas;Joseph, Thomas A.;Dietrich, Wally;Abbadi, Amr El;Birman, Kenneth P.
viewed: 75
title: An Overview of the Isis Project
abstract: The goal of the ISIS projest is to provide a high-level support for fault-tolerant distributed computing by automatically replicating data and code. The extent to which information is replicated and the physical location of information are not specified directly by the programmer, but are instead inferred from a specification, which looks much like a conventional program in an object-oriented language. This novel approach to fault-tolerant software construction requires much less sophistication from programmers than current alternatives. Moreover, optimization techniques that would be too complex for implementation in general purpose applications can be supported by the ISIS system. This overview discusses the goals of the project, its current status, and some of the implications of our work.

url: http://hdl.handle.net/1813/6482
date: 2007-04-23
creator: Soundararajan, Neelam;Moitra, Abha;Joseph, Mathai
viewed: 18
title: Proof Rules for Fault-Tolerant Distributed Programs
abstract: Proving properties of fault tolerant distributed programs is a complex task as such proofs must take into account failures at all possible points in the execution of individual processes. The difficulty in accomplishing this is compounded by the need also to cater for simultaneous failures of two or more processes. In this paper, we consider programs written in a version of Hoare's CSP and define a set of axioms and inference rules by which proofs can be constructed in three steps: proving the properties of each process when its communicants are prone to failure, establishing the effects of failure of each process, and combining these proofs to determine the fault tolerant properties of the whole program.

url: http://hdl.handle.net/1813/6483
date: 2007-04-23
creator: Joseph, Thomas A.;Birman, Kenneth P.
viewed: 45
title: Low Cost Management of Replicated Data in Fault-Tolerant Distributed Systems
abstract: Many distributed systems replicate data for fault tolerance or availability. In such systems, a logical update on a data item results in a physical update on a number of copies. The synchronization and communication required to ensure that the copies of replicated data are kept consistent introduces a delay when operations are performed. In this paper, we describe a technique that relaxes the usual degree of synchronization, permitting copies of replicated data to be updated concurrently with other operations, while at the same time ensuring that correctness is not violated. The additional concurrency thus obtained results in better response time when performing operations on replicated data. We also discuss how this

technique performs in conjunction with roll-back and roll-forward failure recovery mechanisms.

url: http://hdl.handle.net/1813/6484
date: 2007-04-23
creator: Bates, Joseph L.;Knoblock, Todd B.;Constable, Robert L.
viewed: 84
title: Writing Programs that Construct Proofs
abstract: When we learn mathematics, we learn more than definitions and theorems. We learn techniques of proof. In this paper, we describe a particular way to express these techniques and incorporate them into formal theories and into computer systems used to build such theories. We illustrate the methods as they were applied in the λ-PRL system, essentially using the ML programming language from Edinburgh LCF [23] as the formalised metalanguage. We report our experience with such an approach emphasizing the ideas that go beyond the LCF work, such as transformation tactics, refinement tactics, and special purpose reasoners. We also show how the validity of tactics can be guaranteed. The introduction places the work in historical context and the conclusion briefly describes plans to carry the methods further. The majority of the paper presents the λ-PRL approach in detail.

url: http://hdl.handle.net/1813/6485
date: 2007-04-23
creator: Cai, Jin-yi;Coleman, Thomas F.
viewed: 83
title: The Cyclic Coloring Problem and Estimation of Sparse Hessian Matrices
abstract: Numerical optimization algorithms often require the (symmetric) matrix of second derivatives, $\nabla^{2} f (x)$, of some problem function $f: R^{n} \rightarrow R^{1}$. If the Hessian matrix is large and sparse then estimation by finite differences can be quite attractive since several schemes allow for estimation in $\ll n$ gradient evaluations. The purpose of this paper is to analyze, from a combinatorial point of view, a class of methods known as substitution methods. We present a concise characterization of such methods in graph-theoretic terms. Using this characterization, we develop a complexity analysis of the general problem and derive a roundoff error bound on the Hessian approximation. Moreover, the graph model immediately reveals procedures to effect the substitution process optimally (ie. using fewest possible substitutions given the differencing directions) in space proportional to the number of nonzeroes in the Hessian matrix.

url: http://hdl.handle.net/1813/6486
date: 2007-04-23
creator: Van Loan, Charles;Kaplan, I. M.
viewed: 34
title: On Computing the CS Decomposition with Systolic Arrays
abstract: The computation of the CS decomposition is the key to the stable computation of the Generalized Singular Value Decomposition, and is also important in other applications. This paper describes our implementation of a technique to compute the CS decomposition, and investigates the transfer of this technique to systolic computer architectures with parallel computation.

url: http://hdl.handle.net/1813/6487
date: 2007-04-23
creator: Van Loan, Charles;Speiser, J. M.
viewed: 32
title: Signal Processing Computations Using the Genralized Singular Value Decomposition
abstract: The ordinary Singular Value Decomposition (SVD) is widely used in statistical and signal processing

computation, both for the insight it provides into the structure of a linear operator, and as a technique for reducing the computational word length required for least-squares solutions and certain Hermitian eigensystem decompositions by roughly a factor of two, via computing directly on a data matrix, rather than on the corresponding estimated correlation or covariance matrix. Although the SVD has long been utilized as a method of off-line or non-real-time computation, parallel computing architectures for its implementation in near real time have begun to emerge. The Generalized Singular Value Decomposition (GSVD) bears the same relationship to the computation of certain Hermitian generalized eigensystem decompositions that the ordinary SVD bears to the corresponding ordinary eigensystem decompositions. This paper discusses methods for computing the GSVD via a sequence of more familiar computations and indicates the relation of the GSVD to the MUSIC algorithm of R. Schmidt.

url: http://hdl.handle.net/1813/6488
date: 2007-04-23
creator: Van Loan, Charles
viewed: 36
title: How Near is a Stable Matrix to an Unstable Matrix?
abstract: In this paper we explore how close a given stable matrix A is to being unstable. As a measure of "how stable" a stable matrix is, the spectral abscissa is shown to be flawed. A better measure of stability is the Frobenius norm of the smallest perturbation that shifts one of A's eigenvalues to the imaginary axis. This leads to a singular value minimization problem that can be approximately solved by heuristic means. However, the minimum destabilizing perturbation may be complex even when A is real. This suggests that in the real case we look for the smallest real perturbation that shifts one of the eigenvalues to the imaginary axis. Unfortunately, a difficult constrained minimization problem ensues and no practical estimation technique could be devised.

url: http://hdl.handle.net/1813/6489
date: 2007-04-23
creator: Owicki, Susan S.;Gries, David;Nguyen, Van Long
viewed: 24
title: A Model and Temporal Proof System for Networks of Processes
abstract: A model and a sound and complete proof system for networks of processes in which component processes communicate exclusively through messages is given. The model, an extension of the trace model, can desribe both synchronous and asynchronous networks. The proof system uses temporal-logic assertions on sequences of observations - a generalization of traces. The use of observations (traces) makes the proof system simple, compositional and modular, since internal details can be hidden. The expressive power of temporal logic makes it possible to prove temporal properties (safety, liveness, precedence, etc.) in the system. The proof system is language-independent and works for both synchronous and asynchronous networks.

url: http://hdl.handle.net/1813/6490
date: 2007-04-23
creator: Rauchle, Thomas;El Abbadi, Amr
viewed: 17
title: Resilient Communication Structures for Local Area Networks
abstract: Reliable communication is crucial to the correct functioning of distributed systems. We propose a multi-ring communication structure and a reconfiguration algorithm that tolerate multiple link failures before the network divides into more than one partition. In case of partitioning, each partition is reconfigured to allow communication among the sites within the partition. The algorithm handles recovery of links and merges partitions once links become operational again. The algorithm itself is fault-tolerant, and it is fully

distributed and does not require global knowledge about the status of the network at any one site.

url: http://hdl.handle.net/1813/6491
date: 2007-04-23
creator: Edenbrandt, Anders
viewed: 101
title: Quotient Tree Partitioning of Undirected Graphs
abstract: The partitioning of the vertices of an undirected graph, in a way that makes its quotient graph a tree, mirrors a way of permuting a square symmetric matrix to allow its factoring with little fil-in. We analyze the complexity of finding the best partitioning and show that it is NP-complete. We also give a new and simpler implementation of an algorithm that finds a maximal quotient tree.

url: http://hdl.handle.net/1813/6492
date: 2007-04-23
creator: Nance, Richard E.;Crouch, Carolyn J.
viewed: 27
title: An Approach to the Functional Description of an Information Retrieval System Based on a Generalized Model
abstract: In this paper, the authors present a high level, functional approach to the description of a generalized information retrieval system. The description is based on the top-down decomposition of the system into modules and processes and on an appropriate data abstraction. The purpose of this paper is to describe the behavior of the system in terms of the component processes and the interactions of these processes in terms of inputs, outputs, and the associated transformations. It allows one to view the system as a collection of abstract processes, each of which is concisely defined via a notation that describes what is accomplished but not how such a process is to be implemented. Semantically irrelevant details are removed, thereby producing a nonprocedural description which not only elucidates system behavior but serves as a basis for subsequent formal specification.

url: http://hdl.handle.net/1813/6493
date: 2007-04-23
creator: Toueg, Sam;Srikanth, T. K.
viewed: 16
title: Optimal Clock Synchronization
abstract: We present a simple, efficient and unified solution to the problems of synchronizing, initializing, and integrating clocks, for systems with different types of failures: crash, omission, and arbitrary failures with and without message authentication. This is the first known solution that achieves optimal accuracy, i.e., the accuracy of synchronized clocks (with respect to real time) is as good as that specified for the underlying hardware clocks. The solution is also optimal with respect to the number of faulty processes that can be tolerated to achieve this accuracy.

url: http://hdl.handle.net/1813/6494
date: 2007-04-23
creator: Drummond, Rogerio;Babaoglu, Ozalp
viewed: 35
title: Streets of Byzantium: Network Architecture for Fast Reliable Broadcasts
abstract: A site broadcasting its local value to all other sites in a fault-prone environment is a fundamental paradigm in constructing reliable distributed systems. Time complexity lower bounds and network connectivity requirements for reliable broadcast protocols in point-to-point communication networks are

well known. In this paper we consider the reliable broadcast problem in distributed systems with broadcast networks (for example, Ethernets) as the basic communication architecture. We show how properties of such network architectures can be used to effectively restrict the externally visible behavior of faulty processors. We use these techniques to derive simple protocols that implement reliable broadcast in only two rounds, independent of the failure upper bounds.

url: http://hdl.handle.net/1813/6495
date: 2007-04-23
creator: Schneider, Fred B.;Alpern, Bowen
viewed: 28
title: Defining Liveness
abstract: A formal definition for liveness properties is proposed. It is argued that this definition captures the intuition that liveness properties stipulate that "something good" eventually happens during execution. A topological characterization of safety and liveness is given. Every property is shown to be the intersection of a safety property and a liveness property.

url: http://hdl.handle.net/1813/6496
date: 2007-04-23
creator: Toueg, Sam;Raeuchle, Thomas;Joseph, Thomas A.
viewed: 32
title: State Machines and Assertions (An Integrated Approach to Modelingand Verification of Distributed Systems
abstract: This paper describes a methodology for modeling and verifying protocols for asynchronous message passing systems. It combines the techniques of finite state analysis and axiomatic verification. It overcomes the problem of state explosion by using variables and logical assertions where the finite state approach would require a large number of states. By explicitly including states where interactions between processes occur, the complexity of assertional proofs is significantly reduced. Properties like freedom from deadlock, freedom from unspecified message receptions, boundedness of channel size, and partial correctness can be proved. Properties of channels like losing or garbling messages can be modeled, as can premature and non-premature timeouts. The technique is illustrated by proving a sliding window flow control protocol and an alternating bit protocol that is correct only if timeouts are non-premature.

url: http://hdl.handle.net/1813/6497
date: 2007-04-23
creator: Bracha, Gabriel
viewed: 99
title: Randomized Agreement Protocols and Distributed Deadlock Detection Algorithm
abstract: ABSTRACT NOT SUPPLIED

url: http://hdl.handle.net/1813/6498
date: 2007-04-23
creator: Voorhees, Ellen M.
viewed: 27
title: The Cluster Hypothesis Revisited
abstract: A new means of evaluating the cluster hypothesis is introduced and the results of such an evaluation are presented for four collections. The results of retrieval experiments comparing a sequential search, a cluster-based search, and a search of the clustered collection in which individual documents are scored against the query are also presented. These results indicate that while the absolute performance of a search

on a particular collection is dependent on the pairwise similarity of the relevant documents, the relative effectiveness of clustered retrieval versus sequential retrieval is independent of this factor. However, retrieval of entire clusters in response to a query usually results in a poorer performance than retrieval of individual documents from clusters.

url: http://hdl.handle.net/1813/6499
date: 2007-04-23
creator: Mendler, N. P.;Constable, Robert L.
viewed: 16
title: Recursive Definitions in Type Theory
abstract: The type theories we consider are adequate for the foundations of mathematics and computer science. Recursive type definitions are important practical ways to organize data, and they express powerful axioms about the termination of procedures. In the theory examined here, the demands of practicality arising from our implemented system, Nuprl, suggest an approach to recursive types that significantly increases the proof theoretic power of the theory and leads to insights into computational semantics. We offer a new account of recursive definitions for both types and partial functions. The computational requirements of the theory restrict recursive type definitions involving the total function-space constructor ($\rightarrow$) to those with only positive occurrences of the defined type. But we show that arbitrary recursive definitions with respect to the partial function-space constructor are sensible. The partial function-space constructor allows us to express reflexive types of Scott's domain theory (as needed to model the lambda calculus) and thereby reconcile parts of domain theory with constructive type theory.

url: http://hdl.handle.net/1813/6500
date: 2007-04-23
creator: More, Jorge J.;Garbow, Burton S.;Coleman, Thomas F.
viewed: 20
title: Software For Estimating Sparse Hessian Matrices
abstract: The solution of a nonlinear optimization problem often requires an estimate of the Hessian matrix for a function f. In large scale problems the Hessian matrix is usually sparse, and then estimation by differences of gradients is attractive because the number of differences can be small compared to the dimension of the problem. In this paper we describe a set of subroutines whose purpose is to estimate the Hessian matrix with the least possible number of gradient evaluations.

url: http://hdl.handle.net/1813/6501
date: 2007-04-23
creator: Hopcroft, John E.;Hoffmann, Christoph M.
viewed: 35
title: Automatic Surface Generation in Computer Aided Design
abstract: No abstract available

url: http://hdl.handle.net/1813/6502
date: 2007-04-23
creator: Perry, Kenneth J.
viewed: 71
title: Early Stopping Protocols for Fault-Tolerant Distributed Agreement
abstract: No abstract available

url: http://hdl.handle.net/1813/6503

date: 2007-04-23
creator: Li, Ming
viewed: 76
title: Lower bounds in Computational Complexity
abstract: No abstract available

url: http://hdl.handle.net/1813/6504
date: 2007-04-23
creator: Stansifer, Ryan
viewed: 14
title: Representing Constructive Theories in High-Level Programming Languages
abstract: No abstract available

url: http://hdl.handle.net/1813/6505
date: 2007-04-23
creator: Raiha, Kari-Jouko;Mannila, Heikki
viewed: 38
title: Design by Example: An Application of Armstrong Relations
abstract: Example relations, and especially Armstrong relations, can be used as user-friendly representations of dependency sets. In this paper we analyze the use of Armstrong relations in database design with functional dependencies, and show how they and the usual representation of dependencies can be used together. Special attention is given to the size of Armstrong relations. We derive new bounds for the size of minimal Armstrong relations for normalized schemes. New algorithms are also given for generating Armstrong relations and for inferring the functional dependencies holding in a relation.

url: http://hdl.handle.net/1813/6506
date: 2007-04-23
creator: Li, Ming
viewed: 24
title: Lower Bounds by Kolmogorov-Complexity
abstract: Using Kolmogorov-complexity, we obtain the following new lower bounds. For on-line nondeterministic Turing machines, (1) simulating 2 pushdown stores by 1 tape requires $\Omega(n^{1.5} / logn)$ time; together with a newly proved $O(n^{1.5}\sqrt{logn})$ upper bound [L3], this basically settled the open problem 1 in [DGPR] for 1 tape vs. 2 pushdown case (the case of 1 tape vs. 2 tapes was basically settled by [M]); (2) simulating 1 queue by 1 tape requires $\Omega(n^{4/3} / logn)$ time; this brings us closer to a newly proved $O(n^{1.5}\sqrt{logn})$ upper bound [L3]; (3) simulating 2 tapes by 1 tape requires $\Omega(n^{2} / lognloglogn)$ time; this is a minor improvement of [M]'s $\Omega(n^{2} / log^{2}nloglogn)$ lower bound; it is also claimed (full proof contained in [L3]) that the actual languages used in [M] (also here) and [F] do not yield $\Omega(n^{2})$ lower bound. To cope with an open question of [GS] of whether a k-head 1-way DFA (k-DFA) can do string matching, we develop a set of techniques and show that 3-DFA cannot do string matching, settling the case $k = 3$. Some other related lower bounds are also presented.

url: http://hdl.handle.net/1813/6507
date: 2007-04-23
creator: Li, Ming
viewed: 15
title: Simulating Two Pushdown Stores by One Tape in $O(n^{1.5}\sqrt{logn}$) Time. (Preliminary Version)

abstract: Based on two graph separator theorems, one old (the Lipton-Tarjan planar separator theorem) and one new, we present two unexpected upper bounds and resolve several open problems for on-line computations: (1) 1 tape nondeterministic machines can simulate 2 pushdown stores in time $O(n^{1.5} \sqrt{logn})$ (true for both on-line and off-line machines). Together with the $\Omega (n^{1.5} \sqrt{logn})$ lower bound by the author [L1], this solved the open problem 1 in [DGPR] for the 1 tape vs. 2 pushdown case. It also disproves the commonly conjectured $\Omega (n^{2})$ lower bound. (Note, the $\Omega (n^{2})$ lower bound has been proved for the deterministic case [M, L, V].) (2) the languages defined by [M] and [F], aimed to obtain optimal lower bound for 1 tape nondeterministic machines, can be accepted in $O(n^{2} loglogn / \sqrt{logn})$ and $O(n^{1.5}\sqrt{logn})$ time by a 1 tape TM, respectively. (3) 3 pushdown stores are better than 2 pushdown stores. This answers open problem 3 of [DG]. (An $\Omega(n^{4/3} / log^{e} n)$ lower bound is also obtained.) (4) 1 tape can nondeterministically simulate 1 queue in $O(n^{1.5} \sqrt{logn})$ time. (The lower bounds were: $\Omega(n^{2})$ for deterministic case [V] and $\Omega(n^{4/3} / logn)$ [L1] for nondeterministic case.)

url: http://hdl.handle.net/1813/6508
date: 2007-04-23
creator: Birman, Kenneth P.
viewed: 17
title: Replication and Fault-Tolerance in the ISIS System
abstract: The ISIS system transforms abstract type specifications into fault-tolerant distributed implementations while insulating users from the mechanisms used to achieve fault-tolerance. This paper discusses techniques for obtaining a fault-tolerant implementation from a non-distributed specification and for achieving improved performance by concurrently updating replicated data. The system itself is based on a small set of communication primitives, which are interesting because they achieve high levels of concurrency while respecting higher level ordering requirements. The performance of distributed fault-tolerant services running on this initial version of ISIS is found to be nearly as good as that of non-distributed, fault-intolerant ones.

url: http://hdl.handle.net/1813/6509
date: 2007-04-23
creator: Seidel, Raimund;Edelsbrunner, Herbert
viewed: 73
title: Voronoi Diagrams and Arrangements
abstract: We propose a uniform and general framework for defining and dealing with Voronoi Diagrams. In this framework a Voronoi Diagram is a partition of a domain D induced by a finite number of real valued functions on D. Valuable insight can be gained when one considers how these real valued functions partition $D \times R$. With this view it turns out that the standard Euclidean Voronoi Diagram of point sets in R^{d} along with its order-k generalizations are intimately related to certain arrangements of hyperplanes. This fact can be used to obtain new Voronoi Diagram algorithms. We also discuss how the formalism of arrangements can be used to solve certain intersection and union problems.

url: http://hdl.handle.net/1813/6510
date: 2007-04-23
creator: Immerman, Neil;Hartmanis, Juris
viewed: 38
title: On Complete Problems for NP$\cap$CoNP
abstract: It is not known whether complete languages exist for $NP\cap CoNP$, and Sipser has shown that there are relativizations so that $NP\cap CoNP$ has no $\leq ^{P}_{m}$-complete languages. In this paper we show that $NP\cap CoNP$ has $\leq ^{P}_{m}$-complete languages if and only if it has $\leq ^{P}_{T}$-

complete languages. Furthermore, we show that if a complete language L_{0} exists for $NP\cap CoNP$ and $NP\cap CoNP \neq NP$ then the reduction of $L(N_{i}) \in NP\cap CoNP$ cannot be effectively computed from N_{i}. We extend the relativization results by exhibiting an oracle E such that $P^{E} \neq NP^{E} \cap CoNP^{E} \neq NP^{E}$ and for which there exist complete languages in the intersection. For this oracle the reduction to a complete language can be effectively computed from complementary pairs of machines (N_{i}, N_{j}) such that $L(N_{i})= \overline{L(N_{j})}$. On the other hand, there also exist oracles F such that $P^{F} \neq NP^{F} \cap CoNP^{F} \neq NP^{F}$ for which the intersection has complete languages, but the reductions to the complete language cannot be effectively computable from the complementary pairs of machines. In this case, the reductions can be computed from $(N_{i}, N_{j}$, Proof that $L(N_{i})= \overline{L(N_{j})}).$

url: http://hdl.handle.net/1813/6511
date: 2007-04-23
creator: Vander Zanden, Bradley T.;Bitton, Dina
viewed: 39
title: A Better Tool for Query Optimization
abstract: When evaluating the performance of a query strategy, one must often estimate the number of distinct values of an attribute in a randomly selected subset of a relation. Most query optimizers compute this estimate based on the assumption that prior to the selection, the attribute values are uniformly distributed in the relation. In this paper we depart from this assumption and instead consider Zipf distributions that are known to accurately model text and name distributions. Given a relation of cardinality n where a non-key attribute A has a Zipf distribution, we derive both an exact formula and an approximate non-iterative formula for the expected number of distinct A-values contained in a sample of k randomly selected tuples. The approximation is accurate, and it is very easy to compute. Thus it provides a practical tool to deal with non-uniform distributions in query optimization.

url: http://hdl.handle.net/1813/6512
date: 2007-04-23
creator: Natarajan, B. K.
viewed: 21
title: The Homogenous Capture of Random Strings
abstract: It is well known that a set of strings that are random in the Kolmogorov sense is immune to all computable enumerations. In this paper, we discuss the generalization of this property to the computational resource hierarchies. We then introduce the notion of homogeneous capture of sets and show that sets of random strings are not homogeneously captured by any computable enumeration. Again, we discuss the extension of this property to the resource hierarchies. Finally, we discuss the relationship between the notion of homogeneous capture and the traditional concept of randomness.

url: http://hdl.handle.net/1813/6513
date: 2007-04-23
creator: Gilbert, John R.;Zmijewski, Earl
viewed: 23
title: Wide Quotient Trees for Finite Element Problems
abstract: In solving the system of linear equations $Ax = b$ where A is an $n \times n$ large sparse symmetric positive definite matrix, one important objective is to minimize fill. One approach is to partition the matrix so that its corresponding quotient graph is a tree and then use block factorization techniques to solve the system. We examine several methods for generating valid quotient tree partitionings of grid graphs and find that those producing short wide quotient trees are superior for large enough graphs. We then give

an algorithm for generating wide quotient tree partitionings of a more general class of graphs. Bounds on its storage and computational requirements are provided and compared to those of a generalized nested dissection algorithm.

url: http://hdl.handle.net/1813/6514
date: 2007-04-23
creator: Hopcroft, John E.;Hoffmann, Christoph M.
viewed: 70
title: Quadratic Blending Surfaces
abstract: ABSTRACT NOT SUPPLIED

url: http://hdl.handle.net/1813/6515
date: 2007-04-23
creator: Harper, Robert W.
viewed: 17
title: Aspects of the Implementation of Type Theory
abstract: ABSTRACT NOT SUPPLIED

url: http://hdl.handle.net/1813/6516
date: 2007-04-23
creator: Pothen, Alex
viewed: 21
title: Sparse Null Bases and Marriage Theorems
abstract: ABSTRACT NOT SUPPLIED

url: http://hdl.handle.net/1813/6517
date: 2007-04-23
creator: Schneider, Fred B.;Johnson, Ralph E.
viewed: 29
title: Symmetry and Similarity in Distributed Systems
abstract: Similarity is introduced as a model-independent characterization of symmetry. It can be used to decide when a concurrent system has a solution to the selection problem. It can also be used to compare different models of parallel computation, including differences in scheduling policy and instruction set, and the consequences of using randomization.

url: http://hdl.handle.net/1813/6518
date: 2007-04-23
creator: Nicolau, Alexandru
viewed: 21
title: Percolation Scheduling: A Parallel Compilation Technique
abstract: Percolation Scheduling (PS) is a new technique for compiling programs into parallel code. It attempts to overcome problems that limit the effectiveness and applicability of currently available techniques. PS globally rearranges code past basic block boundaries. Its core is a small set of simple, primitive program transformations defined in terms of adjacent nodes in a program graph. These transformations constitute the lowest level in a system of transformations and guidance rules. Higher levels of this hierarchy control and enhance the applicability of the core transformations and enable us to exploit both fine grained and coarse parallelism. Unlike other, more ad hoc approaches, PS is based on rigorous definitions of the computational model and of the core transformations. The correctness and termination of the transformations is proven

here. The completeness of the transformations is also discussed. As a result our implementation, which is now underway, can proceed on a sound basis. In particular, PS enjoys greater adaptability and independence between the levels than would be possible otherwise. This paper describes PS in detail. The correctness aspects as well as illustrations of the effectiveness of our techniques are presented. Architectures which may benefit from the use of PS are also discussed.

url: http://hdl.handle.net/1813/6519
date: 2007-04-23
creator: Yen, I.;Bastani, F.;Iyengar, S. Sitharama;Moitra, Abha
viewed: 35
title: Multilevel Data Structures Models and Performance
abstract: We advocate a stepwise method of deriving high performance implementation of a set of operations. This method is based on the ability to organize the data into a multilevel data structure so as to provide an efficient implementation of all the operations. Typically, for such data organization the performance may deteriorate over a period of time and that can be corrected by reorganizing the data. This data reorganization is done by the introduction of maintenance processes. For a particular example we consider the multilevel data organization and the different models of maintenance processes possible. We sketch a correctness proof for the implementation we develop. Performance behaviour for the different models are derived and we also present some simulation studies of the performance.

url: http://hdl.handle.net/1813/6520
date: 2007-04-23
creator: Van Loan, Charles
viewed: 24
title: The Block Jacobi Method for Computing the Singular Value Decomposition
abstract: Jacobi techniques for computing the symmetric eigenvalue and singular value decompositions have achieved recent prominence because of interest in parallel computation. They are ideally suited for certain multiprocessor systems having processors that are connected in nearest neighbor fashion. If the processors are reasonably powerful and have significant local memory, then block Jacobi procedures are attractive because they render a more favorable computation to communication ratio. This paper examines some of the practical details associated with two block Jacobi methods for the singular value decomposition. The methods differ in how the 2-by-2 subproblems are solved.

url: http://hdl.handle.net/1813/6521
date: 2007-04-23
creator: Van Loan, Charles;Bischof, Christian H.
viewed: 87
title: The WY Representation for Products of Householder Matrices
abstract: A new way to represent products of Householder matrices is given that makes a typical Householder matrix algorithm rich in matrix-matrix multiplication. This is very desirable in that matrix-matrix multiplication is the operation of choice for an increasing number of important high performance computers. We tested the new representation by using it to compute the QR factorization on the FPS-164/MAX. Preliminary results indicate that it is a very efficient way to organize Householder computations.

url: http://hdl.handle.net/1813/6522
date: 2007-04-23
creator: Raiha, Kari-Jouko;Grahne, Gosta
viewed: 38

title: Characterizations for Acyclic Database Schemes
abstract: Acyclic database schemes have attracted much interest because of the nice properties enjoyed by such schemes. Recently some new acyclicity conditions that are strictly stronger than the normal α-acyclicity have been introduced by Fagin. Because of increased requirements, the database schemes in the new classes have some further useful properties that are not shared by α-acyclic schemes. Therefore the new classes have practical relevance. A database designer may work in terms of attribute sets and data dependencies, and not only in terms of database schemes. Thus it is important to have a characterization for the acyclic schemes of various degree in terms of data dependencies. For α-acyclic schemes such a characterization exists, but for the new classes the question has been open. In this paper we provide characterizations for β-, γ- and Berge-acyclic database schemes. The characterizations can be stated in a simple form: thus they should be useful for the database designer.

url: http://hdl.handle.net/1813/6523
date: 2007-04-23
creator: Schneider, Fred B.;Mahaney, Stephen R.
viewed: 23
title: Inexact Agreement: Accuracy, Precision, and Graceful Degradation
abstract: An Inexact Agreement protocol alows processors that each have a value approximating $\hat{\nu}$ to compute new values that are closer to each other and close to $\hat{\nu}$. Two fault-tolerant protocols for Inexact Agreement are described. As long as fewer than 1/3 of the processors are faulty, the protocols give the required convergence; they also permit iteration and thus convergence to any desired precision. When between 1/3 and 2/3 of the processors are faulty, the protocols may not converge. However, then processors either detect that too many faults have occurred or the new values computed by processors remain close to each other and to $\hat{\nu}$. In this case, the divergence is bounded. Use of the protocols for clock synchronization in a distributed system is explained.

url: http://hdl.handle.net/1813/6524
date: 2007-04-23
creator: Constable, Robert L.
viewed: 15
title: The Semantics of Evidence
abstract: The usual meaning of a sentence in the predicate calculus is its truth value. In this paper we show that there is associated with every statement a set of elements comprising evidence for it. A statement is true in a model exactly when there is evidence for it. Proofs can be regarded as expressions which denote evidence. A statement is constructively true when the evidence can be computed from its proofs. Proofs are useful in practical computations when evidence for statements is needed. They are especially valuable in relating computations to the problems they solve.

url: http://hdl.handle.net/1813/6525
date: 2007-04-23
creator: Panangaden, Prakash;Smolka, Gert
viewed: 34
title: FRESH: A Higher-Order Language with Unification and Multiple Results
abstract: This paper presents Fresh, a language that integrates logic programming features into higher-order functional programming. The language incorporates unification, multiple results and a collection construct. Many examples illustrate that these extensions of functional programming are useful. We define an operational semantics along the lines of Plotkin's structural approach. The semantics is of intrinsic interest since it covers backtracking and the collection construct. To illustrate the conceptual similarities

and differences between functional and logic programming, we begin with a purely functional core language and add first unification and then backtracking. With each addition we discuss the enhanced eloquence of the language and the concomitant modifications to the semantics.

url: http://hdl.handle.net/1813/6526
date: 2007-04-23
creator: Buckley, Chris
viewed: 30
title: Implementation of the SMART Information Retrieval System
abstract: ABSTRACT NOT SUPPLIED

url: http://hdl.handle.net/1813/6527
date: 2007-04-23
creator: Drummond, Rogerio;Babaoglu, Ozalp
viewed: 33
title: Time-Communication Tradeoffs for Reliable Broadcast Protocols
abstract: In the Reliable Broadcast Problem, a processor disseminates a value to all other processors in a distributed system where both processors and communication components are subject to failures. Solutions to this Reliable Broadcast problem are at the heart of most fault-tolerant applications. We characterize the execution of Reliable Broadcast protocols as a function of the properties of the underlying communication network. The class of networks considered includes familiar communication structures constructed out of fully-connected point-to-point graphs, linear chains, rings, broadcast networks (such as Ethernet) and buses. We derive a protocol that implements Reliable Broadcast for any member within this class. The execution time of the protocol is a linear function of the two parameters that characterize each network instance. The hardware-software tradeoffs that are revealed between performance, resiliency and network cost offer many new alternatives previously not considered in designing fault-tolerant systems.

url: http://hdl.handle.net/1813/6528
date: 2007-04-23
creator: Meyer, Gabriele E.;Cai, Jin-yi
viewed: 30
title: Graph Minimal Uncolorability is D_{p}-Complete
abstract: In their excellent paper, C.H. Papadimitriou and M. Yannakakis [PY] asked whether the minimal-3-uncolorability problem is, among other Critical Problems, D_{p}-complete. This paper gives an affirmative answer to the above question. We show that minimal-k-uncolorability is D_{p}-complete, for all fixed $k \geq 3$. Furthermore, for k = 3, the reduction can be modified by using "sensitive" gadgets to resolve the planar case, bounded vertex degree case and their combination.

url: http://hdl.handle.net/1813/6529
date: 2007-04-23
creator: Eberlein, Patricia J.
viewed: 31
title: On The Schur Decomposition of a Matrix for Parallel Computation
abstract: An algorithm to solve the eigenproblem for non-symmetric matrices on an $N \times N$ array of mesh connected processors, isomorphic to the architecture described by Brent and Luk for symmetric matrices, is presented. This algorithm is a generalization of the classical Jacobi method, which holds promise for parallel architectures. The rotational parameters for the non-symmetric case are carefully analyzed; many examples of a working program, simulating the parallel architecture, are given.

url: http://hdl.handle.net/1813/6530
date: 2007-04-23
creator: Owicki, Susan S.;Gries, David;Demers, Alan J.;Nguyen, Van Long
viewed: 27
title: A Model and Temporal proof system for Networks of Processes
abstract: An approach is presented for modeling networks of processes that communicate exclusively through message passing. A process (or a network) is defined by its set of possible behaviors, where each behavior is an abstraction of an infinite execution sequence of the process. The resulting model is simple and modular and facilitates information hiding. It can describe both synchronous and asynchronous networks. It supports recursively-defined networks and can characterize liveness properties such as progress of inputs and outputs, termination, and deadlock. A sound and complete temporal proof system based on the model is presented. It is compositional - a specification of a network is formed naturally from specifications of its components.

url: http://hdl.handle.net/1813/6531
date: 2007-04-23
creator: Nguyen, Van Long
viewed: 15
title: A Theory of Processes
abstract: ABSTRACT NOT SUPPLIED

url: http://hdl.handle.net/1813/6532
date: 2007-04-23
creator: Raiha, Kari-Jouko;Mannila, Heikki;Bitton, Dina
viewed: 36
title: Design-By-Example: A Design Tool for Relational Databases
abstract: In recent years, research in relational design theory and in query optimization has established a firm ground for designing well-structured logical and physical database schemes. However, the design process prequires mastering a considerable amount of theoretical results. Furthermore, even for the initiated database designer, many of the known algorithms for logical design do not provide constructive guidelines for generating a database scheme that would prevent update anomalies and data inconsistencies. Nor do the algorithms and evaluation methods for file structures and query processing provide constructive physical design rules. We propose an expert tool that would make knowledge in relational design theory and query optimization automatically and transparently available to the database designer. This tool is a system with an interactive, graphical interface that uses examples to guide the designer through several phases of logical and physical database design. Logical design is based on example relations, and physical design on example queries. The example relations are automatically generated by the system. They contain sample data and satisfy the data dependencies that the designer specifies with the assistance of the expert tool. The example queries and their expected frequency are specified by the designer, using graphically displayed skeleton queries. The system generates a physical design scheme that optimizes the mix of queries expected by the designer, and computes a performance forecast. Both example relations and example queries can be modified by the designer, until the expert tool generates a satisfactory design.

url: http://hdl.handle.net/1813/6533
date: 2007-04-23
creator: Moitra, Abha
viewed: 15
title: Analysis of Hard Real-Time Systems

abstract: In this paper we study hard real-time systems: systems where strict time deadlines have to be met. We analyze a special case as well as a general model for hard real-time systems and study pre-emptive, static, scheduling policies for a single processor. The analysis is exact and can handle any arbitrary choice of strict deadlines. For any specification of a hard real-time system, a feasible priority assignment is one where all deadlines are met. An optimal scheduling algorithm is an algorithm that always produces a feasibile priority assignment if one exists. For both the special and general model we present an optimal scheduling algorithm.

url: http://hdl.handle.net/1813/6534
date: 2007-04-23
creator: Joseph, Thomas A.;Birman, Kenneth P.
viewed: 24
title: Reliable Communication in the Presence of Failures
abstract: We report on the design and correctness of a communication facility for a distributed computer system. The facility provides support for fault tolerant process groups in the form of a family of reliable multicast protocols that can be used both in local and wide-area networks. These protocols attain high levels of concurrency while respecting application-specific delivery ordering constraints, and have varying cost and performance that depends on the degree of ordering desired. In particular, a protocol that enforces causal delivery orderings is introduced, and shown to be a valuable alternative to conventional asynchronous communication protocols. The facility also ensures that the processes belonging to a fault tolerant process group will observe consistent orderings of events affecting the group as a whole, including process failures, recoveries, migration, and dynamic changes to group properties like member rankings. A review of several uses for the protocols in the ISIS system, which supports fault-tolerant resilient objects and bulletin boards, illustrates the significant simplification of higher-level algorithms; made possible by our approach.

url: http://hdl.handle.net/1813/6535
date: 2007-04-23
creator: Edenbrandt, Anders
viewed: 29
title: Combinatorial Problems in Matrix Computation
abstract: NO ABSTRACT SUPPLIED

url: http://hdl.handle.net/1813/6536
date: 2007-04-23
creator: Horwitz, Susan B.
viewed: 27
title: Generating Language-Based Editors: A Relationally-Attributed Approach
abstract: NO ABSTRACT SUPPLIED

url: http://hdl.handle.net/1813/6537
date: 2007-04-23
creator: Campbell, Doug
viewed: 23
title: The Cornell Robot System Design Report
abstract: This report describes a robot control system under development at Cornell University. The goal of the system is to demonstrate automatic generation of robot programs for mechanical assemblies that are specified by exploded diagrams. The structure and current capabilities of the system are discussed.

url: http://hdl.handle.net/1813/6538
date: 2007-04-23
creator: Solworth, Jon A.
viewed: 31
title: The GENERIC Programming Language Manual
abstract: GENERIC is a programming language for the description and manipulation of integrated circuits. GENERIC works on the layout level with the designer in complete control of the layout process. To design an integrated circuit, a program is written which hierarchically describes the chip. The dynamic calling structure of the program determines the integrated circuit's hierarchical cell structure. These cells are created by special procedures called generators. Generators are capable of producing completely custom structures-they do not consist of predefined layout. In addition to the specification, GENERIC provides operators for the manipulation of integrated circuit layouts, thus enabling existing geometry to be modified. These modifications can be geometrical, topological or circuit. GENERIC is a very high level language. The language is general purpose-the VLSI aspects of the language are layered on top of the basic language as a run-time library. Since the library itself is written in GENERIC, the language is completely extensible.

url: http://hdl.handle.net/1813/6539
date: 2007-04-23
creator: Hopcroft, John E.;Hoffmann, Christoph M.
viewed: 13
title: The Potential Method for Blending Surfaces and Corners
abstract: We survey the potential method for blending implicit algebraic surfaces, summarizing and extending work previously reported. The method is capable of deriving blends for pairs of algebraic surfaces, and is guaranteed to produce blending surfaces of lowest possible degree for two quadrics in general position. We give two paradigms by which to understand the method. The first paradigm views the blends as surfaces swept out by a family of space curves. The second, more general paradigm considers the surfaces as result of deformation of a parameter space effected by substitution. The method has a general formulation based on projective parameter spaces, but is also the image under projective transformation of the simpler, affine formulation. The deformation by substitution paradigm is extended to blend blending surfaces at solid vertices without a degree penalty, under the assumption that the vertex valence has been reduced to three. It may also lead to a general solution for blending patches of algebraic surfaces that meet tangentially. A special case of this problem is solved and illustrated.

url: http://hdl.handle.net/1813/6540
date: 2007-04-23
creator: Demers, Alan J.;Borodin, Allan B.
viewed: 18
title: Some Comments on Functional Self-Reducibility and the NP Hierarchy
abstract: In Valiant [11] and Schnorr [9], concepts of "functional self-reducibility" are introduced and investigated. We concentrate on the class NP and on the NP hierarchy of Meyer and Stockmeyer [7] to further investigate these ideas. Assuming that the NP hierarchy exists (specifically, assuming that $P \stackrel{\subset}{+} NP = \sum^{P}_{1} \stackrel{\subset}{+} \sum^{P}_{2}$ we show that, while every complete set in $\sum^{P}_{2}$ is functionally self-reducible, there exist sets in $\sum^{P}_{2}$ which are not functionally self-reducible.

url: http://hdl.handle.net/1813/6541
date: 2007-04-23
creator: Constable, Robert L.

viewed: 23
title: Investigations of Type Theory in Programming Logics and Intelligent Systems
abstract: Type theory has become central to computer science because it deals with fundamental issues in programming languages, in programming methodology and specification languages, in automatic theorem proving and programming logic, in natural language semantics and in the foundations of intelligent systems. At Cornell we have been studying a logical theory of types which has influenced the design of programming languages and has become the basis of an implemented program development system. This theory answers many basic questions about data types. Here we discuss three general questions about this theory: how logical types relate to domains, how they relate to sets, how they organize programming logics and the intelligent systems built around them. These issues are each of independent value, but they also arise naturally as part of a program to provide a computationally meaningful foundation to computing theory.

url: http://hdl.handle.net/1813/6542
date: 2007-04-23
creator: Wolfe, David;Papadimitriou, Christos H.
viewed: 23
title: The Complexity of Facets Resolved
abstract: ABSTRACT NOT SUPPLIED

url: http://hdl.handle.net/1813/6543
date: 2007-04-23
creator: Gries, David;Van Gasteren, A. J. M.;Feijen, W. H. J.
viewed: 33
title: In-situ Inversion of a Cyclic Permutation
abstract: An algorithm is developed for the in-situ inversion of a cyclic permutation represented in an array. The emphasis is on the quo modo rather than the quod; we are interested in finding concepts and notations for dealing more effectively with formal developments and proofs of such algorithms, rather than in this particular algorithm itself.

url: http://hdl.handle.net/1813/6544
date: 2007-04-23
creator: Gaulle, Al (Editor)
viewed: 20
title: Upson's Familiar Quotations. Fourth Edition. (1984 - 1985)
abstract: This report is a compilation of several hundred examples of context-free language and very irregular expressions. Contributions were submitted over the past several years by numerous computer science graduate students who collected these now immortal words in classes and seminars. We wish to express our gratitude to the faculty, guest lecturers, and students who provided the bulk of this work.

url: http://hdl.handle.net/1813/6545
date: 2007-04-23
creator: Voorhees, Ellen M.
viewed: 40
title: The Effectiveness and Efficiency of Agglomerative Hierarchic Clustering in Document Retrieval
abstract: ABSTRACT NOT SUPPLIED

url: http://hdl.handle.net/1813/6546
date: 2007-04-23

creator: Toueg, Sam;Koo, Richard
viewed: 17
title: Checkpointing and Rollback-Recovery for Distributed Systems
abstract: We consider the problem of bringing a distributed system to a consistent state after transient failures. We address the two components of this problem by describing a distributed algorithm to create consistent checkpoints, as well as a rollback-recovery algorithm to recover the system to a consistent state. In contrast to previous algorithms, they tolerate failures that occur during their executions. Furthermore, when a process takes a checkpoint, a minimal number of additional processes are forced to take checkpoints. Similarly, when a process rolls back and restarts after a failure, a minimal number of additional processes are forced to roll back with it. Our algorithms require each process to store at most two checkpoints in stable storage. This storage requirement is shown to be minimal under general assumptions.

url: http://hdl.handle.net/1813/6547
date: 2007-04-23
creator: Hemachandra, Lane A.;Hartmanis, Juris
viewed: 15
title: On Sparse Oracles Separating Feasible Complexity Classes
abstract: This note clarifies which oracles separate NP from P and which do not. In essence, we are changing our research paradigm from the study of which problems can be relativized in two conflicting ways to the study and characterization of the class of oracles achieving a specified relativization. Results of this type have the potential to yield deeper insights into the nature of relativization problems and focus our attention on new and interesting classes of languages. A complete and transparent characterization of oracles that separate NP from P would resolve the long-standing P =? NP question. In this note, we settle a central case. We fully characterize the sparse oracles separating NP from P in worlds where P = NP. We display related results about coNP, E, NE, coNE, and PSPACE.

url: http://hdl.handle.net/1813/6548
date: 2007-04-23
creator: Schneider, Fred B.;Demers, Alan J.;Alpern, Bowen
viewed: 76
title: Safety Without Stuttering
abstract: A new formalization of safety properties is given. The formalization agrees with the informal definition - that a safety property stipulates that some "bad thing" doesn't happen during execution - for properties that are not invariant under stuttering, as well as for properties that are.

url: http://hdl.handle.net/1813/6549
date: 2007-04-23
creator: Nicolau, Alexandru
viewed: 26
title: Loop Quantization: Unwinding for Fine-Grain Parallelism Exploitation
abstract: Loop unwinding is a well known technique for reducing loop overhead, exposing parallelism and increasing the efficiency of pipelining. Traditional loop unwinding is limited to the innermost loop in a group of nested loops and the amount of unwinding is either fixed or has to be specified by the user, on a case by case basis. In this paper we present a general technique for automatically unwinding multply nested loops, explain its advantages over other transformation techniques and illustrates its practical effectiveness.

url: http://hdl.handle.net/1813/6550
date: 2007-04-23

creator: Nicolau, Alexandru;Solworth, Jon A.
viewed: 17
title: Microflow: A Fine-Grain Parallel Processing Approach
abstract: ABSTRACT NOT SUPPLIED

url: http://hdl.handle.net/1813/6551
date: 2007-04-23
creator: Gries, David
viewed: 23
title: Developing Two of Arsac's Funny Algorithms
abstract: In Some Funny Program (Ecole Normale Superieure, Paris, June 1985) J. Arsac discusses several algorithms, but not from the standpoint of their development. Here, we develop the algorithms given their specification using the methods espoused in The Science of Programming.

url: http://hdl.handle.net/1813/6552
date: 2007-04-23
creator: Joseph, Thomas A.
viewed: 28
title: Low Cost Management of Replicated Data
abstract: ABSTRACT NOT SUPPLIED

url: http://hdl.handle.net/1813/6553
date: 2007-04-23
creator: Salton, Gerard
viewed: 26
title: Another Look at Automatic Text Retrieval Systems
abstract: The characteristics of automatic text retrieval systems are briefly described, and the available experimental evidence comparing manual with automatic retrieval is reviewed. Several automatic text analysis and indexing models are then examined, and a basic automatic indexing process is proposed. There is no evidence that an intellectual content analysis performed by human subject experts produces better retrieval results than comparable automatic text processing systems.

url: http://hdl.handle.net/1813/6554
date: 2007-04-23
creator: Panangaden, Prakash;Cleaveland, Rance
viewed: 37
title: Type Theory and Concurrency
abstract: The burgeoning interest in concurrent computation has sparked an increased interest in theoretical models of concurrency. While standard sequential programming has a well-understood semantics and proof theory, the nondeterministic nature of concurrency has made a similar understanding of concurrent programming extremely difficult. Much interesting work in the field has been done, and much remains yet to be done; it is our intention in this paper to present a different kind of model of concurrency, a type-theoretic one, which we hope will shed light on reasoning about concurrency. We encode the synchronization tree model of Milner's CCS as a type in the Nuprl Type Theory. This is a constructive type theory equipped with a rich collection of inference rules for reasoning about types. We relate the equality in the type of synchronization trees with various behavioral equivalences. We also discuss the relation between the logic induced by our models and various modal logics for reasoning about concurrency.

url: http://hdl.handle.net/1813/6555
date: 2007-04-23
creator: Cai, Jin-yi
viewed: 35
title: With Probability One, a Random Oracle Separates PSPACE from the Polynomial-Time Hierarchy
abstract: We consider how much error a fixed depth Boolean circuit has to make for computing the parity function. We show that with an exponential bound of the form $exp(n^{\lambda})$ on the size of the circuits, they make asymptotically 50% error on all possible input, uniformly. As a consequence, we show that with a random oracle set $A,Pr.(PSPACE^{A} \supseteq PH^{A} = 1$.

url: http://hdl.handle.net/1813/6556
date: 2007-04-23
creator: Schwartzbach, Michael I.;Panangaden, Prakash
viewed: 20
title: Categorical Type Theory
abstract: This paper examines the connections between intuitionistic type theory and category theory. A version of type theory is developed in a category theoretic framework by interpreting types as objects and type connectives as constructions in categories. This yields a theory that uniformly models type inhabitation, proof theory, type universes, syntactic forms, equality and computation.

url: http://hdl.handle.net/1813/6557
date: 2007-04-23
creator: Panangaden, Prakash;Keller, Robert M.
viewed: 23
title: Semantics of Digital Networks Containing Indeterminate Modules
abstract: We discuss a formal model based upon dataflow, usable for high-level digital hardware design, among other things. One of our goals is to give a denotational semantics for this model, which includes indeterminate modules. While it is well known that denotational semantics for networks containing only determinate modules can be simply expressed as a composition of stream functions, this aproach has previously been shown unacceptable for networks with indeterminate modules. Our approach is to devise composition rules based on modelling a network by the set of its possible behaviors, i.e., sequences of computational events, where each event is the appearance or consumption of a token on a data path. A sequence of such events is called a history and a set of such histories is called an archive. We give composition rules that allow us to derive an archive for a network from the archive of its constituents. We show how causal and operational constraints on network behavior can be inferred from the specification of archives. We also present a construction which allows us to obtain the the denotation of networks containing loops by a process of successive approximations. This construction is carried out using a construction resembling the category-theoretic notion of limit, which differs from that of more traditional domain theory.

url: http://hdl.handle.net/1813/6558
date: 2007-04-23
creator: Bitton, Dina;Taylor, Howard M.;Vander Zanden, Bradley T.
viewed: 67
title: A General Framework for Computing Block Accesses
abstract: A physical database system design should take account of skewed block access distributions, nonuniformly distributed attribute domains, and dependent attributes. In this paper we derive general formulas for the number of blocks accessed under these assumptions by considering a class of related occupancy problems. We then proceed to develop robust and accurate approximations for these formulas.

We investigate three clases of approximation methods, respectively based on generating functions, Taylor series expansions, and majorization. These approximations are as simple to use and far more accurate than the cost estimate formulas generated by making independence and uniformity assumptions.

url: http://hdl.handle.net/1813/6559
date: 2007-04-23
creator: Krentel, Mark W.
viewed: 15
title: The Complexity of Optimization Problems
abstract: Many important problems in computer science, such as CLIQUE, COLORING, and TRAVELLING SALESPERSON, arise naturally as optimization problems. Typically one considers these problems as decision procedures, which are often in NP, and one shows intractibility by showing them NP-complete. We generalize the notion of an NP problem, in a manner analogous to Valiant's class #P, by considering the optimization version of the problem itself, and we show that this idea yields a natural class of problems that we call OptP. This class allows us to make finer distinctions on the complexity of optimization problems than is possible in NP. For example, assuming P $\neq$ NP, we can show that TRAVELLING SALESPERSON is strictly harder than CLIQUE and CLIQUE is strictly harder than BIN PACKING. We then relate OptP to the class of functions computable in polynomial time with an oracle for NP, by showing that every P^{SAT} function decomposes into an OptP function followed by a polynomial-time computation. This allows us to clear up a misconception on the role of uniqueness for the problem of UNIQUELY OPTIMAL TRAVELLING SALESPERSON as considered by Papadimitriou is the 1982 FOCS conference.

url: http://hdl.handle.net/1813/6560
date: 2007-04-23
creator: Stephenson, Patrick;Babaoglu, Ozalp
viewed: 35
title: Reliable Broadcasts Through Partial Broadcasts
abstract: In the Reliable Broadcast Problem, a processor disseminates a value to all other processors in a distributed system where both processors and communication components are subject to failures. We prove lower bounds for the execution time of any reliable broadcast protocol in distributed systems with arbitrary communication networks. Our results apply to common distributed system architectures consisting of multiple broadcast network-based clusters of processors. In light of these lower bounds, our earlier protocols are shown to be optimal with respect to execution time.

url: http://hdl.handle.net/1813/6561
date: 2007-04-23
creator: Hartmanis, Juris
viewed: 17
title: Relations Between Diagonalization, Proof Systems, and Complexity Gaps
abstract: In this paper we study diagonal processes over time-bounded computations of one-tape Turing machines by diagonalizing only over those machines for which there exist formal proofs that they operate in the given time bound. This replaces the traditional "clock" in resource bounded diagonalization by formal proofs about running times and establishes close relations between properties of proof systems and existence of sharp time bounds for one-tape Turing machine complexity classses. These diagonalization methods also show that the Gap Theorem for resource bounded computations can hold only for those complexity classes which differ from the corresponding provable complexity classes. Furthermore, we show that there exist recursive time bounds $T(n)$ such that the class of languages for which we can formally prove the existence of Turing machines which accept them in time $T(n)$ differs form the class of languages accepted by Turing

machines for which we can prove formally that they run in time $T(n)$.

url: http://hdl.handle.net/1813/6562
date: 2007-04-23
creator: Nicolau, Alexandru
viewed: 17
title: A Development Environment for Scientific Parallel Programs
abstract: This paper describes a development environment for parallel scientific code. The environment uses Percolation Scheduling, a transformational system for parallelism extraction, and an interactive profiling system to give the user control over the parallelization process while reducing the burdensome details of architecture, correctness-preservation and synchronization. Through a graphical interface the user suggests what should be done in parallel, while the system performs the actual changes using semantics-preserving transformations. If a request cannot be satisfied, the system reports the problem causing the failure. The user may then help eliminate the problem by supplying guidance or information not explicit in the code.

url: http://hdl.handle.net/1813/6563
date: 2007-04-23
creator: Gehani, Narain;Gries, David
viewed: 20
title: Some Ideas on Data Types in High Level Languages
abstract: WE explore some new and old ideas concerning data types; what a data type is, overloading operators, when and how implicit conversions between programmer data types should be allowed and so forth. The current notion that a data type is a set of values together with basic operations in that set leads us to conclude that formal parameter types need not be so explicitly stated. Given a formal parameter X with operations $o_{1},\ldots o_{n}$ being performed on X within a procedure, one should be able to supply, as actual parameter in call, a variable of any type which has operations $o_{1},\ldots o_{n}$ defined on it. We introduce a notation for this, using PASCAL as a basic language, illustrate the added flexibility it gives us, and show briefly how to implement the idea efficiently.

url: http://hdl.handle.net/1813/6564
date: 2007-04-23
creator: Hemachandra, Lane A.;Cai, Jin-yi
viewed: 36
title: The Boolean Hierarchy: Hardware over NP
abstract: In this paper, we study the complexity of sets formed by boolean operations $(\bigcup, \bigcap,$ and complementation) on NP sets. These are the sets accepted by trees of hardware with NP predicates as leaves, and together form the boolean hierarchy. We present many results about the boolean hierarchy: separation and immunity results, complete languages, upward separations, connections to sparse oracles for NP, and structural asymmetries between complementary classes. Some results present new ideas and techniques. Others put previous results about NP and D^{P} in a richer perspective. Throughout, we emphasize the structure of the boolean hierarchy and its relations with more common classes.

url: http://hdl.handle.net/1813/6565
date: 2007-04-23
creator: Hopcroft, John E.;Hoffmann, Christoph M.
viewed: 19
title: Geometric Ambiguities in Boundary Representations
abstract: Boundary representations are usually separated into two components, a topological component and

a geometric component. The conditions necessary to insure that the topological component is unambiguous are well understood. However, in algebriac modeling systems (as opposed to polyhedral modeling systems), an unambiguous topological structure can have noncongruent geometric interpretations with identical vertex coordinates, face equations and edge descriptions using the usual representation of edges as the intersection of faces along with tangent vectors at vertices. This means that the conversion of a CSG tree that unambiguously describes a solid can lead to an ambiguous boundary representations unless additional information is retained in the boundary representation. This paper examines the source of these ambiguities and presents one method for their elimination.

url: http://hdl.handle.net/1813/6566
date: 2007-04-23
creator: Van Loan, Charles
viewed: 31
title: On Estimating the Condition of Eigenvalues and Eigenvectors
abstract: A method is developed for estimating the accuracy of computed eigenvalues and eigenvectors that are obtained via certain EISPACK subroutines. It does this at a cost of $O(n^{2})$ flops per eigenpair assuming that the eigenpair is known and assuming that the original matrix has been reduced to Hessenberg form. The heart of the technique involves estimating the smallest singular value of a certain nearly triangular submatrix. This is accomplished by some standard "zero-chasing" with Hivens transformations and with a 2-norm version of the LINPACK condition estimator. An EISPACK compatible code has been developed and its performance is discussed. Suggestions for extending the current work to general invariant subspaces and to the generalized eigenvalue problem are given.

url: http://hdl.handle.net/1813/6567
date: 2007-04-23
creator: Schneider, Fred B.;Alpern, Bowen
viewed: 24
title: Recognizing Safety and Liveness
abstract: Formal characterizations for safety properties and liveness properties are given in terms of the structure of the Buchi automaton that specifies the property. The characterizations permit a property to be decomposed into a safety property and a liveness property whose conjunction is the original. The characterizations also give insight into techniques required to prove a large class of safety and liveness properties.

url: http://hdl.handle.net/1813/6568
date: 2007-04-23
creator: Zhang, Y.;Salton, Gerard
viewed: 34
title: Enhancement of Text Representations Using Related Document Titles
abstract: Various attempts have been made over the years to construct enhanced document representations by using thesauruses of related terms, term association maps, or knowledge frameworks that can be used to extract appropriate terms and concepts. None of the proposed methods for the improvement of document representation has proved to be generally useful when applied to a variety of different retrieval environments. Some recent work by Kwok suggests that document indexing may be enhanced by using title words taken from bibliographically related items. An evaluation of the process shows that many useful content words can be extracted from related document titles, as well as many terms of doubtful value. Overall, the procedure is not sufficiently reliable to warrant incorporation into operational automatic retrieval systems.

url: http://hdl.handle.net/1813/6569
date: 2007-04-23
creator: Prins, Jan F.;Gries, David
viewed: 26
title: McLaren's Masterpiece
abstract: Abstract not available

url: http://hdl.handle.net/1813/6570
date: 2007-04-23
creator: Heath, Michael T.;Gilbert, John R.
viewed: 15
title: Computing a Sparse Basis for the Null Space
abstract: We present algorithms for computing a sparse basis for the null space of a sparse underdetermined matrix. We describe several possible computational strategies, both combinatorial and noncombinatorial in nature, and we compare their effectiveness for several test problems.

url: http://hdl.handle.net/1813/6571
date: 2007-04-23
creator: Turbyfill, Carolyn;Bitton, Dina
viewed: 25
title: Performance Evaluation of Main Memory Database Systems
abstract: In this paper we present the results of a comprehensive benchmark of the relational Main Memory Database System (MMDBS), that is the foundation of the interactive office system. Office-By-Example (OBE). Based on this case study, we identify issues that must be considered in the design and implementation of MMDBS's. We determine relevant performance metrics and describe techniques for benchmarking MMDBS's.

url: http://hdl.handle.net/1813/6572
date: 2007-04-23
creator: Alpern, Bowen
viewed: 23
title: Proving Temporal Properties of Concurrent Programs: A Non-Temporal Approach
abstract: This thesis develops a new method for proving properties of concurrent programs and gives formal definitions for safety and liveness. A property is specified by a property recognizer - a finite-state machine that accepts the sequences of program states in the property it specifies. A property recognizer can be constructed for any temporal logic formula. (ABRIDGED ABSTRACT)

url: http://hdl.handle.net/1813/6573
date: 2007-04-23
creator: Gilbert, John R.;Zmijewski, Earl
viewed: 88
title: A Parallel Algorithm for Large Sparse Cholesky Factorization on a Multiprocessor
abstract: We develop an algorithm for computing the symbolic and numeric Cholesky factorization of a large sparse symmetric positive definite matrix. The algorithm is intended for a message-passing multiprocessor system, such as the hypercube, and is based on the concept of elimination forests. In addition, we provide an algorithm for computing these forests along with a discussion of the algorithm's complexity and a proof of its correctness. We also examine the related issue of load balancing.

url: http://hdl.handle.net/1813/6574
date: 2007-04-23
creator: Natarajan, B. K.
viewed: 26
title: The Complexity of Fine Motion Planning
abstract: We study the complexity of fine motion planning for robots with position measurement and damping. A reduction from fine motion planning with position measurement only to the "classical piano mover's problem" is developed, thereby showing it to be feasible in polynomial time. We then show that deciding the existence of fine motion plans for robots with damping in three dimensional scenes is PSPACE-hard and, with a view to finding the cause for the jump in the complexity, we identify a restricted subclass of the PSPACE-hard problem that is PSPACE-complete. Finally, we show how to restrict this subclass to permit polynomial time algorithms for the problems in it.

url: http://hdl.handle.net/1813/6575
date: 2007-04-23
creator: Schneider, Fred B.
viewed: 83
title: A Paradigm for Reliable Clock Synchronization
abstract: Existing fault-tolerant clock synchronization protocols are shown to result from refining a single clock synchronization paradigm. In that paradigm, a reliable time source periodically issues messages that cause processors to resynchronize their clocks. The reliable time source is approximated by reading all clocks in the system and using a convergence function to compute a fault-tolerant average of the values read. The performance of a clock synchronization algorithm based on the paradigm can be quantified in terms of the two parameters that characterize the behavior of the convergence function used: accuracy and precision.

url: http://hdl.handle.net/1813/6576
date: 2007-04-23
creator: Krentel, Mark W.
viewed: 21
title: Monadic Spectra and Regular Sets
abstract: Abstract not available.

url: http://hdl.handle.net/1813/6577
date: 2007-04-23
creator: Krentel, Mark W.
viewed: 25
title: A Note on the Transaction Backout Problem
abstract: The transaction backout problem arises in the area of distributed databases. Suppose failures partition a data-redundant distributed database, and each partition continues to function as if it were the entire database. When the database is reconnected, the transactions executed by different partitions may not be serializable, and hence it may be necessary to back out some of the transactions. The transaction backout problem is to remove the smallest set of transactions that will leave the remaining ones serializable. The general problem is NP-complete, and in this paper we show that the special case of a fixed-size database can be solved in polynomial time by dynamic programming.

url: http://hdl.handle.net/1813/6578
date: 2007-04-23
creator: Babaoglu, Ozalp

viewed: 26
title: On the Reliability of Fault-Tolerant Distributed Computing Systems
abstract: The designer of a fault-tolerant distributed system faces numerous alternatives. Using a stochastic model of processor failure times, we investigate design choices such as replication level, protocol running time, randomized versus deterministic protocols, fault detection and authentication. We use the probability with which a system produces the correct output as our evaluation criterion. This contrasts with previous fault-tolerance results that guarantee correctness only if the percentage of faulty processors in the system can be bounded. Our results reveal some subtle and counterintuitive interactions between the design parameters and system reliability.

url: http://hdl.handle.net/1813/6579
date: 2007-04-23
creator: Srikanth, T. K.
viewed: 14
title: Designing Fault-Tolerant Algorithms for Distributed Systems Using Communication Primitives
abstract: Fault-tolerance is an important requirement in distributed computing systems. However, designing applications for distributed systems is a difficult task, particularly when components of the system can fail. The difficulty of this task increases with the severity of failures encountered. Arbitrary process failures are generally much harder to overcome than failures that are restricted, e.g. where processes only fail by halting. Thus, techniques that restrict the disruptive behavior of faulty processes can greatly simplify the design of fault-tolerant algorithms. Such techniques effectively provide reduction mechanisms from one class of failures to a more benign class. Message authentication is an example of a technique that imposes restrictions on the bahavior of fault processes. This technique has been used to derive simple solutions to many problems of fault-tolerance for systems with arbitrary failures. To exploit the simplicity provided by authentication we present communication primitives that provide properties of authentication without using digital signatures. These primitives can also be extended to provide properties beyond those of authentication, thereby further restricting the types of faults that have to be overcome. (ABRIDGED ABSTRACT)

url: http://hdl.handle.net/1813/6580
date: 2007-04-23
creator: Bischof, Christian H.
viewed: 41
title: A Parallel Ordering for the Block Jacobi Method on a Hypercube Architecture
abstract: Jacobi methods for computing the singular value decomposition are ideally suited for multiprocessor environments since they contain a great deal of inherent parallelism. We give a parallel ordering for the block Jacobi Method that allows us to take full advantage of the nearest-neighbor topology of the hypercube. It is based on recursively embedding smaller rings into the hypercube using a Gray code labelling of processor nodes. This scheme is optimal in that it entails the lowest communication overhead possible.

url: http://hdl.handle.net/1813/6581
date: 2007-04-23
creator: Wilkinson, W. Kevin;Bitton, Dina;Beck, Micah
viewed: 18
title: Sorting Large Files on a Backend Multiprocessor
abstract: A fundamental measure of processing power in a database management system is the performance of the sort utility it provides. When sorting a large data file on a serial computer, performance is limited by factors involving processor speed, memory capacity and I/O bandwidth. In this paper, we investigate the feasibility and efficiency of a parallel sort-merge algorithm through implementation on the JASMIN prototype,

a backend multiprocessor built around a fast packet bus. We describe the design and implementation of a parallel sort utility that may become a building block for query processing in a database system that runs on JASMIN. We present and analyze the results of measurements corresponding to a range of file sizes and processor configurations. Our results show that using current, off-the-shelf technology coupled with a streamlined distributed operating system, three and five microprocessor configurations provide a very cost-effective sort of large files. The three processor configuration sorts a 100 megabyte file in one hour, which compares well with commercial sort packages available on high-performance mainframes. In additional experiments, we investigate a model to tune our sort software, and scale our results to higher processor and network capabilities.

url: http://hdl.handle.net/1813/6582
date: 2007-04-23
creator: Constable, Robert L.;Knoblock, Todd B.
viewed: 13
title: Formalized Metareasoning in Type Theory
abstract: In this paper we present two practical methods of formalizing the metatheory of constructive type theory and demonstrate how they would be used to improve the reasoning capabilities of formal problem solving systems such as Nuprl. One method depends upon the design of a family of languages, and we sketch that construction. The second approach depends on a particular metatheorem that justifies partial reflection, and we outline this proof. We also illustrate the construction of simple metatheoretic functions, tactics, in Nuprl.

url: http://hdl.handle.net/1813/6583
date: 2007-04-23
creator: Constable, Robert L.;Panangaden, Prakash;Mendler, N. P.
viewed: 20
title: Infinite Objects in Type Theory
abstract: In this paper we show how infinite objects can be defined in a constructive type theory. The type theory that we use is a variant of Martin-Lof's Intuitionistic Type Theory. We show how one can express the intuition that infinite objects are understood through a limiting process without having to introduce partial objects in the theory. This means that we can adhere to the propositions-as-types principle. The type of infinite objects thus contains only total elements. The approximation is expressed through a sequence of types that approximate the type of infinite objects. We give two semantic accounts of types of infinite objects. The first is lattice theoretic and shows how these types can be understood as fixed points. The second is category theoretic and shows the duality between types of infinite objects and the ordinary recursive type definitions.

url: http://hdl.handle.net/1813/6584
date: 2007-04-23
creator: Birman, Kenneth P.
viewed: 30
title: ISIS: A System for Fault-Tolerant Distributed Computing
abstract: The ISIS system transforms abstract type specifications into fault-tolerant distributed implementations, while insulating users from the mechanisms whereby fault-tolerance is achieved. This paper discusses the transformations that are used within ISIS, methods for achieving improved performance by concurrently updating replicated data, and user-level issues that arise when ISIS is employed to solve a fault-tolerant distributed problem. We describe a small set of communication primitives upon which the system is based. These achieve high levels of concurrency while respecting ordering requirements imposed by the caller.

Finally, the performance of a prototype is reported for a variety of system loads and configurations. In particular, we demonstrate that performance of a replicated object in ISIS can equal or exceed that of a nonreplicated object.

url: http://hdl.handle.net/1813/6585
date: 2007-04-23
creator: Schneider, Fred B.
viewed: 88
title: Abstractions for Fault Tolerance in Distributed Systems
abstract: Abstractions useful in fault-tolerant and distributed systems are described. The abstractions are specified as properties of protocols, hence they have a different flavor from abstractions prevalent in sequential and concurrent programming. Among the abstractions discussed are agreement, order, failure detection, and stable storage.

url: http://hdl.handle.net/1813/6586
date: 2007-04-23
creator: Hemachandra, Lane A.;Hartmanis, Juris
viewed: 15
title: Complexity Classes Without Machines: On Complete Languages for UP
abstract: This paper develops techniques for studying complexity classes that are not covered by known recursive enumerations of machines. Often, counting classes, probabilistic classes, and intersection classes lack such enumerations. Concentrating on the counting class UP, we show that there are relativizations for which UP^{A} has no complete languages and other relativizations for which $P^{B} \neq UP^{B} \neq NP^{B}$ and UP^{B} has complete languages. Among other results we show that $P \neq UP$ if and only if there exists a set S in P of Boolean formulas with at most one satisfying assignment such that $S \bigcap SAT$ is not in P. $P \neq UP \bigcap coUP$ if and only if there exists a set S in P of uniquely satisfiable Boolean formulas such that no polynomial-time machine can compute the solutions for the formulas in S. If UP has complete languages then there exists a set R in P of Boolean formulas with at most one satisfying assignment so that $SAT \bigcap R$ is complete for UP. Finally, we indicate the wide applicability of our techniques to counting and probabilistic classes by using them to examine the probabilistic class BPP. There is a relativized world where BPP^{A} has no complete languages. If BPP has complete languages then it has a complete language of the form $B \bigcap MAJORITY$, where $B \in P$ and $MAJORITY = \{f | f$ is true for at least half of all assignments\} is the canonical PP-complete set.

url: http://hdl.handle.net/1813/6587
date: 2007-04-23
creator: Pothen, Alex;Coleman, Thomas F.
viewed: 32
title: The Null Space Problem II: Algorithms
abstract: The Null Space Problem is that of finding a sparsest basis for the null space (null basis) of a $t \times n$ matrix of rank t. This problem was shown to be NP-hard in Coleman and Pothen (1985). In this paper we develop heuristic algorithms to find sparse null bases. These algorithms have two phases: In the first combinatorial phase, a minimal dependent set of columns is identified by finding a matching in the bipartite graph of the matrix. In the second numerical phase, a null vector is computed from this dependent set. We describe an implementation of our algorithms and provide computational results on several large sparse constraint matrices from linear programs. One of our algorithms compares favorably with previously reported algorithms in sparsity of computed null bases and in running times. Unlike the latter, our algorithm does not require any intermediate dense matrix storage. This advantage should make

our algorithm an attractive candidate for large sparse null basis computations. A matching based algorithm is designed to find orthogonal null bases, but we present some theoretical evidence that such bases are unlikely to be sparse. Finally, we show how sparsest orthogonal null bases may be found for an n-vector and a $t \times n$ dense matric by a divide and conquer strategy. The algorithm for a dense matrix is suited for implementation on a parallel machine architecture.

url: http://hdl.handle.net/1813/6588
date: 2007-04-23
creator: Drummond, Rogerio
viewed: 28
title: Impact of Communciation Networks on Fault-Tolerant Distributed Computing
abstract: When the desired reliability of a computing system exceeds that of its individual hardware components the need for fault-tolerant systems arise. While distributed systems have the potential to achieve highly reliable computing, programming them is a challenging task. Several paradigms have been identified that can simplify the conceptual design of fault-tolerant distributed systems. Properties of a distributed system have profound implications on the solvability and efficiency of implementations of these paradigms. In this thesis we study the effect that different communication models have on the efficiency of fault-tolerant computing. As an instance of a fundamental operation we examine protocols for reliable broadcast in distributed systems. Our main contribution is the characterization of the time complexity of reliable broadcast with respect to communication models. A practical consequence of our results is the development of efficient reliable broadcast protocols with respect to communication models. A variety of common networks are shown to support this style of communication. In fact, by parameterizing the minimum multicast size and diameter of these networks, we are able to characterize all known network architectures. Distributed systems where processors perceive the same approximate time makes programming them much easier. Clock synchronization protocols implement this abstraction given only clocks that have bounded drift rates with respect to real time. We show how a primitive which is normally used only for communication in a distributed system can also be used for synchronizing clocks. If this primitive occurs naturally with a sufficient frequency, clock synchronization can be achieved at no additional message cost. Our results reveal hardware/software tradeoffs between performance, resiliency and network cost. Thus, they offer many new alternatives previously not considered in designing fault-tolerant systems.

url: http://hdl.handle.net/1813/6589
date: 2007-04-23
creator: Toueg, Sam;Srikanth, T. K.;Beck, Micah
viewed: 30
title: Implementation Issues In Clock Synchronization
abstract: We present some results from an experimental implementation of a recent clocks synchronization algorithm. This algorithm was designed to overcome arbitrary processor failures, and to achieve optimal accuracy, i.e., the accuracy of synchronized clocks (with respect to real time) is as good as that specified for the underlying hardware clocks. Our system was implemented on a set of workstations on a local area braodcast network. Initial results indicate that this algorithm can form the basis of an accurate, reliable, and practical distributed time service.

url: http://hdl.handle.net/1813/6590
date: 2007-04-23
creator: Gilbert, John R.
viewed: 14
title: Predicting Structure in Sparse Matrix Computations

abstract: We describe the results of an experiment in which the Nuprl proof development system was used in conjunction with a collection of simple proof-assisting programs to constructively prove a substantial theorem of number theory. We believe that these results indicate the promise of an approach to reasoning about computationally meaningful mathematics by which proof construction and the results of formal reasoning are mathematically comprehensible.

url: http://hdl.handle.net/1813/6591
date: 2007-04-23
creator: Voorhees, Ellen M.
viewed: 34
title: The Efficiency of Inverted Index and Cluster Searches
abstract: The processing time and disk space requirements of an inverted index and top-down cluster search are compared. The cluster search is shown to use both more time and more disk space, mostly due to the large number of cluster centroids needed by the search. When shorter centroids are used, the efficiency of the cluster search improves, but the inverted index search remains more efficient.

url: http://hdl.handle.net/1813/6592
date: 2007-04-23
creator: Howe, Douglas J.
viewed: 25
title: Implementing Number Theory: An Experiment with Nuprl
abstract: We describe the results of an experiment in which the Nuprl proof development system was used in conjunction with a collection of simple proof-assisting programs to constructively prove a substantial theorem of number theory. We believe that these results indicate the promise of an approach to reasoning about computationally meaningful mathematics by which both proof construction and the results of formal reasoning are mathematically comprehensible.

url: http://hdl.handle.net/1813/6593
date: 2007-04-23
creator: Joseph, Thomas A.;Birman, Kenneth P.
viewed: 24
title: Communication Support for Reliable Distributed Computing
abstract: We describe a collection of communication primitives integrated with a mechanism for handling process failure and recovery. These primitives facilitate the implementation of fault-tolerant process groups, which can be used to provide distributed services in an environment subject to non-malicious crash failures.

url: http://hdl.handle.net/1813/6594
date: 2007-04-23
creator: Stephenson, Patrick;Drummond, Rogerio;Babaoglu, Ozalp
viewed: 36
title: Reliable Broadcast Protocols and Network Architecture: Tradeoffs and Lower Bounds
abstract: Reliable Broadcast is a mechanism by which a processor in a distributed system disseminates a value to all other processors in the presence of both communication and processor failures. Protocols to achieve Reliable Broadcast are at the heart of most fault-tolerant applications. We characterize the execution time of Reliable Broadcast protocols as a function of the properties of the underlying communication network. The class of networks considered includes familiar communication structures such as fully-connected point-to-point graphs, linear chains, rings, broadcast networks (such as Ethernet) and buses. We derive a protocol

that implements Reliable Broadcast for any member within this class. We present a novel proof technique to obtain lower bound results for Reliable Broadcast in this environment. This proof technique is based on graph mappings. The hardware-software tradeoffs that are revealed between performance, resiliency and network cost offer many new alternatives previously not considered in designing fault-tolerant systems.

url: http://hdl.handle.net/1813/6595
date: 2007-04-23
creator: Babaoglu, Ozalp
viewed: 32
title: Engineering Fault-Tolerant Distributed Computing Systems
abstract: We view the design of fault-tolerant computing systems as an engineering endeavor. As such, this activity requires understanding the theoretical limitations and the scope of the feasible designs. We survey the impact that various environment characteristics and design choices have on the resultant system properties. We propose a single metric - the system reliability - as an appropriate measure for exploring tradeoffs among a potentially-large design space.

url: http://hdl.handle.net/1813/6596
date: 2007-04-23
creator: Babaoglu, Ozalp
viewed: 30
title: Stopping Times of Distributed Consensus Protocols: A Probabilistic Analysis
abstract: Given a model where each processor remains correct for an exponentially distributed random time and then fails independently of the others, we characterize system executions that permit the processors to reach consensus. We show that with non-zero probability, a protocol can achieve consensus even during executions where the number of actual processors to fail exceeds its resiliency.

url: http://hdl.handle.net/1813/6597
date: 2007-04-23
creator: Sasaki, James T.
viewed: 32
title: Extracting Efficient Code From Constructive Proofs
abstract: Extraction is a technique for producing verified programs. A proof of $\forall chi : T \ldot \exists y : T' \ldot F$ corresponds to a function f of type $T \rightarrow T'$ that maps every χ of type T to a y of type T' such that F is true. If the proof is constructive, then f is recursive. The semantics of extracted code involves the manipulation of justifications, which are pieces of evidence for the truth of formulas. The raw extracted code for the formula above is actually a function γ that maps χ to a pair (y, γ'), where γ' is a justification that provides evidence for the truth of F. This thesis presents various ways to improve the efficiency of extracted programs. The first way uses traditional code optimizations. Though very helpful, they are no panacea. The second way involves small changes to its underlying semantics. Certain formulas, called singleton formulas, have no interesting justifications; if F is such a formula, no justification for it needs to be built, which simplifies the extracted code. The third way to improve extracted code is to add call-by-reference parameters to it. As originally defined, extracted code passes arguments by value, which leads to inefficient code for mutable objects like arrays: passing an array by value requires making a copy of it. Adding call-by-reference parameters entails adding a state to the semantics of extracted code, which in turn leads to various semantic and syntactic design issues, like aliasing and side-effects. To account for these changes, the constructive logic used to build proofs is modified. A proof of quicksort illustrates the functional, assignment-free, side-effect-free style of proof promoted by the new logic. To relieve the user of some of the mental overhead involved in using the new logic, an array

inferencing algorithm is presented. The algorithm allows users to get code that uses arrays from proofs that reason about and manipulate lists in restricted ways. In this way, users can view the use of arrays as an optimization.

url: http://hdl.handle.net/1813/6598
date: 2007-04-23
creator: Hopcroft, John E.;Hoffmann, Christoph M.
viewed: 22
title: The Geometry of Projective Blending Surfaces
abstract: Blending surfaces smoothly join two or more primary surfaces that otherwise would intersect in edges. We outline the potential method for deriving blending surfaces, and explain why the method needs to be considered in projective parameter space, concentrating on the case of blending quadrics. Let W be the quadratic polynomial substituted for the homogenizing variable of parameter space. We show that a blending surface derived in projective parameter space is the projective image of a different blending surface derived in affine parameter space, provided that $W = U^{2}$ for some linear U. All blending surfaces may therefore be classified on basis of the projective classification of W.

url: http://hdl.handle.net/1813/6599
date: 2007-04-23
creator: Iyengar, S. Sitharama;Moitra, Abha
viewed: 37
title: Discussion of Parallel Algorithms
abstract: In recent years we have witnessed a tremendous surge in the availability of very fast and inexpensive hardware. However, our ability to design fast and cheap hardware far outstrips our ability to utilize them effectively in solving large problems fast. Hence there is a continuing interest in the study and development of parallel algorithms. In this paper we present a survey of deterministic parallel algorithms for a class of computational problems. Both graph-theoretic and non graph-theoretic problems are considered and the parallel algorithms presented are motivated by identifying some common paradigms.

url: http://hdl.handle.net/1813/6600
date: 2007-04-23
creator: Howe, Douglas J.;Hook, James G.
viewed: 20
title: Impredicative Strong Existential Equivalent to Type:Type
abstract: ABSTRACT NOT SUPPLIED

url: http://hdl.handle.net/1813/6601
date: 2007-04-23
creator: Hemachandra, Lane A.;Cai, Jin-yi
viewed: 32
title: Exact Counting is as Easy as Approximate Counting
abstract: We show that exact counting and approximate counting are polynomially equivalent. That is $P^{#P} = P^{Approx#P}$, where #P is a function that computes the number of solutions to a given Boolean formula f (denoted by $|| f ||$), and Approx#P computes a short list that contains $|| f ||$. It follows that if there is a good polynomial time approximator for #P (i.e., one where the list has at most $O(|f|^{1-\epsilon})$ elements), then $P = NP = P^{#P}$ and probabilistic polynomial time equals polynomial time. Thus we have strong evidence that #P cannot be easily approximated.

url: http://hdl.handle.net/1813/6602
date: 2007-04-23
creator: Coleman, Thomas F.
viewed: 21
title: A Chordal Preconditioner for Large Scale Optimization
abstract: We propose an automatic preconditioning scheme for large sparse numerical optimization. The strategy is based on an examination of the sparsity pattern of the Hessian matrix: using a graph-theoretic heuristic, a block diagonal approximation to the Hessian matrix is induced. The blocks are submatrices of the Hessian matrix; furthermore, each block is chordal. That is, under a positive definiteness assumption, each block can be Cholesky factored without creating new nonzeroes (fill). Therefore the preconditioner is space efficient. We conduct a number of numerical experiments to determine the effectiveness of the preconditioner in the context of a linear conjugate gradient algorithm for optimization.

url: http://hdl.handle.net/1813/6603
date: 2007-04-23
creator: Demers, Alan J.;Panangaden, Prakash;Neirynck, Anne
viewed: 25
title: Computation of Aliases and Support Sets
abstract: When programs are intended for parallel execution it becomes critical to determine whether the evaluations of two expressions can be carried out independently. We provide a scheme for making such determinations in a language with higher order constructs and imperative features. The heart of our scheme is a mechanism for computing the support of an expression, i.e. the set of global variables involved in its evaluation. This computation requires knowledge of all the aliases of an expression. The inference schemes are presented as abstract semantic interpretations. We prove the soundness of our estimates by establishing a correspondence between the abstract semantics and the standard semantics of the programming language.

url: http://hdl.handle.net/1813/6604
date: 2007-04-23
creator: Mendler, N.P.
viewed: 15
title: First- and Second-Order Lambda Calculi with Recursive Types
abstract: Recursive types are added to the first- and second-order lambda calculi and the resulting typed terms are shown to be strongly normalizable. A necessary and sufficient condition for strong normalizability is given for unrestricted definitions of recursive types.

url: http://hdl.handle.net/1813/6605
date: 2007-04-23
creator: Voorhees, Ellen M.
viewed: 33
title: Implementing Agglomerative Hierarchic Clustering Algorithms for Use in Document Retrieval
abstract: Searching hierarchically clustered document collections can be effective, but creating the cluster hierarchies is expensive since there are both many documents and many terms. However, the information in the document-term matrix is sparse: documents are usually indexed by relatively few terms. This paper describes the implementations of three agglomerative hierarchic clustering algorithms that exploit this sparsity so that collections much larger than the algorithms' worst case running times would suggest can be clustered. The implementations described in the paper have been used to cluster a collection of 12,000 documents.

url: http://hdl.handle.net/1813/6606
date: 2007-04-23
creator: Schneider, Fred B.;Gries, David;Widom, Jennifer
viewed: 15
title: Completeness and Incompleteness of Trace-Based Network Proof Systems
abstract: Most trace-based proof systems for networks of processes are known to be incomplete. Extensions to achieve completeness are generally complicated and cumbersome. In this paper, a simple trace logic is defined and two examples are presented to show its inherent incompleteness. Surprisingly, both examples consist of only one process, indicating that network composition is not a cause of incompleteness. Axioms necessary and sufficient for the relative completeness of a trace logic are then presented.

url: http://hdl.handle.net/1813/6607
date: 2007-04-23
creator: Gilbert, John R.
viewed: 17
title: Some Nested Dissection Order is Nearly Optimal
abstract: The minimum fill problem is to reorder the rows and columns of a given sparse symmetric matrix so that its triangular factor is as sparse as possible. Equivalently, it is to find the smallest set of edges whose addition makes a given undirected graph chordal. The problem is known to be NP-complete, and no polynomial-time approximation algorithms are known that provide any nontrivial guarantee for arbitrary graphs (matrices), although some heuristics perform well in practice. Nested dissection is one such heuristic. In this note we prove that every graph with a fixed bound on vertex degree has a nested dissection order that achieves fill within a factor of $O(\logn)$ of minimum. This does not lead to a polynomial-time approximation algorithm, however, because the proof does not give an efficient method for finding the separators required by nested dissection.

url: http://hdl.handle.net/1813/6608
date: 2007-04-23
creator: Bates, Joseph L.
viewed: 18
title: The PRL Mathematics Environment: A Knowledge Based Medium
abstract: ABSTRACT NOT SUPPLIED

url: http://hdl.handle.net/1813/6609
date: 2007-04-23
creator: Nicolau, Alexandru;Bilardi, Gianfranco
viewed: 37
title: Adaptive Bitonic Sorting: An Optimal Parallel Algorithm for Shared Memory Machines
abstract: We propose a parallel algorithm, called adaptive bitonic sorting, which runs on a PRAC, a shared-memory multiprocessor where fetch and store conflicts are disallowed. On a P processors PRAC, our algorithm achieves optimal performance $TP = O(N \log N)$, for any computation time T in the range $\Omega (\log^{2} N) \leq T \leq O(N \log N)$. Adaptive bitonic sorting has also a small constant factor, since it performs less than $2N \log N$ comparisons, and only a handful of operations per comparison.

url: http://hdl.handle.net/1813/6610
date: 2007-04-23
creator: Warren, Joe D.

viewed: 72
title: On Algebraic Surfaces Meeting with Geometric Continuity
abstract: An increasingly prominent area of computer science is Computer Aided Geometric Design or CAGD. The main task of CAGD is to automate, to the greatest extent possible, the process of designing physical objects. A designer typically models an object as a collection of surfaces. For many objects, design specifications indicate only a few critical surfaces, with the remaining surfaces to be chosen so as to make the surface of the resulting object smooth. Smoothness is important because, in many mechanical objects, sharp edges are undesirable for functional or aesthetic reasons. For example, sharp edges on the interior surface of a gate valve retard fluid flow. Automatically calculating these remaining surfaces, called blending surfaces is an important task in any CAGD system. Therefore, an understanding of the mathematics of surfaces that meet smoothly is fundamental to CAGD. Specifically, this thesis investigates the following problem: given a surface V and a point or curve W on that surface, construct surfaces that meet with V with a specified degree of smoothness along W. Working from a measure of smoothness known as geometric continuity, the first half of this thesis establishes that the space of all surfaces meeting V with the k-th order geometric continuity along W is directly related to certain algebraic structures called ideals. For example, let Z(M) (the set of point for which a polynomial M is zero) be an irreducible surface that intersects another surface Z(N) transversally (nontangentially) in an irreducible curve Z(M) $\frown$ Z(N). It is shown that a surface Z(F) meets Z(M) with order k geometric continuity along Z(M) $\frown$ Z(N) if and only if F is a polynomial of the form $AM = BN^{k+1}$ where A and B are free polynomials and A is nonzero on Z(M) $\frown$ Z(N). The second half of this work applies these results to the problem of generating blending surfaces. Using the geometric properties of blending surfaces, it is shown that any surface Z(F) that smooths the intersection of two surfaces Z(M) and Z(N) must have certain algebraic properties. In particular, the degree of F must be greater than or equal to the maximum of the degrees of M^{2} and N^{2}. Finally, existing methods for constructing blending surfaces are shown to be consistent within the above algebraic framework. In fact, we demonstrate that these distinct methods are instances of a single general method for generating blending surfaces. Moreover, this general method is shown to generate blending surfaces of the lowest possible degree.

url: http://hdl.handle.net/1813/6611
date: 2007-04-23
creator: Kadin, Jim
viewed: 29
title: Deterministic Polynomial Time O(log n) Queries
abstract: $P^{NP[\log n]}$ is the class of languages recognizable by determining polynomial time machines that make $O(\log n)$ queries to an oracle for NP. Many of the languages related to optimal solution sizes of NP optimization problems are members of this class. We relate $P^{NP[\log n]}$ to the study of sparse oracles for NP by showing that if NP has a sparse $\leq^{P}_{T}$-complete set, then the polynomial time hierarchy collapses to $P^{NP[\log n]}$. We also discuss complete problems and show that UOCSAT, the set of CNF formulas with the property that every assignment that satisfies the maximum number of clauses satisfies the same set of clauses, is $\leq^{P}_{m}$-complete for $P^{NP[\log n]}$.

url: http://hdl.handle.net/1813/6612
date: 2007-04-23
creator: Stephenson, Patrick;Schmuck, Frank B.;Joseph, Thomas A.;Birman, Kenneth P.
viewed: 21
title: Programming with Shared Bulletin Boards in Asynchronus Distributed Systems
abstract: We consider loosely coupled distributed computing systems in which processes interact through shared resources, which are modeled as bulletin boards. The first part of the paper formalizes the notion

of consistent behavior when unreliable processes concurrently access a bulletin board. This model is interesting both as a tool for showing the correctness of a board implementation and also because it provides a mechanism for reasoning about consistency in distributed systems, which was previously lacking. The remainder of the paper discusses software techniques for implementing consistent bulletin boards in a network of processors lacking shared memory. Applications for our approach range from asynchronous interprocess communication to mechanisms for achieving mutual exclusion, deadlock detection and for building distributed database systems.

url: http://hdl.handle.net/1813/6613
date: 2007-04-23
creator: Landau, Susan;Kozen, Dexter
viewed: 25
title: Polynomial Decomposition Algorithms
abstract: In a recent paper [BZ], Barton and Zippel examine the question of when a polynomial $f(x)$ over a field of characteristic 0 has a nontrivial decomposition $f(x)=g(h(x))$. They give two exponential-time algorithms, both of which require polynomial factorization. We present an $O(s^{2}r\logr)$ algorithm, where r=deg g and s =deg h. The algorithm does not use polynomial factorization. We also show that the problem is in NC. In addition, we give a new structure theorem for testing decomposibility over any field. We apply this theorem to obtain an NC algorithm for decomposing irreducible polynomials over finite fields and a subexponential algorithm for decomposing irreducible polynomials over any field.

url: http://hdl.handle.net/1813/6614
date: 2007-04-23
creator: Natarajan, B.K.
viewed: 24
title: The Automated Design of Parts Orienters
abstract: This paper concerns the design of parts orienters - the dual to the motion planning problem. Three particular paradigms are considered and their abstractions to the computational domain lead to interesting problems in graph pebbling and function composition on finite sets. Polynomial time algorithms are developed for the abstracted problems.

url: http://hdl.handle.net/1813/6615
date: 2007-04-23
creator: Natarajan, B.K.
viewed: 21
title: On Moving and Orienting Objects
abstract: Many problems arising in the area of robotics are directly or indirectly related. In order to analyze such problems, it is necessary to incorporate the dynamics with the geometry in the mathematical formulation. With this in view, this thesis deals with two such problems - motion planning in the presence of uncertainty and the automated design of parts orienters. Motion planning for robots with errors in position measurement, velocity and time is considered and shown to be decidable in polynomial time for a large class of inputs. The robot model is then extended to include damping - a limited form of force sensing. Motion planning for point objects in three-dimensional scenes and robots with damping is shown to be PSPACE-hard. A simplified version of the same problem is shown to be PSPACE-complete. The problem of the automated design of parts orienters is rather closely related to motion planning. But the dynamics of the problem is so dominant that similar general formulations seem impossible. In this thesis, the alternative pursued is paradigm-by-paradigm analysis. Three paradigms are presented and analyzed - the “belt”, for orienting convex polygons that are infinite in the third dimension, the “pan handler”, for flat polygonal objects and

the vibratory track for flat, convex polygons. Polynomial time algorithms are developed for the automated design of orienters in each of the paradigms.

url: http://hdl.handle.net/1813/6616
date: 2007-04-23
creator: Longpre, Luc
viewed: 17
title: Resource Bounded Kolmogorov Complexity, A Link Between Computational Complexity and Information Theory
abstract: The resource bounded Kolmogorov complexity classes identify finite strings (and by extension infinite strings) according to how much we can compress and then recover the strings in a space or time bounded environment. We view the resource bounded Kolmogorov complexity classes as a link between computational complexity and information theory. Firstly, we study these classes with respect to information theory (or unbounded Kolmogorov complexity classes). Most of what we know about information theory can also be shown in a space bounded environment. Whether it also stands in a time bounded environment is an interesting problem and parallels open questions about the power of nondeterminism. Then, we investigate the structure of the classes and show the analogies and differences with the structure of computational complexity classes. For example, we build hierarchies paralleling the time and space hierarchies. We show that the exponential hierarchy collapses if and only if our parallel hierarchy collapses. Lastly, we analyse the statistical properties of random strings. Martin-Lof has shown that all strings with no short description possess all the computable statistical properties of random strings. We show that this result carries over to the space bounded Kolmogorov random strings, which pass all statistical tests using less space than the space bound. Also, allowing a little more space, we can design a test to detect all those strings. These results are further applied to the theory of pseudo-random number generators. Among other consequences, it is shown that there are some properties that no space bounded random number generator can possess. The notion of statistical tests is compared to the notion of a good pseudo-random number generator, as defined by Andrew Yao.

url: http://hdl.handle.net/1813/6617
date: 2007-04-23
creator: Hemachandra, Lane A.
viewed: 16
title: The Sky is Falling: The Strong Exponential Hierarchy Collapses
abstract: This paper investigates the complexity of the high levels of the exponential hierarchy [HY84,HIS85]: Are they hard, and if so why are they hard? We show that $P^{NE} = NP^{NE}$. From this we conclude that the strong exponential hierarchy collapses: $P^{NE} = NP^{NE} \bigcup NP^{NP^{NE}} \bigcup NP^{NP^{NP^{NE}}} \bigcup \cdots,$ where NE is nondeterministic exponential time. This suprising result, a nontrivial hierarchy collapse, is based on P^{NE} overmastering the NP^{NE} computation tree by computing better and better partial census information. We note why the combinatorics involved prevents us from similarly proving that the polynomial hierarchy collapses. Next we look at the exponential hierarchy, which is NE given a rich database: $NE \bigcup NE^{NP} \bigcup NE^{NP^{NP}} \bigcup \cdots$. We show that if the exponential hierarchy's Δ_{i} and Σ_{i} levels do separate, this is due not to the power of the database but to the extravagant number of queries NE makes to the database. Thus the high levels of the strong exponential hierarchy are no harder than the low levels. The high levels of the exponential hierarchy separate completely only if NE floods its database with queries. Extending our techniques, we derive sufficient conditions for collapsing complexity classes, and use them to generate strong new quantitative relativization results.

url: http://hdl.handle.net/1813/6618
date: 2007-04-23
creator: Cai, Jin-yi
viewed: 37
title: On Some Most Probable Separations of Complexity Classes
abstract: This thesis is a study of separations of some complexity classes which take place in almost all relativized worlds. We achieve probability one separations of PSPACE from the Polynomial-time Hierarchy PH. Also we separate with probability one all levels of the Boolean Hierarchy BH. The study on the Boolean Hierarchy is a continuation of the work by Bennet and Gill in [BG81] and the joint work in [CH86], where we introduced the "sawing" argument. This "sawing" technique is adapted here to yield probability one separation. The study on PSPACE versus the Polynomial-time Hierarchy is more intriguing. Several novel techniques are employed here. The connection with Boolean circuit is exploited to reduce the problem to a Boolean circuit computation problem. The fixed depth unbounded fan-in Boolean circuit model is considered in connection with the parity function. We show that with an exponential bound of the form $exp(n^{\ lambda}$ on the size of the circuits, they make asymptomatically 50% error on all possible inputs, uniformly. Certain probabilistic and game theoretic methods are applied extensively to conclude the result.

url: http://hdl.handle.net/1813/6619
date: 2007-04-23
creator: Kreitz, Christoph
viewed: 21
title: Constructive Automata Theory Implemented with the Nuprl Proof Development System
abstract: The Nuprl proof development system was designed for the computer-assisted problem solving in mathematics and programming. In particular it can be used for the development of mathematical proofs and of programs which are guaranteed to meet their specifications. The implementation of the theory of finite automata gave lots of insights into its strengths and weaknesses and shows that Nuprl is indeed powerful enough now to obtain nontrivial results within reasonable amounts of time. Its success shall encourage people to actually use the system and build theories within it. This report describes the techniques and the user-defined extensions to the Nuprl object language which were necessary to formulate and prove theorems from the theory of finite automata. It also describes the experiences which came from actually working with the current Nuprl system and gave some useful insights into its strenghts and weaknesses. A complete Nuprl-proof of the pumping lemma and its computational evaluation are presented and an outline for future development is given.

url: http://hdl.handle.net/1813/6620
date: 2007-04-23
creator: Gries, David;Xue, Jinyun
viewed: 39
title: Developing a Linear Algorithm for Cubing a Cyclic Permutation
abstract: A linear algorithm is developed for cubing a cyclic permutation stored as a function in an array. This continues work discussed in [0] and [1] on searching for disciplined methods for developing and describing algorithms that deal with complicated data structures such as linked lists. Here, a different representation of a cyclic permutation reveals a simple algorithm; then, an equally simple coordinate transformation is used to yield the final algorithm.

url: http://hdl.handle.net/1813/6621
date: 2007-04-23
creator: Raeuchle, Thomas

viewed: 31
title: Efficient Concurrency Control for Libraries of Typed Objects
abstract: Concurrency control algorithms use a conflict detection strategy to determine operations that have to be delayed to provide a correct serialization order. To keep the cost of detecting conflicts feasible, most algorithms employ rather crude strategy that sometimes delays operations when in reality they could proceed concurrently. In an object oriented system where calls to objects can be nested this problem is exacerbated by the fact that a concurrency control decision is made at each level in the calling hierarchy. In this dissertation we address concurrency control issues in object oriented systems. We develop a model of execution for operations on objects, drawing on similar models developed for database systems. We propose a new serialization algorithm that keeps a partial history of operations at each site, and exploits semantic knowledge of operations to achieve a finer granularity of conflict detection. Conflict detection is based on user supplied conflict predicates, thus giving the user the option of fine grained concurrency control and the responsibility for the level of cost of the conflict detection strategy. We then show how to implement the algorithm in a distributed system where sites can fail and recover independently. Finally, we explore techniques to reduce the message overhead and latency for the algorithm in a distributed system.

url: http://hdl.handle.net/1813/6622
date: 2007-04-23
creator: Panangaden, Prakash;Moitra, Abha
viewed: 25
title: A Proof System for Dataflow Networks with Indeterminate Modules
abstract: In this paper we discuss a model for dataflow networks containing indeterminate operators and the associated proof system. The model is denotational and associates with each network the set of possible behaviors. The possible behaviors are represented by traces. The novel feature of our proof system is that we give an inductive proof rule for recursively defined networks based on a fixed point construction given by Keller and Panangaden. We show soundness and relative completeness of our proof system.

url: http://hdl.handle.net/1813/6623
date: 2007-04-23
creator: Peierls, Timothy;Gilbert, John R.
viewed: 17
title: Sparse Partial Pivoting in Time Proportional to Arithmetic Operations
abstract: Existing sparse partial pivoting algorithms can spend asymptomatically more time manipulating data structures than doing arithmetic, although they are tuned to be efficient on many large problems. We present an algorithm to factor sparse matrices by Gaussian elimination with partial privoting in time proportional to the number of arithmetic operations. Implementing this algorithm requires only simple data structures and gives a code that is competitive with, and often faster than, existing sparse codes. The key idea is a new triangular solver that uses depth-first search and topological ordering to take advantage of sparsity in the right-hand side.

url: http://hdl.handle.net/1813/6624
date: 2007-04-23
creator: Seidel, Raimund
viewed: 28
title: Output-Size Sensitive Algorithms for Constructive Problems in Computational Geometry
abstract: In computer science the efficiency of algorithms is usually measured in terms of the size of the input. The output size, on the other hand, has been used for this purpose rather infrequently, except in certain enumerative query problems. This thesis deals with several constructive (in constrast to query) problems in

computational geometry and presents algorithms whose running time depends non-trivially on the output size. We present an algorithm that finds the convex hull on n points in the plane in worst case time $O(n \log H)$, where H is the number of points that turn out to be vertices of the convex hull. we examine the d-dimensional maximal vector problem and show that as long as V, the number of maximal vectors in a set, is not too large, these maximal vectors can be found in $O(n \log V)$. We present an algorithm for solving the planar convex subdivision overlay problem in time proportional to the combined input and output size. Finally we show that, after some preprocessing in the form of linear programs, d-dimensional convex hulls can be constructed at logarithmic cost per face.

url: http://hdl.handle.net/1813/6625
date: 2007-04-23
creator: Nicolau, Alexandru;Aiken, Alexander
viewed: 22
title: A Development Environment for Horizontal Microcode
abstract: This paper describes a development environment for horizontal microcode. The environment used Percolation Scheduling - a transformational system for parallelism extraction - and an interactive profiling system that gives the user control over the microcode compaction process while reducing the burdensome details of architecture, correctness-preservation, and synchronization. Through a graphical interface the user suggests what can be executed in parallel, while the sytem performs the actual changes using semantics-preserving transformations. If a request cannot be satisfied, the system reports the problem causing the failure. The user may then help eliminate the problem by supplying guidance or information not explicit in the code. Index terms - microcode, compaction, Percolation Scheduling, environment, transformation, parallelization, compiler.

url: http://hdl.handle.net/1813/6626
date: 2007-04-23
creator: Xue, Jinyun;Gries, David
viewed: 35
title: Generating a Random Cyclic Permutation
abstract: ABSTRACT NOT SUPPLIED

url: http://hdl.handle.net/1813/6627
date: 2007-04-23
creator: Coleman, Thomas F.;Li, Guangye
viewed: 27
title: A Parallel Triangular Solver for a Hypercube Multiprocessor
abstract: We consider solving triangular systems of linear equations on a hypercube multiprocessor. Specifically, we propose a fast parallel algorithm, applicable when the triangular matrix is distributed around the cube by column in a wrap fashion. Numerical experiments indicate that the new algorithm is very efficient. A theoretical analysis confirms that the total running time varies linearly, with respect to the matrix order, up to a threshold value of the matrix order, after which the dependence is quadratic. Moreover, we show that total message traffic is essentially the minimum possible. Finally, we describe an analogous row-oriented algorithm.

url: http://hdl.handle.net/1813/6628
date: 2007-04-23
creator: Panangaden, Prakash;Moitra, Abha
viewed: 28

title: Finitary Choice Cannot Express Fairness: A Metric Space Technique
abstract:

url: http://hdl.handle.net/1813/6629
date: 2007-04-23
creator: Hafsteinsson, Hjalmtyr;Gilbert, John R.
viewed: 77
title: A Parallel Algorithm for Finding Fill in a Sparse Symmetric Matrix
abstract: We describe a parallel algorithm for finding the fill that occurs when a sparse symmetric positive definite matrix A is factored into its Cholesky factor L. The algorithm is in two steps: First we determine the elimination forest F for A. Then from F and A we compute the fill. The algorithm takes $O(\log^{2} n)$ time, using $m + n$ processors to find the elimination forest and $m^{*}+ n$ processors to find the fill.

url: http://hdl.handle.net/1813/6630
date: 2007-04-23
creator: Toueg, Sam;Neiger, Gilbert A.
viewed: 17
title: Substituting for Real Time and Common Knowledge in Distributed Systems
abstract: We study time and knowledge in synchronous and asynchronous reliable distributed systems. For both types of systems, we describe clocks that can be used as if they were perfectly synchronized real-time clocks in the solution of a large class of problems that we formally characterize. For this same class of problems, we also propose a broadcast primitive that can be used as if it achieves common knowledge. Our clocks and broadcast primitive are tools that considerably simplify the task of designing and proving correct distributed algorithms: the designer can assume that processors have access to real-time clocks and the ability to achieve common knowledge. The latter can be used to implement the abstraction of shared memory.

url: http://hdl.handle.net/1813/6631
date: 2007-04-23
creator: Drummond, Rogerio;Babaoglu, Ozalp
viewed: 37
title: (Almost) No Cost Clock Synchronization
abstract: We show how synchronized clocks can be realized in a distributed system as a byproduct of a common communication paradigm where processors periodically perform broadcasts. Our approach decouples the precision concern-limiting how much correct clocks can differ from each other-and the accuracy concern-limiting how much any correct clock can differ from real time-of clock synchronization. Given a system that guarantees only precision, we develop a protocol whereby high accuracy can be achieved on demand. In this manner, the "lazy" protocol we obtain incurs the cost of high accuracy only when needed while keeping the basic synchronization procedure extremely simple and cheap.

url: http://hdl.handle.net/1813/6632
date: 2007-04-23
creator: Nicolau, Alexandru
viewed: 18
title: A Fine-Grain Parallelizing Compiler
abstract: Percolation Scheduling (PS) is a new technique for compiling programs into parallel code. It attempts to overcome problems that limit the effectiveness and applicability of currently available techniques. PS globally rearranges code past basic block boundaries. Its core is a small set of simple, primitive program

transformations defined in terms of adjacent nodes in a program graph. These transformations constitute the lowest level in a system of transformations and guidance rules. Higher levels of this hierarchy control and enhance the applicability of the core transformations and enable us to exploit both fine grained and coarse parallelism. Unlike other, more ad hoc approaches, PS is based on rigorous definitions of the computational model and of the core transformations. The correctness and termination of the transformations is proven here. The completeness of the transformations is also discussed. As a result our system implementation can proceed on a sound basis. In particular, PS enjoys greater adaptability and independence between the levels than would be possible otherwise. This has greatly facilitated the implementation of the first prototype version of our compiler, which is now complete. This paper describes PS in detail. The correctness aspects as well as illustrations of the effectiveness of our techniques are presented. Architectures which may benefit from the use of PS are also discussed.

url: http://hdl.handle.net/1813/6633
date: 2007-04-23
creator: Schwartzbach, Michael I.
viewed: 17
title: A Category Theoretic Analysis of Predicative Type Theory
abstract: ABSTRACT NOT AVAILABLE

url: http://hdl.handle.net/1813/6634
date: 2007-04-23
creator: Hemachandra, Lane A.
viewed: 19
title: On Ranking
abstract: This paper structurally characterizes the complexity of ranking. A set is P-rankable if there is a polynomial time computable function f so that for all $x, f(x)$ computes the number of elements of A that are lexicographically $\leq x$, i.e., the rank of x with respect to A. We'll say a class C is P-rankable if all sets in C are P-rankable. Our main results show that with the same certainty with which we believe counting to be complex, and thus with at least the certainty with which we believe P $\neq$ NP, we may believe that P has no ranking functions of any type - uniform, strong, weak, or approximate. We show that: P and NP are equally likely to be P-rankable. P is P-rankable if and only if $P = P^{#P}$. This extends important work of Blum and Sipser [Sip85]. Even weak variations of P-ranking are hard if $P \neq P^{#P}$. PSPACE is P-rankable if and only if P = PSPACE. If P has small ranking circuits, then it has small ranking circuits of relatively low complexity. If P has small ranking circuits then the power of counting falls into the polynomial hierarchy (i.e., $P^{#P} \subseteq \(\sum_{2}^{p})\ = PH$). P/poly, the class of sets with small circuits is not P-rankable. P/poly has small ranking circuits if and only if $P^{#P}$/poly = $P^{#P/poly}$ = P/poly. If P is rankable, then P/poly has small ranking circuits. This links the ranking complexity of uniform and nonuniform classes. The ranks of some strings in easy sets are of high relative time-bounded Kolmogorov complexity unless P = $P^{#P}$. It follows that even approximate ranking is hard unless P = $P^{#P}$. This partially resolves a question posed by Sipser [Sip85, pp. 447-448].

url: http://hdl.handle.net/1813/6635
date: 2007-04-23
creator: Hemachandra, Lane A.
viewed: 86
title: Can P and NP Manufacture Randomness?
abstract: This paper studies how Kolmogorov complexity dictates the structure of standard deterministic and nondeterministic classes. We completely characterize, in Kolmogorov terms, when $P^{NP[\log]}= P^{NP}$,

where [log] indicates that $O(\log n)$ oracle calls are made. We give a Kolmogorov characterization of P=NP that links the work of Adleman and Krentel. Briefly stated, complexity classes collapse unless they can manufacture randomness. A Δ^{p}_{2} machine is a P machine with an NP oracle. The series of replies the NP oracle makes is called the pronouncement. We show that $P^{NP[\log]}= P^{NP}$ if and only if each Δ^{p}_{2} language is accepted by some Δ^{p}_{2} machine with Kolmogorov simple pronouncements. (i.e., $(\forall P_{i}) (\exists c) (\forall x) [Pronouncements_{P_{i}}$ SAT $(x) \in K[c \log n, n^{c} | x]])$. Turning to functions, we show that: $P^{NP[\log]}F = P^{NP}F$ if and only if all Δ^{p}_{2} machines have Kolmogorov simple pronouncements. Since $P^{NP[\log]}F = P^{NP}F \Longleftrightarrow$ P=NP (Krentel), the above gives an alternate Kolmogorov characterization of the P=NP question, which complements Adleman's classic characterization. Our key technique is an oracle-based divide and conquer over a tree of potential pronouncements. The results generalize to many other classes, including truth-table classes and counting classes. Thus, Kolmogorov complexity dictates the structure of the classes that are at the center of our understanding of feasible computation.

url: http://hdl.handle.net/1813/6636
date: 2007-04-23
creator: Hemachandra, Lane A.;Hartmanis, Juris
viewed: 14
title: One-Way Functions, Robustness, and the Non-Isomorphism of NP-Complete Sets
abstract: This paper 1. gives a relativized counterexample to the conjectured connection between the existence of one-way functions and the existence of non-isomorphic NP-complete sets. 2. establishes that in relativized worlds there are NP-complete sets that are non-isomorphic in a strong sense. 3. proves that robust machines squander their powerful nondeterministic oracle access in all relativizations. (1) resolves an open question. (2) extends our knowledge about non-isomorphic NP-complete sets. (3) sharing the proof techniques of (1) and (2), enriches the nascent theory of robustness and presents a consequence of the limited combinatorial control of machines.

url: http://hdl.handle.net/1813/6637
date: 2007-04-23
creator: Van Loan, Charles
viewed: 22
title: A Block or Factorization Scheme for Loosely Coupled Systems of Array Processors
abstract: A statically scheduled parallel block QR factorization procedure is described. It is based on "block" Givens rotations and is modeled after the Gentleman-Kung systolic QR procedure. Independent tasks are associated with each block column. "Tallest possible" subproblems are always solved. The method has been implemented on the IBM Kingston LCAP-1 system which consists of ten FPS-164/MAX array processors that can communicate through a large shared bulk memory. The implementation revealed much about the tradeoff between block size and load balancing. Large blocks make load balancing more difficult but give better 164/MAX performance and less shared memory traffic. The results obtained indicate that our approach to parallelizing the QR factorization is competitive for very large problems, e.g. of the order 5000-by-1000.

url: http://hdl.handle.net/1813/6638
date: 2007-04-23
creator: Gries, David;Owicki, Susan S.
viewed: 20
title: Proving Properties of Parallel Programs: An Axiomatic Approach
abstract: This paper presents an axiomatic technique for proving a number of properties of parallel programs. Hoare has given a set of axioms for partial correctness of parallel programs, but they are not strong enough

in most cases. Here we define a deductive system which is in some sense complete for partial correctness. The information in a partial correctness proof is then used to prove such properties as mutual exclusion, blocking and termination.

url: http://hdl.handle.net/1813/6639
date: 2007-04-23
creator: Vazirani, Vijay V.;Vazirani, Umesh V.;Kozen, Dexter
viewed: 79
title: NC Algorithms for Comparability Graphs, Interval Graphs, and Unique Perfect Matchings
abstract: Laszlo Lovasz recently posed the following problem: "Is there an NC algorithm for testing if a given graph has a unique perfect matching?" We present such an algorithm for bipartite graphs. We also give NC algorithms for obtaining a transitive orientation of a comparability graph, and an interval representation of an interval graph. These enable us to obtain an NC algorithm for finding a maximum matching in an incomparability graph.

url: http://hdl.handle.net/1813/6640
date: 2007-04-23
creator: Schneider, Fred B.
viewed: 17
title: The State Machine Approach: A Tutorial
abstract: The state machine approach is a general method for achieving fault tolerance and implementing decentralized control in distributed systems. This paper reviews the approach and identifies abstractions needed for coordinating ensembles of state machines. Implementations of these abstractions for two different failure models -Byzantine and fail-stop-are discussed. The state machine approach is illustrated by programming several examples. Optimization and system reconfiguration techniques are explained.

url: http://hdl.handle.net/1813/6641
date: 2007-04-23
creator: Barford, Lee Alton
viewed: 22
title: Representing Generic Solid Models by Constraints
abstract: A generic solid is a representation of a class of similar solid objects. This report introduces microCOSM, a constraint language for specifying generic solids. MicroCOSM allows relationships between parts of an object to be expressed as constraints between those parts. As a result, microCOSM can express many more such relationships than current languages for building generic solids. An editor for building and modifying two-dimensional generic solids in microCOSM has been written. This report describes the microCOSM language, the user interface, and implementation of the editor, and concludes with a discussion of some improvements that should be made to the editor.

url: http://hdl.handle.net/1813/6643
date: 2007-04-23
creator: Zmijewski, Earl;Gilbert, John R.
viewed: 32
title: A Parallel Graph Partitioning Algorithm for a Message-Passing Multiprocessor
abstract: We develop a parallel algorithm for partitioning the vertices of a graph into $p \geq 2$ sets in such a way that few edges connect vertices in different sets. The algorithm is intended for a message-passing multiprocessor system, such as the hypercube, and is based on the Kernighan-Lin algorithm for finding small edge separators on a single processor. We use this parallel partitioning algorithm to find orderings

for factoring large sparse symettric positive definite matrices. These orderings not only reduce fill, but also result in good processor utilization and low communication overhead during the factorization. We provide a complexity analysis of the algorithm, as well as some numerical results from an Intel hypercube and a hypercube simulator.

url: http://hdl.handle.net/1813/6644
date: 2007-04-23
creator: Paoluzzi, Alberto
viewed: 27
title: Integration Constraints in Parametric Design of Physical Objects
abstract: Design by constraint is a powerful approach to improve CAD systems and designer productivity. This paper addresses the topic of incorporating integration constraints concerning object mass and inertia in a CAD system. Two classes of generic objects are discussed that contain affine and conformal images of a given solid, usually derived from the initial design solution. Domain-derivatives are partial derivatives needed to solve the existence problem of an object instance satisfying all constraints and, eventually, to find an optimal design solution. In the paper, it is shown that these derivatives are closely linked to the topology of the solid. They are symbolically expressable as integrals over domains having a lower geometrical dimension than the original solid.

url: http://hdl.handle.net/1813/6645
date: 2007-04-23
creator: Preparata, Franco P.;Bilardi, Gianfranco
viewed: 18
title: Size-Time Complexity of Boolean Networks for Prefix Computations
abstract: The prefix problem consists of computing all the products $x_{0}x_{1}\ldots x_{j} (j=0,\ldots,N-1)$, given a sequence $X = (x_{0},x_{1},\ldots,x_{N-1})$ of elements in a semigroup. In this paper we completely characterize the size-time complexity of computing prefixes with boolean networks, which are synchronized interconnections of boolean gates and one-bit storage devices. This complexity crucially depends upon a property of the underlying semigroup, which we call cycle-freedom (no cycle of length greater than one in the Cayley graph of the semigroup). Denoting by S and T size and computation time, respectively, we have $S = \Theta((N/T) \log(N/T))$, for non-cycle-free semigroups, and $S = \Theta((N/T)$, for cycle-free semigroups. In both cases, $T \in [\Omega(\logN),O(N)]$.

url: http://hdl.handle.net/1813/6646
date: 2007-04-23
creator: Xavier, Patrick G.;Solworth, Jon A.;Nicolau, Alexandru;Hendren, Laurie J.
viewed: 32
title: Low-level programming for a massively parallel fine-grain computer: the Microflow approach
abstract: A new programming language MFL^{3} is described, which, while low level, combines both message passing and shared memory models. We examine both the programming style and implementation issues of such a language. The programming style splits the computation into a computation thread (one process per processor) and several server threads. The computation thread (which performs the bulk of the computation) is deterministic, while all of the non-deterministic code is in the server threads. Also described are several ways of making programming in message passing languages less tedious and more modular, in terms of compilation techniques, runtime structures and a new programming structure.

url: http://hdl.handle.net/1813/6647
date: 2007-04-23

creator: Solworth, Jon A.
viewed: 17
title: Epochs
abstract: To date, the implementation of message passing languages have required the communications variables (sometimes called ports) either to be limited to the number of physical communications registers in the machine, or to be mapped to memory. Neither solution is satisfactory. Limiting the number of variables decreases modularity and efficiency of parallel programs. Mapping variables to memory increases the cost of communications and the granularity of parallelism. We present here a new programming language construct called epochs. Epochs are a scoping mechanism within which the programmer can declare communications variables, which are live only during the scope of that epoch. To limit the range of time a register has to be allocated for a communications variable, the compiler ensures that all processors enter an epoch simultaneously. The programming style engendered fits somewhere between the SIMD data parallel and MIMD process spawning models. We describe an implementation for epochs including an efficient synchronization mechanism, means of statically binding registers to communications variables and a method of fusing epochs to reduce synchronization overhead.

url: http://hdl.handle.net/1813/6648
date: 2007-04-23
creator: Sinofsky, Steven J.;Pugh, William W.
viewed: 25
title: A New Language - Independent Prettyprinting Algorithm
abstract: An algorithm for prettyprinting using word wrapping is described that is independent of the language being formatted and is substantially simpler than other published algorithms. The algorithm makes use of a simple model with a small set of primitives to direct the prettyprinting of text. For an input string of length n, and an output device m characters wide the algorithm runs in $O(n)$ time and requires $O(m)$ space. The algorithm can be restarted from an intermediate point and is therefore well suited for incremental prettyprinting of text. This algorithm is now being used in the Cornell Synthesizer Generator [2]. The algorithm is compared with and contrasted to the previously published algorithm by Oppen [1].

url: http://hdl.handle.net/1813/6649
date: 2007-04-23
creator: Moore, Doug W.
viewed: 24
title: Dense Patch-oriented Matrix Factorization on a Hypercube Multiprocessor
abstract: We develop algorithms for Cholesky factorization and the solution of triangular systems of linear equations on a hypercube multiprocessor. Specifically, we describe algorithms that apply when the matrix is distributed around the hypercube by submatrices, or patches. We show that these algorithms use asymptomatically less internode communication than more common row- and column- oriented algorithms. Empirical results accompany the analysis and show that patch-oriented algorithms are competitive with, but not demonstrably superior to, the other algorithms for hypercubes of low dimension. Implementations in C appear in an appendix.

url: http://hdl.handle.net/1813/6650
date: 2007-04-23
creator: Pingali, Keshav;Nikhil, Rishiyur;Arvind
viewed: 74
title: I-Structures: Data Structures for Parallel Computing
abstract: It is difficult simulteneously to achieve elegance, efficiency and parallelism in functional programs

that manipulate large data structures. We demonstrate this through careful analysis of program examples using three common functional data-structuring approaches - lists using Cons and arrays using Update (both fine-grained operators), and arrays using make-array (a "bulk" operator). We then present I-structures as an alternative, defining precisely the parallel operational semantics of Id, a language with I-structures. We show elegant, efficient and parallel solutions for the program examples in Id. I-structures make the language non-functional, but do not raise determinancy issues. Finally, we show that even in the context of purely functional languages, I-structures are invaluable for implementing functional data abstractions.

url: http://hdl.handle.net/1813/6651
date: 2007-04-23
creator: Joseph, Thomas A.;Birman, Kenneth P.
viewed: 21
title: Exploiting Virtual Synchrony in Distributed Systems
abstract: We describe applications of a new software abstraction called the virtually synchronous process group. Such a group consists of a set of processes that cooperate to implement some distributed behavior in an environment where events like broadcasts to the group as an entity, process failures, and process recoveries appear to occur synchronously. The utility of this approach is illustrated by solving a number of classical problems using our methods. Many are problems that are quite difficult in the absence of some sort of support, and all are easily solved in the context of the mechanisms we propose here. We then describe a new version of the ISIS system, which is based on this abstraction. $ISIS_{2}$ provides a number of high level mechanisms that facilitate the use of process groups in application software design, including addressing support for atomic communication with the members of a single or several groups (even when their membership is changing), group RPC constructs, a package of distributed programming tools, a fault-tolerant asynchronous bulletin board mechanism, and resilient objects.

url: http://hdl.handle.net/1813/6652
date: 2007-04-23
creator: Coleman, Thomas F.;Li, Guangye
viewed: 22
title: A New Method for Solving Triangular Systems on Distributed Memory Message-Passing Multiprocessors
abstract: Efficient triangular solvers for use on message passing multiprocessors are required, in several contexts, under the assumption that the matrix is distributed by columns (or rows) in a wrap fashion. In this paper we describe a new efficient parallel triangular solver for this problem. This new algorithm is based on the previous method of Li and Coleman [1986] but is considerably more efficient when $\frac{n}{p}$ is relatively modest, where p is the number of processors and n is the problem dimension. A useful theoretical analysis is provided as well as extensive numerical results obtained on an Intel iPSC with $p \leq 128$.

url: http://hdl.handle.net/1813/6653
date: 2007-04-23
creator: Barford, Lee Alton
viewed: 31
title: A Graphical, Language-Based Editor for Generic Solid Models Represented by Constraints.
abstract: A solid model is a representation of the space occupied by a rigid object. A generic solid (or "generic") expresses the solid models for a class of similar objects, or equivalently, a non-rigid object. Automated manufacturing systems require solid models of the objects with which they work. For example, solid models are needed to discover collision-free paths for robot arms. Previously, generics have been created

using clumsy textual languages, and solid models have usually been created using graphical editors. This thesis describes a technique for editing generics graphically, thus decreasing the labor required to create both generics and solid models. This thesis introduces microCOSM, a language for specifying solid models and generics in which a solid or generic is represented by its parts along with constraints that the parts must satisfy. Relationships between parts of an object are expressed as constraints between those parts. As a result, microCOSM can express more such relationships than current generic solid languages. A graphical editor for two-dimensional generics in microCOSM has been written. The microCOSM language and the user interface and implementation of the editor are described, and some improvements that should be made to the editor are discussed. The microCOSM editor, like any constraint-based editor, must have a constraint solver, a module that forces any object displayed by the editor to satisfy its constraints. This thesis shows why the usual techniques for solving constraints do not work well with microCOSM and show that the constraints in microCOSM are best solved as a related minimization problem. The minimization problem is chosen to achieve a harmonious compromise between the numerical complexity of the problem and the principle of least astonishment. Most bugs in microCOSM generic definitions involve having too many or too few constraints on some part of the solid. Algorithms are presented that detect under and overconstraint, under some reasonable assumptions about the constraints. These algorithms are dynamic; it is possible to determine if a modification induces an error without rerunning the entire computation. Error messages can be updated interactively, easing identification of the erroneous constraints.

url: http://hdl.handle.net/1813/6654
date: 2007-04-23
creator: Dill, Jens M.
viewed: 18
title: Optimal Trie Compaction is NP-Complete
abstract: NOT AVAILABLE

url: http://hdl.handle.net/1813/6655
date: 2007-04-23
creator: Dill, Jens M.
viewed: 14
title: A Counter-example for "A Simpler Construction for Showing the Intrinsically Exponential Complexity of the Circularity Problem for Attribute Grammars"
abstract: Jazayeri proposes a simpler construction for use in the proof by Jazayeri, Ogden, and Rounds that the circularity problem for attribute grammars has inherent exponential complexity. The simplification introduces a flaw that invalidates the proof. Correcting the flaw leaves the new construction only slightly simpler than the old.

url: http://hdl.handle.net/1813/6656
date: 2007-04-23
creator: Bilardi, Gianfranco
viewed: 18
title: Merging and Sorting Networks with the Topology of the Omega Network
abstract: We consider a class of comparator networks obtained from the omega permutation network by replacing each switch with a comparator exchanger of arbitrary direction. These networks are all isomorphic to each other, have merging capabilities, and can be used as building blocks of sorting networks in ways different from the standard merge-sort scheme. It is shown that the bitonic merger and the balanced merger are members of the class. These two networks were not previously known to be isomorphic.

url: http://hdl.handle.net/1813/6657
date: 2007-04-23
creator: Hartmanis, Juris
viewed: 15
title: Some Observations About NP Complete Sets
abstract: In this paper we summarize and extend some recent results about the properties of NP complete sets and related results about the structure of feasible computations.

url: http://hdl.handle.net/1813/6658
date: 2007-04-23
creator: Kozen, Dexter;Immerman, Neil
viewed: 29
title: Definability with Bounded Number of Bound Variables
abstract: A theory satisfies the k-variable-property if every first-order formula is equivalent to a formula with at most k bound variables (possibly reused). Gabbay has shown that a fixed time structure satisfies the k-variable property for some k if and only if there exists a finite basis for the temporal connectives over that structure. We give a model-theoretic method for establishing the k-variable property, involving a restricted Ehrenfeucht-Fraisse game in which each player has only k pebbles. We use the method to unify and simplify results in the literature for linear orders. We also establish new k-variable properties for various theories of bounded-degree trees, and in each case obtain tight upper and lower bounds on k. This gives the first finite basis theorems for branching-time models.

url: http://hdl.handle.net/1813/6659
date: 2007-04-23
creator: Schneider, Fred B.;Alpern, Bowen
viewed: 23
title: Proving Boolean Combinations of Deterministic Properties
abstract: This paper gives a method for providing that a program satisfies a temporal property that has been specified in terms of Buchi automata. The method permits extraction of proof obligations for a property formulated as the Boolean combination of properties, each of which is specified by a deterministic Buchi automaton, directly from the indiviudal automata. The proof obligations can be formulated as Hoare triples. The method is proved sound and relatively complete. A simple example illustrates application of the method.

url: http://hdl.handle.net/1813/6660
date: 2007-04-23
creator: Howe, Douglas J.
viewed: 15
title: The Computational Behaviour of Girard's Paradox
abstract: In their paper "Type" Is Not a Type, Meyer and Reinhold argued that serious pathologies can result when a type of all types is added to a programing language with dependent types. Central to their argument is the claim that by following the proof of Girard's paradox it is possible to construct in their calculus $\lambda^{\tau \tau}$ a term having a fixed-point property. Because of the tremendous amount of formal detail involved, they were unable to establish this claim. We have made use of the Nuprl proof development system in constructing a formal proof of Girard's paradox and analysing the resulting term. We can show that the term does not have the desired fixed-point property, but does have a weaker form of it that is sufficient to establish some of the results of Meyer and Reinhold. We believe that the method used here is in itself of some interest, representing a new kind of application of a computer to a problem in symbolic logic.

url: http://hdl.handle.net/1813/6661
date: 2007-04-23
creator: Nicolau, Alexandru;Aiken, Alexander
viewed: 30
title: Loop Quantization: an Analysis and Algorithm
abstract: Loop unwinding is a well-known technique for reducing loop overhead, exposing parallelism, and increasing the efficiency of pipelining. Traditional loop unwinding is limited to the innermost loop of a set of nested loops and the amount of unwinding is either fixed or must be specified by the user. In this paper we present a general technique, loop quantization, for unwinding multiple nested loops, explain its advantages over other transformations, and illustrate its practical effectiveness. An abstraction of nested loops is presented which leads to results about the complexity of computing quantizations and an algorithm.

url: http://hdl.handle.net/1813/6662
date: 2007-04-23
creator: Smith, Scott Fraser;Constable, Robert L.
viewed: 16
title: Partial Objects in Constructive Type Theory
abstract: Constructive type theories generally treat only total functions; partial functions present serious difficulties. In this paper, a theory of partial objects is given which puts partial functions in a general context. Semantic foundations for the theory are given in terms of a theory of inductive relations. The domain of convergence of a partial function is exactly characterized by a predicate within the theory, allowing for abstract reasoning about termination. Induction principles are given for reasoning about these functions, and comparisons are made to the domain theoretic account of LCF. Finally, an undecidability result is presented to suggest connections to a subset of recursive function theory.

url: http://hdl.handle.net/1813/6663
date: 2007-04-23
creator: Toueg, Sam;Koo, Richard
viewed: 30
title: Effects of Message Loss on Distributed Termination
abstract: We study the problem of termination in distributed systems with faulty communication channels. We show that for asynchronous systems, protocols that guarantee knowledge gain via message transfers cannot be guaranteed to terminate even if we assume that only transient communication failures can occur, and want to achieve only a weak kind of termination. The same result holds for synchronous systems as well.

url: http://hdl.handle.net/1813/6664
date: 2007-04-23
creator: Chu, Clare
viewed: 15
title: Load Balanced FFT Implementations on the Intel iPSC
abstract: Two implementations of both the Cooley-Tukey and Gentelman-Sande radix-two FFT algorithms are described where the distribution of computational work among the processors is balanced, i.e. every processor does the same number of complex multiplications and additions. One method requires no extra storage space for the buffering of the complex data that is to be exchanged between processors therefore allowing "in-place" computation. The second implementation is useful for doing FFT's of symmetric sequences and an example of its use in the sine transform is presented. We also show how to simulate the second implementation in terms of the first to gain "in-place" computation without the need for buffering

and intra-processor swapping.

url: http://hdl.handle.net/1813/6665
date: 2007-04-23
creator: Chu, Clare
viewed: 14
title: A Sine Transform Algorithm for the Hypercube
abstract: A new sine transform algorithm is presented where the pre-and post-processing steps are amenable to implementation on the hypercube parallel computer. Interprocessor communication is minimized at the expense of some redundant computations resulting in an algorithm with almost linear speedup against the conventional sequential algorithm. The transforms for both naturally ordered input and bit-reversed input can be processed, thereby avoiding the communication overhead needed to either run an autosort algorithm or to unscramble the results by performing a bit-reversed permutation about $O(d)$ parallel transmissions on hypercubes of dimension d.

url: http://hdl.handle.net/1813/6666
date: 2007-04-23
creator: Dickerson, Matthew T.
viewed: 14
title: Polynomial Decomposition Algorithms For Multivariate Polynomials
abstract: ABSTRACT NOT SUPPLIED

url: http://hdl.handle.net/1813/6667
date: 2007-04-23
creator: Salton, Gerard
viewed: 24
title: Historical Note: The Past Thirty Years in Information Retrieval
abstract: The documentation literature of the nineteen fifties is reviewed briefly, and some early text processing endeavors are discussed. Various predictions made in 1960 by Mooers about the creative role of computers in information retrieval are then considered, and an attempt is made to explain why some of the more exciting predictions have not been fulfilled. Conclusions are drawn concerning the limits of computer power in text retrieval applications.

url: http://hdl.handle.net/1813/6668
date: 2007-04-23
creator: Buckley, Chris;Salton, Gerard
viewed: 41
title: Parallel Text Search Methods
abstract: An evaluation of recently proposed parallel text search methods does not support the notion that the parallel methods provide large-scale gains in either retrieval effectiveness or efficiency, compared with alternative available search strategies using serial processing machines.

url: http://hdl.handle.net/1813/6669
date: 2007-04-23
creator: Elkan, Charles P.
viewed: 33
title: Adaptive Locking
abstract: Adaptive locking is a new concurrency control scheme for relational database systems. An adaptive

locking scheduler automatically issues to each transaction appropriate locks on its read and write sets. The read and write sets of transactions are exactly the parts of the shared database that it is necessary and sufficient to lock in order to prevent all state and view inconsistencies. This paper shows how to compute logical expressions representing the read and write sets of access statements and describes an efficient algorithm to check whether the locks issued to different transactions cause them to conflict. The algorithm is based on extended tableaux capable of representing all conjunctive queries. The paper discusses how to use adaptive locking with complex queries and compares the new scheme to conventional locking. A prototype database system demonstrating how an adaptive locking scheduler reasons about conflict is presented.

url: http://hdl.handle.net/1813/6670
date: 2007-04-23
creator: Segre, Alberto M.
viewed: 17
title: On the Operationality/Generality Trade-Off in Explanation-Based Learning
abstract: In this paper we examine the operationality/generality trade-off and how it affects performance of explanation-based learning systems. Experience with the ARMS learning apprentice system, presented in the form of an empirical performance analysis, illustrates both sides of the trade-off.

url: http://hdl.handle.net/1813/6671
date: 2007-04-23
creator: Pugh, William W.
viewed: 20
title: Efficient Concatenable Ordered Lists
abstract: A new approach for providing an efficient implementation of concatenable ordered lists is discussed. The structures described have an equivalence to search trees. In balanced search trees the tree is continually modified to maintain certain balance properties; with our structure the tree is guaranteed to be structured randomly and with very high probability is relatively balanced. We thus avoid the overhead associated with explicitly maintaining the balance. Because of this property, the structures described are referred to as guaranteed-random trees.

url: http://hdl.handle.net/1813/6672
date: 2007-04-23
creator: Allen, Stuart
viewed: 15
title: A Non-Type-Theoretic Definition of Martin-Lof's Types
abstract: It is possible to make a natural non-type-theoretic reinterpretation of Martin-Lof's type theory. This paper presents an inductive definition of the types explicitly defined in Martin-Lof's paper, Constructive Mathematics and Computer Programming. The definition is set-theoretically valid, and probably will be convincing to intuitionists as well. When this definition is used with methods set out in the author's thesis, the inference rules presented in Martin-Lof's paper can be shown to be valid under the non-type-theoretic interpretation. This interpretation is non-trivial, that is, there are both inhabited types and empty types, and so, validity entails simple consistency. Finally, Michael Beeson has defined some recursive realizability models which we shall compare with the term model presented here, and we shall compare the methods of definition.

url: http://hdl.handle.net/1813/6673
date: 2007-04-23
creator: Widom, Jennifer

viewed: 13
title: Trace-Based Network Proof Systems: Expressiveness and Completeness
abstract: Most trace-based proof systems for networks of processes are known to be incomplete. Extensions to achieve completeness are generally complicated and cumbersome. In this thesis, we isolate the componenets of a trace-based network proof system that are necessary and sufficient to achieve relative completeness. We then consider the expressiveness required of any trace logic that encodes these componenets.

url: http://hdl.handle.net/1813/6674
date: 2007-04-23
creator: Krentel, Mark W.
viewed: 15
title: The Complexity of Optimization Problems
abstract: We study computational complexity theory and define a class of optimization problems called OptP (Optimization Polynomial Time), and we show that TRAVELLING SALESPERSON, KNAPSACK and 0-1 INTEGER LINEAR PROGRAMMING are complete for OptP. OptP is a natural generalization of NP (Nondeterministic Polynomial Time), but while NP only considers problems at the level of their yes/no question, the value of an OptP function is the optimal value of the problem. This approach enables us to show a deeper level of structure in these problems than is possible in NP.

url: http://hdl.handle.net/1813/6675
date: 2007-04-23
creator: Vander Zanden, Bradley T.;Pugh, William W.;Field, John H.;Chen, Wilfred Z.;Teitelbaum, Tim;Kozen, Dexter
viewed: 29
title: ALEX - an Alexical Programming Language
abstract: ALEX is an experimental language for high-level parallel programming. It is a testbed for exploring various non-traditional ways of expressing algorithmic ideas, making extensive use of high-resolution color graphics. The language itself is not a programming language in the traditional sense, since there is no lexical syntax. This paper discusses the basic design of the ALEX user interface.

url: http://hdl.handle.net/1813/6676
date: 2007-04-23
creator: Hoover, Roger
viewed: 15
title: Incremental Graph Evaluation
abstract: There are many computer applications that can be made incremental. After a small perturbation to the computation at hand, intermediate values of a previous evaluation can be used to obtain the result of the new computation. This requires less time than reevaluating the entire computation. We propose the use of a directed graph to represent computations that we wish to make incremental. This graph, called a dependency graph, represents an intermediate computation at each vertex. Edges between vertices represent the dependence of intermediate computations on other intermediate computations. A change to the computation can be represented as a change in the dependency graph.

url: http://hdl.handle.net/1813/6677
date: 2007-04-23
creator: Cleaveland, Walter Rance II
viewed: 82
title: Type-Theoretic Models of Concurrency

abstract: Sequential computation has well-understood correctness criteria and proof techniques for verifying programs, but the novelty and complexity of concurrent computation complicates a similar analysis of concurrenct programs. This thesis examines the use of a system for developing formal mathematics, the Nuprl proof development system, as a tool for reasoning about concurrency and ameliorating somewhat the complex chore of analyzing concurrent programs.

url: http://hdl.handle.net/1813/6678
date: 2007-04-23
creator: Vander Zanden, Bradley T.;Barford, Lee Alton
viewed: 36
title: Attribute Grammars in Constraint-based Graphics Systems
abstract: A constraint-based graphics system provides a flexible, intuitive framework for describing relationships among graphical objects in applications such as document preparation, font design, and solid modelling. This paper describes two constraint-based graphics systems, micro-COSM and the IDEAL Synthesizer, and their implementation in terms of attribute grammars. The implementation of these two systems is noteworthy since they represent the first interactive constraint-based graphics systems that are implemented using attribute grammars. Our experiences with attribute grammars suggest that they provide a powerful framework for representing constraints and extracting important semantic information such as the equations to be solved by the constraint solver. We discuss the advantages of using attribute grammars in constraint-based graphics and from our experiences make several observations about the way attribute grammars should be used.

url: http://hdl.handle.net/1813/6679
date: 2007-04-23
creator: Hartmanis, Juris
viewed: 13
title: Structural Complexity Column for the Bulletin of the European Association for Theoretical Computer Science
abstract: Abstract not Available

url: http://hdl.handle.net/1813/6680
date: 2007-04-23
creator: Hemachandra, Lane A.
viewed: 24
title: Counting in Structural Complexity Theory
abstract: Structural complexity theory is the study of the form and meaning of computational complexity classes. Complexity classes - P, NP, Probabilistic P, PSPACE, etc. - are formalizations of computational powers - deterministic, nondeterministic, probabilistic, etc. By examining the structure of and the relationships between these classes, we seek to understand the relative strengths of their underlying computational paradigms. This thesis studies counting in structural complexity theory. We are interested in complexity classes defined by counting and in the use of counting to explore the structure of these and other classes.

url: http://hdl.handle.net/1813/6681
date: 2007-04-23
creator: Johnstone, John K.
viewed: 24
title: The Sorting of Points Along an Algebraic Curve
abstract: The area of geometric modeling is concerned with the creation of computationally efficient models of

solid physical objects to facilitate their design, assembly, and analysis. In a geometric modeling system, a solid such as a robot hand or a coffee cup is modeled by a collection of points, curves, and surfaces. The sorting of points along an algebraic curve is an operation that arises frequently during the creation and manipulation of geometric models. This thesis presents a thorough investigation of sorting, including an evaluation of the two conventional methods of sorting and the presentation of a new and superior method.

url: http://hdl.handle.net/1813/6682
date: 2007-04-23
creator: Kadin, Jim
viewed: 30
title: Is One NP Question as Powerful as Two?
abstract: For any integer k, $P^{SAT[k]}$ is the class of languages accepted by deterministic polynomial time oracle machines that make at most k queries to an oracle for SAT. It is easy to see that $P^{SAT[1]} \subseteq D^{P} \subseteq P^{SAT[2]}$. We use a technique called oracle replacement to show that if D^{P} = co-D^{P}, then there is a sparse set S such that $\overline{SAT} \in NP^{S}$, there exist "small" NP machines that recognize initial segments of $\overline{SAT}$, and the polynomial time hierarchy (PH) is contained in Δ^{3}_{P}. Thus for deterministic polynomial time oracle machines, if one NP question is as powerful as two, then the PH collapses to Δ^{3}_{P}. As another application of oracle replacement, we show that if there exists a sparse set $S \in NP^{SAT}$ such that $\overline{SAT} \in NP^{S}$, then $PH \subseteq \Delta^{3}_{P}$. We also discuss how oracle replacement is a unifying principle for many of the results concerning sparse oracles for NP.

url: http://hdl.handle.net/1813/6683
date: 2007-04-23
creator: Kadin, Jim
viewed: 24
title: The Polynomial Time Hierarchy Collapses if the Boolean Hierarchy Collapses
abstract: The structure of the Boolean hierarchy (BH) is related to the polynomial time hierarchy (PH) by showing that if the BH collapses, then $PH \subseteq \Delta^{P}_{3}$.

url: http://hdl.handle.net/1813/6684
date: 2007-04-23
creator: Kozen, Dexter
viewed: 22
title: On Teaching Left-Handed Children to Write
abstract: It is argued that the handwriting method commonly taught to left-handed children is incorrect and harmful. The disadvantages of this method are noted, and a new method alleviating these disadvantages is proposed.

url: http://hdl.handle.net/1813/6685
date: 2007-04-23
creator: Rosen, Adam
viewed: 14
title: Colormap: A Color Image Quantizer
abstract: This paper is a preliminary report on color image quantization and the background, design and implementation of the colormap program. The purpose of colormap is to quantize 24-bit per pixel color images down to only 8 or 9 bits per pixel with minimal perceived image degradation.

url: http://hdl.handle.net/1813/6686
date: 2007-04-23
creator: Griffin, Timothy G.
viewed: 19
title: An Environment for Formal Systems
abstract: This report describes the Environment for Formal Systems, EFS, that allows a user to interactively define the syntax and inference rules of a formal system and to construct proofs in the defined system. The EFS supports two AUTOMATH-like formalisms for encoding logics: the Edinburgh Logical Framework and the Calculus of Constructions. Facilities are provided for the definition of notational abbreviations and the construction of goal-directed proofs. New goal-directed rules can be interactively defined and checked for validity. The EFS was implemented with the Cornell Synthesizer Generator.

url: http://hdl.handle.net/1813/6687
date: 2007-04-23
creator: Hempel, Christian;Coleman, Thomas F.
viewed: 13
title: Computing a Trust Region Step for a Penalty Function
abstract: We consider the problem of minimizing a quadratic function subject to an ellipsoidal constraint when the matrix involved is the Hessian of a quadratic penalty function (i.e., a function of the form $p(x) = f(x) + \frac{1}{2\mu} c(x)^{T} c(x))$. Most applications of penalty functions require $p(x)$ to be minimized for values of μ decreasing to zero. In general, as μ tends to zero the nature of finite precision arithmetic causes a considerable loss of information about the null space of the constraint gradients when $\nabla^{2}p(x)$ is formed. This loss of information renders ordinary trust region Newton's methods unstable and degrades the accuracy of the solution to the trust region problem. The algorithm of More and Sorenson [1983] is modified so as to be more stable and less sensitive to the nature of finite precision arithmetic in this situation. Numerical experiments clearly demonstrate the stability of the proposed algorithm.

url: http://hdl.handle.net/1813/6688
date: 2007-04-23
creator: Schneider, Fred B.;Alpern, Bowen
viewed: 81
title: Verifying Temporal Properties without using Temporal Logic
abstract: An approach to proving temporal properties of concurrent programs that does not use temporal logic as an inference system is presented. The approach is based on using Buchi automata to specify properties. To show that a program satisfies a given property, proof obligations are derived from the Buchi automaton for that property. These obligations are discharged by devising suitable invariant assertions and variant functions for the program. The approach is shown to be sound and relatively complete. A mutual exclusion protocol illustrates its application.

url: http://hdl.handle.net/1813/6689
date: 2007-04-23
creator: Schmuck, Frank B.;Joseph, Thomas A.;Birman, Kenneth P.
viewed: 35
title: ISIS DOCUMENTATION: RELEASE 1
abstract: ABSTRACT NOT AVAILABLE

url: http://hdl.handle.net/1813/6690
date: 2007-04-23

creator: Chu, Clare
viewed: 14
title: Comparison of Two-Dimensional FFT Methods on the Hypercube : The Choice Between Strips and Patches
abstract: Complex two-dimensional FFT's up to size 256 X 256 points were implemented on the Intel iPSC/System 286 hypercube with emphasis on comparing the effects of data mapping, data transposition, and distributed FFT's. Comparison is based on partitioning the data into either strips or patches and three distinct methods are discussed. Of the two strips methods, the Transpose-Split implementation involves local independent FFT computations in both directions with an intervening transpose, while the Local-Distributed method performs local FFT's in one direction followed by distributed FFT's in the other. The patch or Block method partitions the matrix in submatrices and maps the (i,j)th block into node $i \hat j$ ($\hat$ denoting concatenation of binary numbers). Both the row-wise FFT's and the column-wise FFT's require inter-node communication for the distributed butterfly computations. Timing results show that on the Intel iPSC/System 286, there is hardly a difference between the three methods. This is due primarily to the inadequacies of Intel communication handling and its inability to overlap communication and computation as well as a lack of vector boards. A model follows where several important factors such as vectorization and communication complexity are considered. While timing results show that on a vectorized hypercube with ideal synchronization of communication and computation the Block method is asymptomatically the fastest. The conclusion is that this problem is highly system dependent and therefore no sweeping recommendations can be made.

url: http://hdl.handle.net/1813/6691
date: 2007-04-23
creator: Landau, Susan;Kozen, Dexter;Von zur Gathen, Joachim
viewed: 38
title: Functional Decomposition of Polynomials
abstract: ABSTRACT NOT AVAILABLE

url: http://hdl.handle.net/1813/6692
date: 2007-04-23
creator: Hemachandra, Lane A.
viewed: 12
title: On Parity and Near-Testability: $P^{A} \neq NT^{A}$ With Probability 1
abstract: The class of near-testable sets, NT, was defined by Goldsmith, Joseph, and Young. They noted that $P \subseteq NT \subseteq PSPACE$, and asked whether P=NT. This note shows that NT shares the same m-degree as the parity-based complexity class $\bigoplus P$ (i.e., $NT\equiv^{p}_{m} \oplus P$) and uses this to prove that relative to a random oracle $A, P^{A} \neq NT^{A}$ with probability one. Indeed, with probability one, $NT^{A} - (NP^{A} \bigcup coNP^{A}) \neq 0$.

url: http://hdl.handle.net/1813/6693
date: 2007-04-23
creator: El Abbadi, Amr
viewed: 83
title: A Paradigm for Concurrency Control Protocols for Distributed Databases
abstract: In this thesis, we present a paradigm for concurrency control protocols for distributed replicated databases. This paradigm presents a framework for both developing and analyzing concurrency control protocols, especially those that are designed to handle partitioning failures. Any concurrency control protocol that is an instance of the paradigm must be correct. We show that several known protocols are instances

of this paradigm. Consequently, these seemingly unrelated protocols can now be compared and their understanding is simplified. We also present two new concurrency control protocols: the virtual partitions protocol and the accessibility thresholds protocol. Both protocols allow the reading and writing of data in spite of site and communication failures, even when these failures lead to network partitioning. In neither protocol is it ever necessary for a read operation to physically access more than one copy, which makes these protocols desirable for applications where efficient read operations are necessary. The accessibility thresholds protocol provides the database designer with much flexibility in trading off the cost of executing operations and the availability of data objects. Unlike previous protocols, the cost of executing operations on an object is separated from the read and write availability of that object.

url: http://hdl.handle.net/1813/6694
date: 2007-04-23
creator: Prins, Jan F.
viewed: 27
title: Partial Implementations in Program Derivation
abstract: A partial implementation of an abstract notation provides an implementation for some of the notations operations on some of the values in the notation. A collection of partial implementations of a fixed notation -differing in the selection of values and operations implemented- caters to different patterns of usage of the notation in individual programs. Partial implementations of a general mathematical notation are more appropriate to the formal development of programs than the more familiar paradigm of abstract data types with complete implementations. Furthermore, partial implementations provide the only realistic account of the implementation of finite machinery of many familiar mathematical notations. From a practical point of view, partial implementations of a fixed notation exhibit great reusability and provide a convenient approach to early prototyping in program development. The incorporation of mathematical notations into a programming system is studied, with particular regard to the formal development of programs in the style of Dijkstra and Gries. A new notion of encapsulation is presented to define partial implementations and a predicate-transformer characterization of implementation correctness is defined. The implementation correctness criterion simplifies and extends the original data-type implementation criterion of Hoare, generalizes implementation criterion for algebraic abstract data types, and accommodates the implementation of non-deterministic operations. Different variables of the same type may have different representations and implementations of operations within the same program. Not all implementations are adequate in a given program, so syntactic and semantic conditions are given to ensure that a proposed implementation of a variable is adequate.

url: http://hdl.handle.net/1813/6695
date: 2007-04-23
creator: Johnson, Ralph E.
viewed: 26
title: Symmetry in Distributed Systems
abstract: A distributed computing system can be considered to be symmetric because of its topology or because of its behavior. Unfortunately, these different definitions can categorize the same system differently. The choice of definition becomes important when one is trying to prove that certain problems, such as the Dining Philosophers problem, cannot be solved on symmetric distributed computing systems. Since the behavioral definitions are based on the possible patterns of computation, it is much easier to use them for these proofs. However, behavioral definitions admit straightforward decision procedures. This thesis presents a new definition for symmetry, called similarity, that, while based on behavior of processes, is decidable given the initial configuration of the system. The decision procedure for similarity depends partly on the model of computation being used, but a way to discover these decision procedures is given

and is used to find decision procedures for a wide range of models of distributed computation. Distributed versions of these decision procedures form the basis of solutions to the problem of selecting a process as the leader. The thesis also shows how to use similarity to compare the relative power of different models of computation, including models with shared variables with and without locking, models using synchronous and asynchronous message-passing, models making different assumptions about fairness, and models based on probabilistic techniques.

url: http://hdl.handle.net/1813/6696
date: 2007-04-23
creator: Zmijewski, Earl
viewed: 17
title: Sparse Cholesky Factorization on a Multiprocessor
abstract: Systems of linear equations of the form $Ax = b,$ where A is a large sparse symmetric positive definite matrix, arise frequently in science and engineering. The sequential computation of the solution vector x is well understood and many algorithms for this problem employ the following steps. First, try to reorder the rows and columns of A so that its Cholesky factor L is sparse. Next, determine the structure of L by symbolically factoring A and allocate storage for L. Finally, numerically factor A and then compute x by solving the triangular systems $Ly=b$ and $L^{T}x=y$. In this thesis, we present parallel algorithms for the different steps of this computation. We design our algorithms for message-passing multiprocessors. The algorithms limit communication overhead and can solve problems that are too large to reside in the memory of any single processor. We provide numerical results based upon an implementation on an Intel hypercube. We begin by presenting a parallel column-oriented sparse numeric Cholesky factorization algorithm. Then, viewing A as a graph, we develop a parallel graph partitioning algorithm that we use to order the columns of A and partition them among the processors. In addition to producing a sparse L, the resulting ordering and partitioning allows for parallelism and reduces communication overhead during the remaining phases of the computation. The parallel graph partitioning algorithm is based on the sequential Kernighan-Lin algorithm for finding small edge separators. Since the computation of a particular column of L may depend on columns stored on several processors, the processors cannot operate independently. The elimination forest of A captures these dependencies and allows for efficient numeric factorization. We provide a parallel algorithm for computing the forest and prove its correctness. We also develop a parallel row-oriented symbolic factorization algorithm that uses the elimination forest. Finally, we describe fast parallel forward and backward triangular solve algorithms. These algorithms solve for the components of x requiring information from other processors by using a variant of Li and Coleman's dense triangular solve algorithms.

url: http://hdl.handle.net/1813/6697
date: 2007-04-23
creator: Toueg, Sam;El Abbadi, Amr
viewed: 77
title: Maintaining Availability in Partitioned Replicated Databases
abstract: In a replicated database, a data item may have copies residing on several sites. A replica control protocol is necessary to ensure that data items with several copies behave as if they consist of a single copy, as far as users can tell. We describe a new replica control protocol that allows the accessing of data in spite of site failures and network partitioning. This protocol provides the database designer with a large degree of flexibility in deciding the degree of data availability, as well as the cost of accessing data.

url: http://hdl.handle.net/1813/6698
date: 2007-04-23

creator: Koo, Richard
viewed: 33
title: Techniques for Simplifying the Programming of Distributed Systems
abstract: It is difficult to design and verify distributed programs that execute correctly despite transient processor failures, or despite variable and unpredictable processor speeds and message transmission times. In this thesis, we describe a checkpointing/rollback mechanism that allows programmers to write distributed programs with the simplifying assumption that processors do not fail, and then run these programs correctly on systems with transient processor failures. We also describe a translation mechanism that can be used to write programs with the simplifying assumptions that processors execute in synchronized steps and messages take exactly one step to arrive, and then run these programs correctly on systems that violate these assumptions. Both mechanisms are transparent to the programmer, and they can be applied to solve a large class of problems.

url: http://hdl.handle.net/1813/6699
date: 2007-04-23
creator: Schneider, Fred B.
viewed: 81
title: Understanding Protocols for Byzantine Clock Synchronization
abstract: All published fault-tolerant clock synchronization protocols are shown to result from refining a single paradigm. This allows the different clock synchronization protocols to be compared and permits presentation of a single correctness analysis that holds for all. The paradigm is based on a reliable time source that periodically causes events; detection of such an event causes a processor to reset its clock. In a distributed system, the reliable time source can be approximated by combining the values of processor clocks using a generalization of a "fault-tolerant average", called a convergence function. The performance of a clock synchronization protocol based on our paradigm can be quantified in terms of the two parameters that characterize the behavior of the convergence function used: accuracy and precision.

url: http://hdl.handle.net/1813/6700
date: 2007-04-23
creator: Vazirani, Vijay V.
viewed: 81
title: NC Algorithms for Computing the Number of Perfect Matchings in $K_{3,3}$-free Graphs and Related Problems
abstract: We show that the problem of computing the number of perfect matchings in $K_{3,3}$-free graphs is in NC. This stands in striking contrast with the #P-completeness of counting the number of perfect matchings in arbitrary graphs. As corollaries we obtain NC algorithms for checking if a given $K_{3,3}$-free graph has a perfect matching and if it has an EXACT MATCHING. Our result also opens up the possibility of obtaining an NC algorithm for finding a perfect matching in $K_{3,3}$-free graphs.

url: http://hdl.handle.net/1813/6701
date: 2007-04-23
creator: Hartmanis, Juris
viewed: 15
title: The Collapsing Hierarchies
abstract: No Abstract Available

url: http://hdl.handle.net/1813/6702
date: 2007-04-23

creator: Van Loan, Charles
viewed: 32
title: A Unitary Method for the ESPRIT Direction-of-Arrival Estimation Algorithm
abstract: ESPRIT is an interesting new method for solving the Direction-of-Arrival estimation problem. It involves some rather tricky matrix manipulations. We show how these calculations can be carried out using only unitary transformations of the data. No inverses or cross-products are required making the new method extremely robust.

url: http://hdl.handle.net/1813/6703
date: 2007-04-23
creator: Van Loan, Charles
viewed: 30
title: Matrix Computations and Signal Processing
abstract: The interactions between the signal processing and matrix computation areas is explored by examining some subspace dimension estimation problems that arise in a pair of direction-of-arrival algorithms: MUSIC and ESPRIT. We show that the intelligent handling of these numerical problems requires a successful intermingling of perturbation theory, sensible problem formulation, and reliance upon unitary matrix methods.

url: http://hdl.handle.net/1813/6704
date: 2007-04-23
creator: Van Loan, Charles;Schreiber, Robert S.
viewed: 22
title: A Storage Efficient WY Representation for Products of Householder Transformations
abstract: A product $Q = P_{1} \cdots P_{r}$ of m-by-m Householder matrices can be written in the form $Q = I + WY^{T}$ where W and Y are each m-by-r. This is called the WY representation of Q. It is of interest when implementing Householder techniques in high-performance computing environments that "like" matrix-matrix multiplication. In this note we describe a storage efficient way to implement the WY representation. In particular, we show how the matrix Q can be expressed in the form $Q = I + YTY^{T}$ where $Y \epsilon R^{mxr}$ and $T \epsilon R^{rxr}$ with T upper triangular. Usually r less than less than m and so this "compact" WY representation requires less storage. When compared with the recent block-reflector strategy proposed by Schreiber and Parlett the new technique still has a storage advantage and involves a comparable amount of work.

url: http://hdl.handle.net/1813/6705
date: 2007-04-23
creator: Gries, David
viewed: 16
title: Complete, Trace-based, Network Proof Systems: An Advisor's Perspective
abstract: NO ABSTRACT AVAILABLE

url: http://hdl.handle.net/1813/6706
date: 2007-04-23
creator: Allen, Stuart
viewed: 18
title: A Non-Type-Theoretic Semantics For Type-Theoretic Language
abstract: Since 1970 several methods have been proposed for using formal systems of constructive logic as programming languages. One prominent approach is based upon systems of computationally significant terms

which either bear or are assigned types; these systems are essentially lambda calculi or combinatory logics in which either the terms are explicitly typed or else types are assigned to untyped terms in the manner of Curry. This thesis concerns two such systems, namely, Martin-Lof's intuitionistic type theory of 1979, and a variation of that theory upon which Nuprl is based. Nuprl is a system implemented at Cornell for developing functional programs and constructive proofs. The expressive machinery of these theories can be given a rather natural non-type-theoretic semantics that is not inherently constructive and yet closely follows the semantical explanation of type theory. The principal content of this thesis is a careful development of such a semantic reinterpretation with the intention of making the bulk of type-theoretic practice, of the kind arising from the use of Nuprl and formalizations of Martin-Lof's theory, independent of its original type-theoretic and constructive basis. The reinterpretation opens the type-theoretic methodology of programming to nonconstructivists and others who may not subscribe to the intuitionistic theory of types, preserving the features of type-theoretic language that make it a suitable language for programming. Moreover, the natural structural similarity between the type-theoretic concepts and their reinterpretations yields an analytic tool which may serve type-theorists as well. The body of this thesis has two phases. In the first, the semantic concepts of Martin-Lof's theory, including expressions, types, judgements of functionality, and universes, are reinterpreted. This phase culminates in a non-type-theoretic definition of the types explicitly defined in Martin-Lof's paper of 1979. The remainder of the thesis treats various topics of semantic significance, including the representation of propositions as types, the anticipation of new terms and types, certain "type-free" forms of inference, and a sort of "universe polymorphism." Finally, we shall reinterpret the semantics of Nuprl's judgements of functionality which differs radically from that of Martin-Lof's judgements in the use of assumptions.

url: http://hdl.handle.net/1813/6707
date: 2007-04-23
creator: Panangaden, Prakash;Widom, Jennifer
viewed: 31
title: Expressiveness Bounds for Completeness in Trace-Based Network Proof Systems
abstract: Network proof systems based on first-order specifications over channel traces are incomplete unless reasoning over the interleaving of communication events is permitted. Relatively complete trace-based proof systems using temporal logic have been described, but full temporal logic is more powerful than necessary. Using the interleaving approach, we isolate the expressiveness required of a relatively complete trace logic. A hierarchy of temporal logic subsets is then defined; a certain subset is shown to have necessary and sufficient expressive power for relative completeness.

url: http://hdl.handle.net/1813/6708
date: 2007-04-23
creator: Fagan, Joel L
viewed: 34
title: Experiments in Automatic Phrase Indexing For Document Retrieval:A Comparison of Syntactic and Non-Syntactic Methods
abstract: In order for an automatic information retrieval system to effectively retrieve documents related to a given subject area, the content of each document in the system's database must be represented accurately. This study examines the hypothesis that better representations of document content can be constructed if the content analysis method takes into consideration the syntactic structure of document and query texts. Two methods of automatically generating phrases for use as content indicators have been implemented and tested experimentally. The non-syntactic (or statistical) method is based on simple text characteristics such as word frequency and the proximity of words in text. The syntactic method uses augmented phrase structure rules (production rules) to selectively extract phrases from parse trees generated by an automatic syntactic

analyzer. Experimental results show that the effect of non-syntactic phrase indexing is inconsistent. For the five collections tested, increases in average precision ranged from 22.7% to 2.2% over simple, single term indexing. The syntactic phrase indexing method was tested on two collections. Precision figures averaged over all test queries indicate that non-syntactic phrase indexing performs significantly better than syntactic phrase indexing for one collection, but that the difference is insignificant for the other collection. More detailed analysis of individual queries, however, indicates that the performance of both methods is highly variable, and that there is evidence that syntax-based indexing has certain benefits not available with the non-syntactic approach. Possible improvements of both methods of phrase indexing are considered. It is concluded that the prospects for improving the syntax-based approach to document indexing are better than for the non-syntactic approach. The PLNLP system was used for syntactic analysis of document and query texts, and for implementing the syntax-based phrase construction rules. The SMART information retrieval system was used for retrieval experimentation.

url: http://hdl.handle.net/1813/6709
date: 2007-04-23
creator: Bischof, Christian H.
viewed: 19
title: Computing the Singular Value Decomposition on a Distributed System of Vector Processors
abstract: Jacobi methods for computing the singular value decomposition (SVD) of a matrix are ideally suited for multiprocessor environments due to their inherent parallelism. In this paper we show how a block version of the two-sided Jacobi method can be used to compute the SVD efficiently on a distributed architecture. We compare two variants of this method that differ mainly in the degree to which they diagonalize a given subproblem. The first method is a true block generalization of the scalar scheme in that each off-diagonal block is completely annihilated. The second method is a scalar Jacobi algorithm reorganized in such a manner that it conforms to the block decomposition of the problem. We have performed experiments on the Loosely Coupled Array Processor (LCAP) system at IBM Kingston which for the purposes of this article can be viewed as a ring of up to ten FPS-164/MAX array processors. These experiments show that the block Jacobi algorithm performs well on a distributed system, especially when the processors have vector processing hardware. As an example, we were able to achieve a sustained performance of 159 MFlops on a 960-by-720 SVD problem using eight processors. A surprising outcome of these experiments is that the determining factor for the performance of the algorithm on a high-performance architecture is the subproblem solver, not the communication overhead of the algorithm.

url: http://hdl.handle.net/1813/6710
date: 2007-04-23
creator: Mendler, Paul Francis
viewed: 13
title: Inductive Definition in Type Theory
abstract: Type theories can provide a foundational account of constructive mathematics, and for the computer scientist, they can also serve the dual roles of specification and programming languages. In the search for natural and expressive extensions to the NuPrl type theory, we are lead to consider forms of inductive and co-inductive definition. We realize these notions through the addition of two new type constructors, denoted $\mu and \nu$. This represents a step towards a more expressive theory, without adopting a completely impredicative notion of type. With these constructors we can define all the common inductive data types, from natural numbers to infinite trees. Through the propositions-as-types principle, these type constructors yield inductively defined propositions. The induction principle associated with the μ types lets us define well-founded recursive functions, and dual principle for the ν types lets us inductively define their "infinite" elements. We present another induction principle for the μ types which takes advantage of

the information hiding properties of the $\{ __ | __ \}$ type, and can be used to define an unbounded search operator, or more generally, to compute not with elements of the μ type, but under the assumption of its inhabitation. After presenting the proof rules for these new type constructors we give a semantic account, from which intuitionistic consistency is a consequence. First, we consider the the question of inductive types in the simpler setting of the second-order lambda calculus, where we prove a strong normalization property. We also consider typing terms in the presence of type constraints, and present a condition on the constraints (of polynomial complexity in the size of the constraints) for determining if the terms will be strongly normalizable or there will be a diverging typed term. Second, we develop a semantic account of the basic type theory, then relativize it to account for the impredicativity inherent in the definition of the new type constructors. We also show how this model can justify other impredicative type constructors, such as an impredicative type abstraction operation.

url: http://hdl.handle.net/1813/6711
date: 2007-04-23
creator: Donahue, James E.
viewed: 13
title: On the Semantics of "Data Type"
abstract: This paper considers the general problem of specifying the meaning of programming languages which include "data type definition facilities". The fundamental question posed in attempting to define such languages is: "what meaning should be given to a data type definition," or more simply, "what does data type mean?". In this paper we describe a new approach to defining the meaning of data types and give its application to the definition of a typed lambda calculus extension. We also prove a theorem stating that our language is "strongly typed".

url: http://hdl.handle.net/1813/6712
date: 2007-04-23
creator: Gries, David
viewed: 29
title: What Programmers Don't and Should Know
abstract: ABSTRACT UNAVAILABLE

url: http://hdl.handle.net/1813/6713
date: 2007-04-23
creator: Nicolau, Alexandru;Aiken, Alexander
viewed: 23
title: Perfect Pipelining: A New Loop Parallelization Technique
abstract: Parallelizing compilers do not handle loops in a satisfactory manner. Fine-grain transformations capture irregular parallelism inside a loop body not amenable to coarser approaches but have limited ability to exploit parallelism across iterations. Coarser methods sacrifice irregular forms of parallelism in favor of pipelining (overlapping) iterations. In this paper we present a new transformation, Perfect Pipelining, that bridges the gap between these fine-and coarse-grain transformations while retaining the desirable features of both. This is accomplished even in the presence of conditional branches and resource constraints. For loops typically encountered in practice, Perfect Pipelining achieves the effect of full loop unrolling coupled with fine-grain parallelization. To make our claims rigorous, we develop a formalism for parallelization. The formalism can also be used to compare transformations across computational models. As an illustration, we show that Doacross, a transformation intended for synchronous and asynchronous multiprocessors, can be expressed as a restriction of Perfect Pipelining.

url: http://hdl.handle.net/1813/6714
date: 2007-04-23
creator: Schneider, Fred B.
viewed: 30
title: Decomposing Properties into Safety and Liveness
abstract: A new proof is given that every property can be expressed as a conjunction of safety and liveness properties. The proof is in terms of first-order predicate logic.

url: http://hdl.handle.net/1813/6715
date: 2007-04-23
creator: Karasick, Michael S.;Hopcroft, John E.;Hoffmann, Christoph M.
viewed: 26
title: Robust Set Operations on Polyhedral Solids
abstract: We describe an algorithm for performing regularized set operations on polyhedral solids. Robustness of this algorithm is achieved by adding symbolic reasoning as a supplemental step that compensates for possible numerical uncertainty. The algorithm has been implemented, and our experience with the implementation is discussed.

url: http://hdl.handle.net/1813/6716
date: 2007-04-23
creator: Van de Snepscheut, Jan L.A.;Gries, David
viewed: 33
title: Inorder Traversal of a Binary Tree and its Inversion
abstract: ABSTRACT NOT AVAILABLE

url: http://hdl.handle.net/1813/6717
date: 2007-04-23
creator: Pingali, Keshav
viewed: 29
title: Lazy Evaluation and the Logic Variable
abstract: Functional languages can be enriched with logic variables to provide new computational features such as incremental construction of data structures. In this paper, we present a novel application for logic variables that highlights their importance: we argue that they are essential for efficient implementations of pure functional languages. This point is made by demonstrating that logic variables are required for explicating the process of demand propagation in lazy evaluation of functional programs. There are two applications of this result. For dataflow researchers, it offers a simple and efficient implementation of laziness on dataflow machines. For researchers investigating lazy graph reduction, it suggests new strictness analysis algorithms in which logic variables play an important role.

url: http://hdl.handle.net/1813/6718
date: 2007-04-23
creator: Donald, Bruce Randall
viewed: 23
title: Towards Task Level Robot Programming
abstract: This paper summarizes our research efforts in robotics. The primary goal is to bring robotics science closer to its goal of task-level planning. We approach this goal through blend of theory, implementation, and experimentation. We have identified several key problem areas on which to concentrate, and are undertaking research on generating assembly strategies from task-level descriptions. Our projects focus on: Algorithmic

techniques for modelling geometric constraints, and the planning of robot motions using these constraints. The synthesis of compliant motion programs using the geometric constraints imposed by the task. The explicit modelling of uncertainty and error in sensing, control, and the shape of the manipulated parts. The development of a precise theory of Error Diagnosis and Recovery, and a method for generating sensor-based plans with built-in error detection and recovery. The heart of this research lies in a geometrical planning theory, for reasoning about and manipulating physical systems. We will develop this underlying theory, implement and test the theory in simulation, and conduct robotics laboratory experiments.

url: http://hdl.handle.net/1813/6719
date: 2007-04-23
creator: Donald, Bruce Randall;Canny, John
viewed: 23
title: Simplified Voronoi Diagrams
abstract: We are interested in Voronoi diagrams as a tool in robot path planning, where the search for a path in an r dimensional space may be simplified to a search on an $r-1$ dimensional Voronoi diagram. We define a Voronoi diagram V based on a measure of distance which is not a true metric. This formulation has lower algebraic complexity than the usual definition, which is a considerable advantage in motion planning problems with many degrees of freedom. In its simplest form, the measure of distance between a point and a polytope is the maximum of the distances of the point from the half-spaces which pass through faces of the polytope. More generally, the measure is defined in configuration spaces which represent rotation. The Voronoi diagram defined using this distance measure is no longer a strong deformation retract of free space, but it has the following useful property: any path through free space which starts and ends on the diagram can be continuously deformed so that it lies entirely on the diagram. Thus it is still complete for motion planning, but it has lower algebraic complexity than a diagram based on the euclidean metric.

url: http://hdl.handle.net/1813/6720
date: 2007-04-23
creator: Donald, Bruce Randall
viewed: 14
title: Planning Multi-Step Error Detection and Recovery Strategies
abstract: Robots must plan and execute tasks in the presence of uncertainty. Uncertainty arises from sensing errors, control errors, and uncertainty in the geometry of the environment. By employing a combined strategy of force and position control, a robot programmer can often guarantee reaching the desired final configuration from all the likely initial configurations. Such motion strategies permit robots to carry out tasks in the presence of significant uncertainty. However, compliant motion strategies are very difficult for humans to specify-for this reason we have been working on the automatic synthesis of motion strategies for robots. In previous work [D], we presented a framework for computing one-step motion strategies that are guaranteed to succeed in the presence of all three kinds of uncertainty. The motion strategies comprise sensor-based gross motions, compliant motions, and simple pushing motions. However, it is not always possible to find plans that are guaranteed to succeed. For example, if tolerancing errors render an assembly infeasible, the plan executor should stop and signal failure. In such cases the insistence on guaranteed success is too restrictive. For this reason we investigate Error Detection and Recovery (EDR) strategies. EDR plans will succeed or fail recognizably: in these more general strategies, there is no possibility that the plan will fail without the executor realizing it. The EDR framework fills a gap when guaranteed plans cannot be found or do not exist: it provides a technology for constructing plans that might work, but fail in a "reasonable" way when they cannot. We describe techniques for planning multi-step EDR strategies in the presence of uncertainty. Multi-step strategies are considerably more difficult to generate, and we introduce three approaches for their synthesis: these are the Push-forward Algorithm, Failure Mode Analysis, and

the Weak EDR Theory. We have implemented the theory in the form of a planner, called LIMITED, in the domain of planar assemblies.

url: http://hdl.handle.net/1813/6721
date: 2007-04-23
creator: Buckley, Chris;Salton, Gerard
viewed: 73
title: Term Weighting Approaches in Automatic Text Retrieval
abstract: The experimental evidence accumulated over the past 20 years indicates that textindexing systems based on the assignment of appropriately weighted single terms produce retrieval results that are superior to those obtainable with other more elaborate text representations. These results depend crucially on the choice of effective term weighting systems. This paper summarizes the insights gained in automatic term weighting, and provides baseline single term indexing models with which other more elaborate content analysis procedures can be compared.

url: http://hdl.handle.net/1813/6722
date: 2007-04-23
creator: Chu, Clare Yung-lei
viewed: 81
title: The Fast Fourier Transform on Hypercube Parallel Computers
abstract: The Fast Fourier Transform appears frequently in scientific computing. Therefore it is desirable to implement it efficiently on parallel computers. In this thesis, we investigate several different aspects of parallel Fast Fourier Transform implementation techniques for distributed-memory message-passing systems such as hypercube multiprocessors. We describe various Fast Fourier Transform algorithms using a matrix notation. An error analysis is presented that considers the effect of different methods used in the computation of the Fourier Transform coefficients as well as accumulated roundoff. New implementations of one and two-dimensional Fast Fourier Transforms are presented along with comparisons with existing methods. New algorithms for symmetric transforms are also developed and the results show excellent speedup when implemented on the Intel iPSC hypercube.

url: http://hdl.handle.net/1813/6723
date: 2007-04-23
creator: Stark, Eugene W.;Panangaden, Prakash
viewed: 23
title: Computations, Residuals, and the Power of Indeterminacy
abstract: We investigate the power of Kahn-style dataflow networks, with processes that may exhibit indeterminate behavior. Our main result is a theorem about networks of "monotone" processes, which shows: (1) that the input/output relation of such a network is a total and monotone relation; and (2) every relation that is total, monotone, and continuous in a certain sense, is the input/output relation of such a network. Now, the class of monotone networks includes networks that compute arbitrary continuous input/output functions, an "angelic merge" network, and an "infinity-fair merge" network that exhibits countably indeterminate branching. Since the "fair merge" relation is neither monotone nor continuous, a corollary of our main result is the impossibility of implementing fair merge in terms of continuous functions, angelic merge, and infinity-fair merge. Our results are established by applying the powerful technique of "residuals" to the computations of a network. Residuals, which have previously been used to investigate optimal reduction strategies for the λ-calculus, have recently been demonstrated by one of the authors (Stark) also to be of use in reasoning about concurrent systems. Here, we define the general notion of a "residual operation" on an automaton, and show how residual operations defined on the components of a network induce a certain

preorder $\extend$ on the set of computations of the network. For networks of "monotone port automata," we show that the "fair" computations coincide with $\extend$-maximal computations. Our results follow from this extremely convenient property.

url: http://hdl.handle.net/1813/6724
date: 2007-04-23
creator: Basin, David A.
viewed: 19
title: An Environment for Automated Reasoning About Partial Functions
abstract: We report on a new environment developed and implemented inside the Nuprl type theory that facilitates proving theorems about partial functions. It is the first such automated type-theoretic account of partiality. We demonstrate that such an environment can be used effectively for proving theorems about computability and for developing partial programs with correctness proofs. This extends the well-known proofs as programs paradigm to partial functions.

url: http://hdl.handle.net/1813/6725
date: 2007-04-23
creator: Nicolau, Alexandru;Karplus, Kevin
viewed: 34
title: ROPE: A New Twist in Computer Architectures
abstract: Supercomputer architectures are not as fast as logic technology allows because memories are slow than the CPU, conditional jumps limit the usefulness of pipelining and prefetching mechanisms, and functional-unit parallelism is limited by the speed of hardware scheduling. We propose a supercomputer architecture called Ring Of Prefetch Elements (ROPE) that attempts to solve the problems of memory latency and conditional jumps without hardware scheduling. ROPE consists of a pipelined CPU or very-large-instruction-word data path with a new instruction prefetching mechanism that supports general multi-way conditional jumps. To get high-performance without scheduling hardware, ROPE relies on an optimizing compiler based on a global code transformation technique (Percolation Scheduling). This paper describes both the promise and the limitations of ROPE.

url: http://hdl.handle.net/1813/6726
date: 2007-04-23
creator: Yannakakis, Mihali;Vazirani, Vijay V.
viewed: 39
title: Pfaffian Orientations, 0/1 Permanents, and Even Cycles in Directed Graphs
abstract: The following issues in computational complexity remain imprecisely understood: the striking difference in the complexities of computing the permanent and determinant of a matrix despite their similar looking formulae, the complexity of checking if a directed graph contains an even length cycle, and the complexity of computing the number of perfect matchings in a graph using Pfaffian orientations. Via polynomial time equivalences, we show inter-relationships among these issues.

url: http://hdl.handle.net/1813/6727
date: 2007-04-23
creator: Li, Guangye;Coleman, Thomas F.
viewed: 18
title: Solving Systems of Nonlinear Equations on a Message-Passing Multiprocessor
abstract: We develop parallel algorithms for the solution of dense systems of nonlinear equations on a message-passing multiprocessor computer. Specifically, we propose a distributed finite-difference Newton

method, a multiple secant method, and a rank-1 secant method. Experimental results, obtained on an Intel hypercube, indicate that our methods exhibit good parallelism.

url: http://hdl.handle.net/1813/6728
date: 2007-04-23
creator: Schmuck, Frank B.;Marzullo, Keith
viewed: 18
title: Supplying High Availability with a Standard Network File System
abstract: This paper describes the design of a network file service that is tolerant to fail-stop failures and can be run on top of a standard network file service. The fault-tolerance is completely transparent, so the resulting file system can support the same set of heterogeneous workstations and applications as the chosen standard supports. To demonstrate that our design can provide the benefit of highly available files at a reasonable cost to the user, we implemented a prototype based on the Sun NFS protocol. Our approach is not limited to being used with NFS, however. The methodology we used should apply to any network file service built along the client-server model.

url: http://hdl.handle.net/1813/6729
date: 2007-04-23
creator: Donald, Bruce Randall
viewed: 13
title: The Complexity of Planar Compliant Motion Planning Under Uncertainty
abstract: We consider the computational complexity of planning compliant motions in the plane, given geometric bounds on the uncertainty in sensing and control. We can give efficient algorithms for generating and verifying compliant motion strategies that are guaranteed to succeed as long as the sensing and control uncertainties lie within the specified bounds. We also consider the case where a compliant motion plan is required to succeed over some parametric family of geometries. While these problems are known to be intractable in 3D, we identify tractable subclasses in the plane.

url: http://hdl.handle.net/1813/6730
date: 2007-04-23
creator: Donald, Bruce Randall
viewed: 16
title: On Planning: What is to be Done?
abstract: In this paper, we suggest research directions in domain-independent planning, addressing several open problems. In particular, we present: A modal truth criterion for the planning of overlapping actions with multiple agents. A "reduction" of planning in time to classical planning and a discussion of the relative power of the two methods. A formal framework towards describing planners with partial deductive closure (derived side effects). A discussion of failure analysis, error diagnosis, and recovery in domain-independent planning. An exploration of mathematical models of time (and space) proposed in naive physics. A discussion of the relative difficulty of classical planning, versus planning with a dense model of time.

url: http://hdl.handle.net/1813/6731
date: 2007-04-23
creator: Shanbhogue, Vasant;Panangaden, Prakash
viewed: 21
title: On the Expressive Power of Indeterminate Network Primitives
abstract: It is well known that a fair merge primitive leads to unbounded indeterminacy. In this paper we show that unbounded indeterminacy cannot express a fair merge in the setting of Kahn-style dataflow networks.

Intuitively, unbounded indeterminacy can be used to program a fair merge when it is guaranteed that data will always be available. But such schemes rely on predictive scheduling and they may fail if one of the inputs to the merge is a finite stream. It is reasonable to expect that if one were to add a primitive which "knows how to avoid bottom" (so called "angelic merge") then one could use this in conjunction with unbounded choice in order to produce a fair merge. Somewhat surprisingly, this expectation is incorrect as we show in this paper. The method we use to prove this is to identify a property which generalises monotonicity to indeterminate networks and then show that this property is possessed by determinate networks and by unbounded choice and by angelic merge but not by fair merge. It appears that there is a hierarchy of inequivalent indeterminate primitives all of which feature some form of unbounded indeterminacy.

url: http://hdl.handle.net/1813/6732
date: 2007-04-23
creator: Knoblock, Todd B.
viewed: 19
title: Metamathematical Extensibility in Type Theory
abstract: An automated theorem prover is said to be metamathematically extensible if a metalanguage can be employed by the user to soundly extend the reasoning capabilities of the system. In this thesis, we present a framework for metamathematical extensibility for a system based upon a type-theoretic logic, the Nuprl system. Using this framework, the user can construct programs called proof tactics that may be used to provide new reasoning capabilities for the logic. These proof tactics can encode reasoning methods as simple asd a derived rule of inference or as ambitious as a theorem prover. The design of the framework ensures that all proof tactics are correct. A formal metalanguage called Metaprl is defined that represents the proof theory of Nuprl in a natural and computationally-oriented fashion. The logic of Metaprl is an extension of the constructive type theory of Nuprl. Type theories like Nuprl and Metaprl are distinguished by the uniform treatment of computations (programs) and logical propositions and by rich languages for expressing computations. In Metaprl, formal specifications for tactics may be written and formally correct tactics extracted from the proofs of the specification. Three classes of tactics are defined: complete tactics, partial tactics, and search tactics. Complete tactics are analogous to derived axioms for the Nuprl logic. Partial tactics are analogous to derived rules of inference. Search tactics are analogous to the procedural tactics of LCF and the current Nuprl system. Examples from each class of tactics are presented. There are a number of advantages to using a formal logic as a metalanguage for metamathematical extensibility. System-implemented reflection principles guarantee that the framework is a conservative extension of Nuprl. The expressiveness of the Metaprl logic allows the validity of tactics to be ensured. Often it is not even necessary to execute tactics since they have been proved correct and all that is required is that a proof exists; the exact form for the proof is not needed. This can result in substantial computational savings. Finally, the construction of a metalanguage for metamathematical extensibility for Nuprl is generalized to a hierarchy of metalanguages, each logic providing for metamathematical extensibility of the preceeding logic.

url: http://hdl.handle.net/1813/6733
date: 2007-04-23
creator: Hafsteinsson, Hjalmtyr;Gilbert, John R.
viewed: 75
title: Parallel Cholesky Factorization of Sparse Matrices
abstract: We describe a parallel algorithm for finding the Cholesky factorization of a sparse symmetric positive definite matrix A. The algorithm runs in $O(h \log n)$ time with $m*$ processors, where h is the height of A's elimination tree. We then show how to speed up that algorithm, so that it runs in $O(\log n \log^{2}h)$ time with increased number of processors. Also, we present corresponding parallel algorithms for forward solve and back solve with the same time bounds and similar processor bounds.

url: http://hdl.handle.net/1813/6734
date: 2007-04-23
creator: McCurley, E. Robert
viewed: 19
title: An Assertional Characterization of Serializability and Locking
abstract: The problem of synchronizing transactions in a database system so that concurrent execution transforms the system from one consistent state to another is called the Concurrency Control Problem. Over the past 20 years, a property of concurrent execution called serializability has evolved as a universal paradign for colving the Concurrency Control Problem. Up until now, most work on serializability has been characterized by an emphasis on sequences of operations. Researchers studying programming logics and methodologies have developed a different approach to characterizing the semantics of concurrent programs. This approach is called assertional reasoning, and emphasizes the system state instead of sequences of operations. This dissertation describes the extension of the formalisms and tools of assertional reasoning to the Concurrency Control Problem. Proposed is a definition of serializability that generalizes previous definitions in many respects. Two methods are described by which this definition of serializability can be specified in an assertional programming logic using formulas called proof outlines. As a consequence of specifying serializability with proof outlines, it becomes possible to formally verify serializability. The use of an assertional programming logic eliminates the need to explicitly consider transaction interleavings, simplifying verfication. Another consequence of specifying serializability with proof outlines is the ability to derive synchronization protocols for serializability. This possibility is realized in the form of a method for deriving locking protocols from assertional specifications. The method is based on a novel view of locking, in which locks held by transactions reflect properties of the system state. Using this method, semantic information available during the derivation process can be used to obtain locking protocols permiting greater concurrency among transactions than locking protocols obtained by more traditional methods. Examples are given throughout the dissertation to illustrate the methods described.

url: http://hdl.handle.net/1813/6735
date: 2007-04-23
creator: Donald, Bruce Randall
viewed: 20
title: A Geometric Approach to Error Detection and Recovery for Robot Motion Planning With Uncertainty
abstract: Robots must plan and execute tasks in the presence of uncertainty. Uncertainty arises from sensing errors, control errors, and uncertainty in the geometric models of the environment and of the robot. The last, which we will call model uncertainty, has received little previous attention. In this paper we present a formal framework for computing motion strategies which are guaranteed to succeed in the presence of all three kinds of uncertainty. We show that it is effectively computable for some simple cases. The motion strategies we consider include sensor-based gross motions, compliant motions, and simple pushing motions. We show that model uncertainty can be represented by position uncertainty in a generalized configuration space. We describe the structure of this space, and how motion strategies may be planned in it. It is not always possible to find plans that are guaranteed to succeed. In the presence of model error, such plans may not even exist. For this reason we investigate Error Detection and Recovery (EDR) strategies. We characterize what such strategies are, and propose a formal framework for constructing them. Our theory represents what is perhaps the first systematic attack on the problem of error detection and recovery based on geometric and physical reasoning.

url: http://hdl.handle.net/1813/6736

date: 2007-04-23
creator: Neirynck, Anne
viewed: 23
title: Static Analysis of Aliases and Side Effects in Higher-Order Languages
abstract: In recent years, there has been substantial interest in the development of programming languages for new parallel architectures. A basic design conflict arises because languages with simple semantics tend to use storage inefficiently, whereas languages allowing the programmer to access storage explicitly are difficult to analyze. We present a compile-time estimation scheme for determining whether an expression in an imperative language either uses or updates the store. We also determine the aliasing behavior of expressions and in general, we can tell whether the evaluation of two expressions interfere. Current interprocedural dataflow techniques for aliasing and side effect inference are valid for first-order languages. Our inference schemes provide information about aliasing and side effects in a higher-order expression language with call-by-value semantics. The higher order character of the language represents only a partial obstacle. On the other hand, the presence of l-valued expressions has the consequence that aliasing information must be computed for all expressions, and cannot be represented as a relation among identifiers. Furthermore, the introduction of pointers make aliasing and side effects flow-dependent properties. Abstract interpretation techniques allow us to define compositional static inference schemes for aliasing and side effects, which can be proved sound with respect to the standard semantics by structural induction. The abstract interpretation functions are easy to modify, in case a different type of information is requested. We also discuss how different language features may affect the static analyses, simplifying them or making them untractable. The abstract interpretation functions implicitly define static inference algorithms, which can easily be implemented by an attribute grammar, or any other tool capable of performing computations on the abstract syntax tree. The accuracy of these algorithms is better than for the dataflow ones, because we make use of control flow information. Our algorithms also compare favorably in complexity, but the dataflow approach is probably cheaper in most practical settings. In addition, our schemes can give information even in the presence of dynamically allocated data structures.

url: http://hdl.handle.net/1813/6737
date: 2007-04-23
creator: Marsh, Dorothy;Gries, David
viewed: 25
title: The 1986-1987 Taulbee Survey Report: The Computing Research Board's Survey on the Production and Employment of Ph.D.'s and Faculty in Computer Science and Engineering
abstract: ABSTRACT NOT AVAILABLE

url: http://hdl.handle.net/1813/6738
date: 2007-04-23
creator: Buckley, Chris;Salton, Gerard
viewed: 27
title: Improving Retrieval Performance by Relevance Feedback
abstract: Relevance feedback is an automatic process, introduced over 20 years ago, designed to produce query formulations following an initial retrieval operation. The principal relevance feedback methods described over the years are examined briefly, and evaluation data are included to demonstrate the effectiveness of the various methods. Prescriptions are given for conducting text retrieval operations iteratively using relevance feedback.

url: http://hdl.handle.net/1813/6739
date: 2007-04-23

creator: Howe, Douglas J.
viewed: 15
title: Computational Metatheory in Nuprl
abstract: This paper describes an implementation within Nuprl of mechanisms that support the use of Nuprl's type theory as a language for constructing theorem-provind procedures. The main componenet of the implementation is a large library of definitions, theorems and proofs. This library may be regarded as the beginning of a book of formal mathematics; it contains the formal development and explanation of a useful subset of Nuprl's metatheory, and of a mechanism for translating results established about this embedded metatheory to the object level. Nuprl's rich type theory, besides permitting the internal development of this partial reflection mechanism, allows us to make abstractions that drastically reduce the burden of establishing the correctness of new theorem-proving procedures. Our library includes a formally verified term-rewriting system.

url: http://hdl.handle.net/1813/6740
date: 2007-04-23
creator: Kadin, Jim
viewed: 28
title: Restricted Turing Reducibilities and the Structure of the Polynomial Time Hierarchy
abstract: The polynomialtime many-one and Turing reducibilities, Karp and Cook reducibilities respectively, play an major role in computational complexity theory, particularly in the study of such classes as P, NP, the polynomial time hierarchy (PH), and PSPACE. In this thesis, we consider polynomial time Turing reducibilities with various restricted oracle access mechanisms such as restrictions on the number of queries allowed or requiring that all queries be made at once, in parallel. Such restrictions are related to polynomial time truth-table and bounded truth-table reducibilities. We focus mostly on classes of languages reducible to NP sets via these reducibilities. For any integer $k, P^{NP[k]}$ is the class of languages recognizable in polynomial time with k queries to an oracle from NP. The query hierarchy, QH, is $\bigcup_{k} P^{NP[k]}$. The class $P^{NP[\log n]}$ is the set of languages recognizable with $O(\log n)$ queries. Two related hierarchies are the Boolean hierarchy Boolean hierarchy (BH) and the parallel query hierarchy $(\rm QH_{||})$. The BH, QH, and $\rm QH_{||}$ intertwine to form a rich structure within P^{NP}: NP $\cup$ co-NP $\subseteq P^{NP[1]} \subseteq P^{NP[2]} \subseteq \cdots \subseteq QH = QH_{||} = BH \subseteq P^{NP[\log n]} \subseteq P^{NP}.$ We show that the structure of these classes is closely tied to the existence of nonuniform algorithms for NP and co-NP languages and to the structure of the PH as a whole. We improve Mahaney's result for sparse Turing-complete sets for NP by showing that if there exists a sparse set $S \in NP$ such that co-NP $\subseteq NP^{S}$, then PH $\subseteq P^{NP[\log n]}$. We show that there are relativized worlds where this collapse is optimal, and thus we provide a clear distinction between the effects of a sparse many-one-complete set and a sparse Turing-complete set for NP. We prove that if the BH, QH, or $QH_{||}$ collapses, for instance, if $D^{P} =$co-D^{P} or if $P^{NP[k]} = P^{NP[k+1]}$, then there exists a sparse set S such that co-NP $\subseteq NP^{S}, and therefore the PH collapses to $P^{NP^{NP}[\log n]}$, a subclass of the Δ^{P}_{3} level of the PH. Hence the structure of unsatisfiable Boolean formulas, co-NP, and the whole PH are all closely related to the structure of the BH and to the issue of how deterministic polynomial time algorithms can access the information from NP oracles.

url: http://hdl.handle.net/1813/6741
date: 2007-04-23
creator: Griffin, Timothy G.
viewed: 15
title: A Formal Account of Notational Definition
abstract: In the course of developing a mathematical theory or proof it is a common practice to introduce

new notation to represent notation that is previously understood. This paper presents a formal account that is intended to model the practice of introducing and using notational (abbreviative) definitions. The aim of this work is a pragmatic one: to provide a framework useful in the design and implementation of secure proof system interfaces which accommodate, as much as possible, conventional mathematical practice. A typed λ-calculus is used to represent expressions of a given object language. A new type of equation, called a Δ-equation, is introduced to model conventional definitional equations.

url: http://hdl.handle.net/1813/6742
date: 2007-04-23
creator: Khuller, Samir
viewed: 32
title: Extending Planar Graph Algorithms to K_{3},$_{3}$-free Graphs
abstract: For several problems, restricting attention to special classes of graphs has yielded better algorithms. In particular, restricting to planar graphs yields efficient parallel algorithms for several graph problems. In this paper we extend these algorithms to K_{3},$_{3}$-free graphs, showing that the restriction of planarity is not important. The three problems dealt with are: graph coloring, depth first search and maximal independent sets. As a corollary we show that K_{3},$_{3}$-free graphs are five colorable (this bound is tight).

url: http://hdl.handle.net/1813/6743
date: 2007-04-23
creator: Burkhardt, Bill;Gries, David
viewed: 24
title: Presenting an Algorithm to Find the Minimum Edit Distance
abstract: ABSTRACT UNAVAILABLE

url: http://hdl.handle.net/1813/6744
date: 2007-04-23
creator: Smith, Scott Fraser;Constable, Robert L.
viewed: 17
title: Computational Foundations of Basic Recursive Function Theory
abstract: The theory of computability, or basic recursive function theory as it is often called, is usually motivated and developed using Church's Thesis. Here we show that there is an alternative computability theory in which some of the basic results on unsolvability become more absolute, results on completeness become simpler, and many of the central concepts become more abstract. In this approach computations are viewed as mathematical objects, and the major theorems in recursion theory may be classified according to which axioms about computation are needed to prove them. The theory is a typed theory of functions over the natural numbers, and there are unsolvable problems in this setting independent of the existence of indexings. The unsolvability results are interpreted to show that the partial function concept, so important in computer science, serves to distinguish between classical and constructive type theories (in a different way than does the decidability concept as expressed in the law of excluded middle). The implications of these ideas for the logical foundations of computer science are discussed, particularly in the context of recent interest in using constructive type theory in programming.

url: http://hdl.handle.net/1813/6745
date: 2007-04-23
creator: Nicolau, Alexandru;Aiken, Alexander
viewed: 24
title: Optimal Loop Parallelization

abstract: Parallelizing compilers promise to exploit the parallelism available in a given program, particularly parallelism that is too low-level or irregular to be expressed by hand in an algorithm. However, existing parallelization techniques do not handle loops in a satisfactory manner. Fine-grain (instruction level) parallelization, or compaction, captures irregular parallelism inside a loop body but does not exploit parallelism across loop iterations. Coarser methods, such as doacross [9], sacrifice irregular forms of parallelism in favor of pipelining iterations (software pipelining). Both of these approaches often yield suboptimal speedups even under the best conditions-when resources are plentiful and processors are synchronous. In this paper we present a new technique bridging the gap between fine-and coarse-grain loop parallelization, allowing the exploitation of parallelism inside and across loop iterations. Furthermore, we show that, given a loop and a set of dependencies between its statements, the execution schedule obtained by our transformation is time optimal: no transformation of the loop based on the given data-dependencies can yield a shorter running time for that loop.

url: http://hdl.handle.net/1813/6746
date: 2007-04-23
creator: Xue, Jinyun;Gries, David
viewed: 45
title: The Hopcroft-Tarjan Planarity Algorithm, Presentation and Improvements
abstract: We give a rigorous, yet, we hope, readable, presentation of the Hopcroft-Tarjan linear algorithm for testing the planarity of a graph, using more modern principles and techniques for developing and presenting algorithms that have been developed in the past 10-12 years (their algorithm appeared in the early 1970's). Our algorithm not only tests planarity but also constructs a planar embedding, and in a fairly straightforward manner. The paper concludes with a short discussion of the advantages of our approach.

url: http://hdl.handle.net/1813/6747
date: 2007-04-23
creator: Buckley, Chris;Salton, Gerard
viewed: 20
title: On the Use of Spreading Activation Methods in Automatic Information Retrieval
abstract: Spreading activation methods have been recommended in information retrieval to expand the search vocabulary and to complement the retrieved document sets. The spreading activation strategy is reminiscent of earlier associative indexing and retrieval systems. Some spreading activation procedures are briefly described, and evaluation output is given, reflecting the effectiveness of one of the proposed procedures.

url: http://hdl.handle.net/1813/6748
date: 2007-04-23
creator: Hartmanis, Juris
viewed: 25
title: New Developments in Structural Complexity Theory
abstract: This paper discusses the scope and goals of structural complexity theory, describes some working hypothesis of this field and summarizes (some) recent development.

url: http://hdl.handle.net/1813/6749
date: 2007-04-23
creator: Khuller, Samir
viewed: 93
title: Parallel Algorithms for K_{5}-minor Free Graphs

abstract: For several problems, restricting attention to special classes of graphs has yielded better algorithms. In particular, restricting to planar graphs yields efficient parallel algorithms for several graph problems. In this paper, we extend these algorithms to K_{5}-minor free graphs, showing that the restriction of planarity is not important. The two problems dealt with are: graph coloring and maximal independent sets. We also show that K_{5}-minor free graphs are four colorable (this bound is tight). We also give an NC algorithms to recognize K_{5}-minor free graphs.

url: http://hdl.handle.net/1813/6750
date: 2007-04-23
creator: Vander Zanden, Bradley T.
viewed: 27
title: An Incremental Planning Algorithm for Ordering Equations in a Multilinear System of Constraints
abstract: Constraint equations are increasingly being used in interactive applications such as graphics, logical programming, and simulation that demand immediate feedback. To handle the performance requirements imposed by such systems constraint evaluators must use incremental satisfaction techniques. In this paper, we apply these techniques to noncircular, multilinear systems of equations. The constraint satisfaction process is divided into two phases--a planning phase that imposes a topological order on the equations and an execution phase that evaluates the equations. A planning algorithm is presented that incrementally updates this order each time the constraint system changes. This technique achieves significant performance improvements in large constraint systems since modifications generally perturb only a small portion of the topological order.

url: http://hdl.handle.net/1813/6751
date: 2007-04-23
creator: Preparata, Franco P.;Bilardi, Gianfranco
viewed: 19
title: Characterization of Associative Operations with Prefix Circuits of Constant Depth and Linear Size
abstract: The prefix problem consists of computing all the products $x_{0}x_{1} \ldots x_{j} (j = 0, \ldots,N - 1)$, given a sequence $x =(x_{0},x_{1},\ldots, x_{N-1})$ of elements in a semigroup. It is shown that there are unbounded fan-in and fan-out boolean circuits for the prefix problem with constant depth and linear size if and only if the Cayley graph of the semigroup does not contain a special type of cycle called monoidal cycle.

url: http://hdl.handle.net/1813/6752
date: 2007-04-23
creator: Hartmanis, Juris
viewed: 20
title: Structural Complexity Column: Some Observations About Relativization of Space Bounded Computations
abstract: NO ABSTRACT AVAILABLE

url: http://hdl.handle.net/1813/6753
date: 2007-04-23
creator: Shanbhogue, Vasant;Panangaden, Prakash
viewed: 21
title: McCarthy's Amb Cannot Implement Fair Merge
abstract: In this paper, we establish that fair merge is a powerful non-deterministic primitive that cannot be implemented in terms of other well-known primitives. It is well known that fair merge embodies countable

non-determinism. It is also been known that McCarthy's amb embodies countable non-determinism. It had not been known, however, whether amb could implement a fair merge. We show that countable non-determinism together with angelic non-determinism cannot implement fair merge even in dynamic dataflow networks. This settles a question posed by Abramsky over four years ago. Earlier work had suggested this result by showing that for static dataflow networks, one cannot implement fair merge using angelic merge.

url: http://hdl.handle.net/1813/6754
date: 2007-04-23
creator: Schneider, Fred B.
viewed: 22
title: Critical (of) Issues in Real-Time Systems: A Position Paper
abstract: NO ABSTRACT AVAILABLE

url: http://hdl.handle.net/1813/6755
date: 2007-04-23
creator: Valiant, Leslie;Paul, Wolfgang J.;Hopcroft, John E.
viewed: 38
title: On Time Versus Space
abstract: It is shown that every deterministic multitape Turing machine of time complexity t(n)/log t(n). Consequently, for tape constructable t(n), the class of languages recognizable by multitape Turing machines of time complexity t(n) is strictly contained in the class of languages recognized by Turing machines of tape complexity t(n). In particular, the context sensitive languages can not be recognized in linear time by deterministic multitape Turing machines. Keywords and phrases: Turing machines, time complexity, tape complexity.

url: http://hdl.handle.net/1813/6756
date: 2007-04-23
creator: Moore, Doug W.
viewed: 34
title: A Round-Robin Parallel Partitioning Algorithm
abstract: We develop parallel heuristic algorithms for partitioning the vertices of a graph into many groups of roughly equal size so that few edges connect vertices in different groups. The algorithms are intended for a message passing multiprocessor such as a hypercube, but only require the processors to be connected as a ring. They are based on the Kernighan-Lin algorithm, which finds a small edge separator that divides a graph into two pieces of equal size. Each of the algorithms features a parameter that allows for a trade-off between the potentially conflicting goals of reducing the number of edges between different groups and keeping the sizes of the groups roughly the same. These algorithms are applied to the problem of parallel block oriented Cholesky factorization. For an efficient factorization, we need a graph partition in which few pairs of vertex groups are interconnected; that is, we desire the quotient graph induced by the partition to be sparse. We discuss how standard partitioning heuristics may fail to give sparse quotient graphs and how they can be modified to correct this.

url: http://hdl.handle.net/1813/6757
date: 2007-04-23
creator: Joseph, Thomas A.;Birman, Kenneth P.
viewed: 23
title: Exploiting Replication
abstract: NO ABSTRACT AVAILABLE

url: http://hdl.handle.net/1813/6758
date: 2007-04-23
creator: Birman, Kenneth P.;oseph, Thomas A.
viewed: 19
title: Reliable Broadcast Protocols
abstract: NO ABSTRACT AVAILABLE

url: http://hdl.handle.net/1813/6759
date: 2007-04-23
creator: Widom, Jennifer;Hooman, Jozef
viewed: 40
title: A Temporal-Logic Based Compositional Proof System for Real-Time Message Passing
abstract: We consider a model of real-time network computation in which synchronous communication events occur during (possibly overlapping) intervals along a dense time scale. A specification language for processes and networks based on real-time temporal logic is defined. We give a simple proof system for network specifications when specifications for component processes are given. The proof system is then extended for a version of real-time CSP, under the assumption that all communications take some fixed length of time. Finally, it is shown that this proof system can be modified to allow varying communication lengths. All versions of the proof system are compositional, sound, and relatively complete.

url: http://hdl.handle.net/1813/6760
date: 2007-04-23
creator: Belmonte, Matthew
viewed: 17
title: A Practical Attribute Grammar Circularity Test
abstract: Efficient implementations for two optimisations to Knuth's attribute grammar circularity test are described. A new method for eliminating useless visits to productions is introduced. This improves upon a somewhat weaker mechanism introduced previously by Deransart et. al. Data structures and algorithms for graph covering and elimination of redundant unions are discussed and proven correct.

url: http://hdl.handle.net/1813/6761
date: 2007-04-23
creator: Khuller, Samir
viewed: 29
title: On Computing Graph Closures
abstract: Given a graph G, the closure of G is the graph obtained from G by recursively joining pairs of non-adjacent vertices whose degree sum is at least n until no such pair remains. We give an efficient algorithm to compute the closure using F-heaps. We also define the general closure of a graph and show that computing the general closure is P-complete with respect to log space transformations.

url: http://hdl.handle.net/1813/6762
date: 2007-04-23
creator: Aiken, Alexander
viewed: 23
title: Compaction-Based Parallelization
abstract: We present a transformational system for extracting parallelism from programs. Our transformations generate code for synchronous parallel computers, such as Very Long Instruction Word and pipelined

machines. The transformational system, which is based on percolation scheduling,is simple and uniform. There are four primitive transformations-three that perform code motion plus loop unrolling-from which all parallelizing algorithms are constructed. Our transformations are studied as a formal system. We define a formal measure of program improvement, and show that our transformations improve programs with respect to the measure. This formal approach allows a number of results on the expressive power of our transformations. Most importantly, we show that it is possible to compute limits of infinite sequences of the primitive transformations. This leads to a number of new algorithms for software pipelining, including: an algorithm that generates optimal code for loops without tests, an algorithm for software pipelining of multiple nested loops, and a general solution to the problem of software pipelining in the presence of tests. Using the four primitives and the limit-taking transformation, it is possible to express the classical parallelization techniques for vector, multiprocessor, and VLIW machines, such as doacross, the wavefront method, loop interchange, trace scheduling, and a simple form of vectorization. Thus, our transformational system can be viewed as a formal foundation for the area of parallelization.

url: http://hdl.handle.net/1813/6763
date: 2007-04-23
creator: Plassmann, Paul;Coleman, Thomas F.
viewed: 20
title: Solution of Nonlinear Least-Square Problems on a Multiprocessor
abstract: In this paper we describe algorithms for solving nonlinear least-squares problems on a message-passing multiprocessor. We demonstrate new parallel algorithms, including an efficient parallel algorithm for determining the Levenberg-Marquardt parameter and a new row-oriented QR factorization algorithm. Experimental results obtained on an Intel iPSC hypercube are presented and compared with sequential MINPACK code executed on a single processor. These experimental results show that essentially full efficiency is obtained for problems where the row size is sufficiently larger than the number of processors. These algorithms have the advantage of involving only simple data movements and consequently are not constrained to the hypercube architecture.

url: http://hdl.handle.net/1813/6764
date: 2007-04-23
creator: Hendren, Laurie J.
viewed: 17
title: Recursive Data Structures and Parallelism Detection
abstract: Interference estimation is a key aspect of automatic parallelization of programs. In this paper we study the problem of estimating interference in a language with dynamic data-structures. We focus on the case of binary trees to illustrate the approach. We develop a structural flow-analysis technique that allows us to estimate whether two statements influence disjoint sub-trees of a forest of dynamically-allocated binary trees. The method uses a regular-expression-like representation of the relationships between the nodes of the trees and is based on the algebraic properties of such expressions. We have implemented our analysis in Standard ML and have obtained some promising experimental results.

url: http://hdl.handle.net/1813/6765
date: 2007-04-23
creator: Howe, Douglas J.
viewed: 33
title: Automating Reasoning in an Implementation of Constructive Type Theory
abstract: The starting point for this thesis is the Nuprl proof development system. Nuprl is an environment for the development of formal computational mathematics and has a rich constructive type theory as a logical

basis. It provides sophisticated editors and an integrated tactic mechanism that allows the programming of guaranteed-sound extensions to the inference system. The work presented in this thesis concerns the automation of reasoning in Nuprl, and consists of three parts. The first is a collection of general-purpose tactics. These tactics are simple enough that their function can be readily understood, yet powerful enough to support development of substantial formal mathematics. The second part is the use of Nuprl to solve an open problem in the theory of programming languages. The set of basic tactics together with various tools provided by Nuprl play a crucial role in the solution, and it seems that this problem is not tractable without computer assistance. The third part is an implementation within Nuprl of mechanisms that support the use of Nuprl's type theory as a language for constructing theorem-proving procedures. The main component of the implementation is a large library of definitions, theorems and proofs. This library may be regarded as the beginning of a book of formal mathematics; it contains a complete formal development and explanation of a useful subset of Nuprl's metatheory, and of a mechanism for translating results established about this embedded metatheory to the object level. The type theory, besides permitting the internal development of this partial reflection mechanism, allows us to make abstractions that drastically reduce the burden of establishing the correctness of new theorem-proving procedures. Our library includes a formally verified term-rewriting system.

url: http://hdl.handle.net/1813/6766
date: 2007-04-23
creator: Hulbert, Laurie;Coleman, Thomas F.
viewed: 17
title: A Direct Active Set Algorithm for Large Sparse Quadratic Programs withSimple Bounds
abstract: We show how a direct active set method for solving definite and indefinite quadratic programs with simple bounds can be efficiently implemented for large sparse problems. All of the necessary factorizations can be carried out in a static data structure that is set up before the numeric computation begins. The space required for these factorizations is no larger than that required for a single sparse Cholesky factorization of a matrix with the same sparsity structure as the Hessian of the quadratic. We propose several improvements to this basic algorithm: a new way to find a search direction in the indefinite case that allows us to free more than one variable at a time and a new heuristic method for finding a starting point. These ideas are motivated by the two-norm trust region problem. Additionally, we also show how projection techniques can be used to add several constraints to the active set at each iteration. Our experimental results show that an algorithm with these improvements runs much faster than the basic algorithm for positive definite problems and finds local minima with lower function values for indefinite problems.

url: http://hdl.handle.net/1813/6767
date: 2007-04-23
creator: Johnson, Richard C.;Moitra, Abha
viewed: 79
title: Parallel Algorithms For Maximum Matching And Other Problems On Interval Graphs
abstract: In this paper, we consider parallel algorithms on interval graphs. An interval graph is a graph having a one-to-one correspondence with a sequence of intervals on the real line, such that each vertex maps to an interval in the sequence and an edge exists between two vertices if and only if the corresponding intervals overlap. Throughout the paper we use the CREW PRAM model. Our main result is an $O(\log^{2} n)$ time, $O(n^{6}/\log n)$ processor algorithm for maximum matching on interval graphs. We give PT-optimal algorithms for maximum weighted clique, maximum independent set, minimum clique cover, and minimum dominating set for representations of interval graphs; and Hamiltonian circuit for representations of proper interval graphs. We also give an improved algorithm for minimum bandwidth on representations of proper interval graphs. In addition, we present $O (\log n)$ time, $O (n^{2}/\log n)$ processor algorithms

for depth-first search on representations of interval graphs and maximum matching on representations of proper interval graphs.

url: http://hdl.handle.net/1813/6768
date: 2007-04-23
creator: Schmuck, Frank B.
viewed: 21
title: The Use of Efficient Broadcast Protocols in Asynchronous Distributed Systems
abstract: Reliable broadcast protocols are important tools in distributed and fault-tolerant programming. They are useful for sharing information and for maintaining replicated data in a distributed system. However, a wide range of such protocols has been proposed. These protocols differ in their fault tolerance and delivery ordering characteristics. There is a tradeoff between the cost of a broadcast protocol and how much ordering it provides. It is, therefore, desirable to employ protocols that support only a low degree of ordering whenever possible. This dissertation presents techniques for deciding how strongly ordered a protocol is necessary to solve a given application problem. We show that there are two distinct classes of application problems: problems that can be solved with efficient, asynchronous protocols, and problems that require global ordering. We introduce the concept of a linearization function that maps partially ordered sets of events to totally ordered histories. We show how to construct an asynchronous implementation that solves a given problem if a linearization function for it can be found. We prove that in general the question of whether a problem has an asynchronous solution is undecidable. Hence there exists no general algorithm that would automatically construct a suitable linearization function for a given problem. Therefore, we consider an important subclass of problems that have certain commutativity properties. We present techniques for constructing asynchronous implementations for this class. These techniques are useful for constructing efficient asynchronous implementations for a broad range of practical problems.

url: http://hdl.handle.net/1813/6769
date: 2007-04-23
creator: Xavier, Patrick G.;Reif, John;Donald, Bruce Randall;Canny, John
viewed: 28
title: On the Complexity of Kinodynamic Planning
abstract: In robotics, kinodynamic planning attempts to solve a motion problem subject to simultaneous kinematic and dynamic constraints. We consider the following problem: given a robot system, find a minimal-time trajectory from a start position and velocity to a goal position and velocity, while avoiding obstacles and respecting dynamic constraints on velocity and acceleration. We consider the simplified case of a point mass under Newtonian mechanics, together with velocity and acceleration bounds. The point must be flown from a start to a goal, amidst polyhedral obstacles in 2D or 3D. While exact solutions to this problem are not known, we provide the first provably good approximation algorithm, and show that it runs in polynomial time.

url: http://hdl.handle.net/1813/6770
date: 2007-04-23
creator: Coleman, Thomas F.
viewed: 28
title: On Characterizations of Superlinear Convergence for Constrained Optimization
abstract: We show how the Dennis-More characterization of superlinear convergence for unconstrained optimization can be applied, and usefully restricted for use in the constrained setting.

url: http://hdl.handle.net/1813/6771

date: 2007-04-23
creator: Fenyes, Peter;Coleman, Thomas F.
viewed: 27
title: Partitioned Quasi-Newton Methods for Nonlinear Equality Constrained Optimization
abstract: We derive new quasi-Newton updates for the (nonlinear) equality constrained minimization problem. The new updates satisfy a quasi-Newton equation, maintain positive definiteness on the null space of the active constraint matrix and satisfy a minimum change condition. The application of the updates is not restricted to a small neighbourhood of the solution. In addition to derivation and motivational remarks, we discuss various numerical subtleties and provide results of numerical experiments.

url: http://hdl.handle.net/1813/6772
date: 2007-04-23
creator: Basin, David A.
viewed: 19
title: Building Theories in Nuprl
abstract: This paper provides an account of how mathematical knowledge is represented, reasoned about, and used computationally in a mechanized constructive theorem proving environment. We accomplish this by presenting a particular theory developed in the Nuprl proof development system: finite set theory culminating in Ramsey's theorem. We believe that this development is interesting as a case study in the relationship between constructive mathematics and computer science. Moreover, the aspects we emphasize-the high-level development of definitions and lemmas, the use of tactics to automate reasoning, and the use of type theory as a programming logic-are not restricted in relevance to this particular theory, and indicate the promise of our approach for other branches of constructive mathematics.

url: http://hdl.handle.net/1813/6773
date: 2007-04-23
creator: Neiger, Gilbert A.
viewed: 30
title: Techniques for Simplifying the Design of Distributed Systems
abstract: Distributed computing systems offer a number of advantages over centralized systems, such as the replication of data and functionality, which may result in increased performance and fault-tolerance. The design of protocols for distributed systems is more complex than for centralized systems because coordination and cooperation between the different processors can be difficult to achieve. Among the factors complicating this design are the following: lack of processor synchronization, lack of common knowledge, and processor failures. This thesis presents techniques for simplifying the design of distributed systems by addressing these three complicating factors. Processor synchronization is provided by using logical clocks as if they are real-time (and hence, perfectly synchronized) clocks. This can be done in solutions to a large class of problems. Common knowledge is simulated by timestamped common knowledge, which is identical to true common knowledge in systems with perfectly synchronized clocks. A communication primitive, called publication, is defined which achieves timestamped common knowledge, and an implementation of publications is given that uses logical clocks. When solving problems in the class characterized earlier, publications can be used as if they achieve true common knowledge. The design of fault-tolerant protocols is simplified through methods that automatically translate protocols tolerant of benign failures into ones tolerant of more severe failures. The design task is reduced to that of designing simpler protocols.

url: http://hdl.handle.net/1813/6774
date: 2007-04-23
creator: Pingali, Keshav

viewed: 20
title: Fine-Grain Compilation for Pipelined Machines
abstract: Computer architecture design requires careful attention to the balance between the complexity of code scheduling problems and the cost and feasibility of building a machine. In this paper, we show that recently developed software pipelining algorithms produce optimal or near-optimal code for a large class of loops when the target architecture is a clean pipelined parallel machine. The important feature of these machines is the absence of structural hazards. We argue that the robustness of the scheduling algorithms and relatively simple hardware make these machines realistic and cost-effective. To illustrate the delicate balance between architecture and scheduling complexity, we show that scheduling with structural hazards is NP-hard, and that there are machines with simple structural hazards for which vectorization and the software pipelining techniques generate poor code.

url: http://hdl.handle.net/1813/6775
date: 2007-04-23
creator: Pingali, Keshav;Rogers, Anne M.
viewed: 21
title: Process Decomposition Through Locality of Reference
abstract: In the context of sequential computers, it is common practice to exploit temporal locality of reference through devices such as caches and virtual memory. In the context of multiprocessors, we believe that it is equally important to exploit spatial locality of reference. We are developing a system which, given a sequential program and its domain decomposition, performs process decomposition so as to enhance spatial locality of reference. We describe an application of this method - generating code from shared-memory programs for the (distributed memory) Intel iPSC/2.

url: http://hdl.handle.net/1813/6776
date: 2007-04-23
creator: Pugh, William W.
viewed: 23
title: Incremental Computation and the Incremental Evaluation of Functional Programs
abstract: Incremental computation is generally thought of as the technique of efficiently updating the result of a computation when the input is changed. This idea is used in doing semantic checking in programming environments, document formatting in WYSIWYG editors and other applications. More generally, incremental computation is the technique of efficiently applying a function to a series of similar inputs. Much of the previous work on incremental computation has centered on incremental attribute grammar and incremental dependency graph evaluation schemes, but these techniques are only suitable for certain applications. This thesis examines an alternative method for providing incremental computation. Our results provide practical methods that can be used for applications such as theorem provers for which attribute grammars are unusable. Even for those problems for which attribute grammars are best suited, our methods perform almost as well as attribute grammars. We describe an incremental evaluator for functional programs that makes use of function caching. Function caching, or memoising, allows reuse of solutions to problems that were solved previously. We examine how function caching can be effectively used when solving problems that are similar to problems that were solved previously. In order for function caching to provide incremental evaluation, two similar problems must be solved by decomposing them into sub-problems in such a way that they share many common sub-problems. We formalize and quantify this idea with the notion of a stable decomposition, and we present data structures for representing sets and sequences that have stable decompositions. We solve several problems related to the efficient implementation of function caching. To perform function caching efficiently, one must be able to determine if two values are equal in constant time and perform updates applicatively. The data structures we present for sets and sequences

support these features. This was previously an open problem for representations that also supported efficient updates. We also examine how to calculate hash keys and perform fast equality tests for S-expressions and how to determine what to purge from a function cache when it is full. We report benchmarks that show our function caching implementation produces significant speed-ups in complex programs such as incremental theorem provers.

url: http://hdl.handle.net/1813/6777
date: 2007-04-23
creator: Griffin, Timothy G.
viewed: 26
title: Notational Definition and Top-Down Refinement for Interactive Proof Development Systems
abstract: This thesis is concerned with issues related to the design and implementation of systems that support interactive proof development. The goal is to provide logic-independent frameworks that can be used in the design and implementation of component parts for such systems. In particular, this thesis will focus on two frameworks: a language-independent account of notational definition and a logic-independent account of a structure-oriented approach to the interactive construction of goal-directed proofs. These particular concerns were inspired and motivated by the Nuprl proof development system. However, the results presented in this thesis are meant to be applicable to a wide class of logics. The formal account of notational definition begins with the presentation of a simply typed λ-calculus together with a method of representing expressions in a given language $\cal L$ as λ-expressions. The λ-calculus has a very simple abbreviative mechanism that allows a new constant, introduced by means of a δ-equation, to represent a closed expression. A new construct, called a Δ-equation, is introduced. It provides a higher-level means of introducing new notations that is close to the conventional style of definition. A Δ-equation is given meaning by a translation into a simple δ-equation. The implementation of mechanisms that support notational definitions in interactive proof development systems as well as applications to Nuprl are discussed. The second part of the thesis presents a logic-independent framework for top-down proof development called abstract refinement. Rather than presenting, as is done for Nuprl, refinement and refinement rules as primitive notions that are extended by grafting on tactics, tactics are instead viewed as the basic notion from which refinement trees arise as tree-structured representations of the iterated composition of tactics. This is accomplished with the definition of a new construct called a tactic tree that extends the LCF tactics framework in a natural way. Several examples of proof development using tactic trees are presented. One example demonstrates that the refinement rules and the extraction mechanism of Nuprl can be modeled in this framework.

url: http://hdl.handle.net/1813/6778
date: 2007-04-23
creator: Smith, Scott Fraser
viewed: 23
title: Partial Objects in Type Theory
abstract: Intuitionistic type theories, originally developed by Martin-Lof, provide a foundation for intuitionistic mathematics, much as set theory provides a foundation for mathematics. They are of interest to computer scientists because the objects typed are computations, making type theory an appropriate setting for reasoning about computation. Type theories such as Nuprl or the theories of Martin-Lof have types for objects that always terminate, but objects which may diverge are not directly typable. If type theory is to be a full-fledged theory for reasoning about computations, we need to be able to reason about potentially diverging objects. In this thesis we show how potentially diverging computations, which we call partial objects, may be typed by extending type theory to partial object type theory. New partial types are added to type partial objects. These types are usable: partial objects written in natural program notation can easily be

shown to lie in the types. In addition to being able to express partial objects, it is also important to be able to reason about them; for this purpose general principles are given for proving facts about partial objects via induction. The resulting theory serves as a foundation for computational as well as mathematical reasoning. It also gives insights into abstract recursion theory, leads to a new method for constructive reasoning, and sheds light on inductive methods for reasoning about recursive computation.

url: http://hdl.handle.net/1813/6779
date: 2007-04-23
creator: Bischof, Christian H.
viewed: 72
title: QR Factorization Algorithms for Coarse-Grained Distributed Systems
abstract: We present the techniques of adaptive blocking and incremental condition estimation which we believe to be useful for the computation of common matrix decompositions in high-performance environments. We apply these new techniques to algorithms for computing the Householder QR factorization with and without pivoting on a coarse-grained distributed system. For reasons of portability, we use a pipelined scheme on a ring of processors as the basis of our algorithms. To take advantage of possible floating point hardware on each node we develop a blocked version of the pipelined Householder QR algorithm that employs the compact WY representation for products of Householder matrices. While a strategy involving blocks of fixed width leads to increased floating point utilization per node, it also leads to increased load imbalance. To reconcile this tradeoff we introduce a variable width block strategy based on a model of the critical path of the algorithm. The resulting adaptive blocking strategy provides for good floating point performance per node while maintaining overall load balance. Experimental results on the Intel iPSC hypercube show that the adaptive blocking strategy performs indeed better than any fixed width blocking strategy. In the second part of our thesis we develop methods for introducing pivoting into the distributed QR factorization algorithm. Incorporating the traditional column pivoting strategy in a straightforward manner introduces a global synchronization constraint which results in increased communication overhead. A strictly local pivoting scheme avoids the resulting loss in efficiency, but has to be monitored for reliability. To this end, we introduce an incremental condition estimator which allows us to update the estimate of the smallest singular value of an upper triangular matrix R as new columns are added to R. The update requires only $O(n)$ flops an the storage of $O(n)$ words between successive steps. Experiments indicate that the incremental condition estimator is reliable despite its small computational cost. Using the incremental condition estimator we are then able to guard against the selection of troublesome pivot columns in our local pivoting scheme at little extra cost. Simulation results show that the resulting algorithm is about as reliable as the traditional QR factorization algorithm with column pivoting.

url: http://hdl.handle.net/1813/6780
date: 2007-04-23
creator: Hafsteinsson, Hjalmtyr
viewed: 45
title: Parallel Sparse Cholesky Factorization
abstract: As sequential computers seem to be approaching their limits in CPU speed there is increasing interest in parallel computers. This development calls for parallel algorithms for problems that may already have efficient sequential algorithms. The problem of solving a linear system of equations arises in many areas of science and engineering. Quite often each equation only involves a small number of the variables. In that case the linear systems is sparse. If we can take advantage of the sparsity we can solve much larger systems. Consider the linear system $Ax = b$, where A is a sparse symmetric positive define matrix. A common approach to solving this system is to use Cholesky factorization. Algorithms that solve sparse linear systems using the Cholesky factorization usually consist of the following steps. First the matrix A

is permuted in order to get a sparse Cholesky factor L. Then there is the symbolic factorization of A to determine the nonzero structure of L. Finally the value of L is calculated in the numeric factorization phase and x is computed by solving the triangular systems $Ly = b$ and $L^{T}x = y$. In this thesis we present parallel algorithms for all the above steps except for the permutation step. Before the symbolic factorization we compute the elimination tree of A. Elimination trees have many applications in sparse matrix computations. Therefore our parallel algorithm to find elimination trees is important in its own right. The algorithm we present for symbolic factorization then uses the elimination tree to compute the nonzero structure of L. We next present a parallel algorithm to compute the numeric factorization of A. It runs in time proportional to the height of A's elimination tree times a log factor. We also show how that algorithm can be converted into an NC algorithm (i.d., an algorithm that runs in polygarithmic time) by use of fast algorithms for dense matrices. Finally we demonstrate a parallel algorithm to solve sparse triangular systems of equations. There again we show a version that runs in time related to the height of the elimination tree and a version that is an NC algorithm.

url: http://hdl.handle.net/1813/6781
date: 2007-04-23
creator: Vander Zanden, Bradley T.
viewed: 32
title: Incremental Constraint Satisfaction and its Application to Graphical Interfaces
abstract: Software that emphasizes pictures, rather than text, has become increasingly popular since the introduction of the Macintosh computer. Creating this software is a time-consuming task that can take months or years. Researchers have attempted to speed up this process by developing constraint-based tools that automate portions of the software development cycle. However, these tools are often limited in the types of applications they can generate, since 1) they lack powerful editing models that can manipulate complex data structures, such as lists, trees, and sets; and 2) in large applications, they cannot perform constraint satisfaction quickly enough to provide instantaneous feedback to the user. We present tools for overcoming each of these difficulties. First, we describe a new model, called constraint grammars, that integrates aspects of both attribute grammars and constraint-based, object systems to produce a powerful specification language for graphical interfaces. Constraint grammars integrate important concepts such as the part-whole hierarchy, almost-hierarchical structures, and multidirectional constraints. These features are augmented with a pattern-matching editing model that permits a designer to manipulate complex data structures. We then present techniques for incrementally resatisfying multidirectional, noncircular sets of constraints. It is shown that minimizing the number of re-solved constraints is NP-complete. We therefore describe an approach that attempts to minimize the amount of time spent updating the constraint solution. This technique divides constraint solving into two phases-a planning phase that linearly orders the constraints and an evaluation phase that solves the constraints using this linear order. Previous approaches have thrown away the linear order whenever the constraint system changes. However, this is unnecessary since only a local portion of the linear order is typically modified. We exploit this fact to develop an algorithm that incrementally updates this order. We the augment this algorithm with a heuristic that attempts to choose a linear order that minimizes the number of equations that the evaluation stage must solve. We present benchmarks that show that these algorithms can significantly reduce the number of equations examined by the planning phase and the number of equations solved by the evaluation phase.

url: http://hdl.handle.net/1813/6782
date: 2007-04-23
creator: Schreiber, Robert S.;Higham, Nicholas J.
viewed: 40
title: Fast Polar Decomposition of an Arbitrary Matrix

abstract: The polar decomposition of an $m x n$ matrix A of full rank, where $m \geq n$, can be computed using a quadratically convergent algorithm of Higham [SIAM J. Sci. Stat. Comput., 7 (1986), pp.1160-1174]. The algorithm is based on a Newton iteration involving a matrix inverse. We show how with the use of a preliminary complete orthogonal decomposition the algorithm can be extended to arbitrary A. We also describe how to use the algorithm to compute the positive semi-definite square root of a Hermitian positive semi-definite matrix. We formulate a hybrid algorithm which adaptively switches from the matrix inversion based iteration to a matrix multiplication based iteration due to Kovarik, and to Bjorck and Bowie. The decision when to switch is made using a condition estimator. This "matrix multiplication rich" algorithm is shown to be more efficient on machines for which matrix multiplication can be executed 1.5 times faster than matrix inversion.

url: http://hdl.handle.net/1813/6783
date: 2007-04-23
creator: Leu, M. C.;Pai, Dinesh K.
viewed: 38
title: Generic Singularities of Robot Manipulators
abstract: The singularities of the differential kinematic map, i.e., of the manipulator Jacobian, are considered. We first examine the notion of a "generic" kinematic map, whose singularities form smooth manifolds of prescribed dimension in the joint space of the manipulator. For 3-joint robots, an equivalent condition for genericity using determinants is derived. The condition lends itself to symbolic computation and is sufficient for the study of decoupled manipulators, i.e., manipulators which can be separated into a 3-joint translating part and a 3-joint orienting part. The results are illustrated by analyzing the singularities of two classes of 3-joint positioning robots.

url: http://hdl.handle.net/1813/6784
date: 2007-04-23
creator: Chang, Richard
viewed: 23
title: On the Structure of Bounded Queries to Arbitrary NP Sets
abstract: In [Kad87b], Kadin showed that if the Polynomial Hierarchy (PH) has infinitely many levels, then for all k, $P^{SAT[k]} \subseteq P^{SAT[k+1]}$. In this paper, we extend Kadin's technique to show that a proper query hierarchy is not an exclusive property of SAT. In fact, for any $A \in NP - \overbrace{low_{3}}$, if PH is infinite, then $P^{A[k]} \subseteq P^{A[k+1]}$. Moreover, for the case of parallel queries, we show that $P^{A||[k+1]}$ is not contained in $P^{SAT||[k]}$. We claim that having a proper query hierarchy is a consequence of the oracle access mechanism and not a result of the "hardness" of a set. To support this claim, we show that assuming PH is infinite, one can construct an intermediate set $B \in NP$ so that $P^{B[k+1]} \subseteq P^{SAT[k]}$. That is, the query hierarchy for B grows as "tall" as the query hierarchy for SAT. In addition, B is intermediate, so it is not "hard" in any sense (e.g., not NP hard under many-one, Turing, or strong nondeterministic reductions). Using these same techniques, we explore some other questions about query hierarchies. For example, we show that is there exists any A such that $P^{A[2]} = P^{SAT[1]}$ then PH collapses to Δ^{P}_{3}.

url: http://hdl.handle.net/1813/6785
date: 2007-04-23
creator: Toueg, Sam;Neiger, Gilbert A.
viewed: 23
title: Providing Design Abstractions in Distributed Systems
abstract: The design of protocols for distributed systems is more complex than for centralized systems because

coordination and cooperation between processors are difficult to achieve. Among the factors complicating this design are the failure of processors and the lack of processor synchronization. In this paper, we show how to simplify the design of fault-tolerant protocols using methods that automatically translate protocols tolerant of benign failures into ones tolerant of more severe failures. Such methods provide the abstraction of restricted faulty behavior. We also show how to circumvent the lack of processor synchronization by using logical clocks, which provide the abstraction of perfectly synchronized clocks in solutions to a large class of problems, both in asynchronous and partially synchronized systems.

url: http://hdl.handle.net/1813/6786
date: 2007-04-23
creator: Moitra, Dipen
viewed: 24
title: Finding a Minimal Cover for Binary Images: An Optimal Parallel Algorithm
abstract: Given a black and white image, represented by an array of $\surd n x \surd n$ binary valued pixels, we wish to cover the black pixels with a minimal set of (possibly overlapping) maximal squares. It was recently shown that obtaining a minimum cover with squares for a polygonal binary image having holes is NP-hard. We derive an optimal parallel algorithm for the minimal square cover problem, which for any desired computation time T in [log n, n] runs on an EREW-PRAM with (n/T) processors. The cornerstone of our algorithm is a novel data structure, the cover graph, which compactly represents the covering relationships between the maximal squares of the image. The size of the cover graph is linear in the number of pixels. This algorithm has applications to problems in VLSI mask generation, incremental update of raster displays, and image compression.

url: http://hdl.handle.net/1813/6787
date: 2007-04-23
creator: Xavier, Patrick G.;Donald, Bruce Randall
viewed: 32
title: A Provably Good Approximation Algorithm for Optimal-Time Trajectory Planning
abstract: We consider the following problem: given a robot system, find a minimal-time trajectory from a start position and velocity to a goal position and velocity, while avoiding obstacles and respecting dynamic constraints on velocity and acceleration. Based on the theoretical results of [CDRX], we have developed and implemented a new, provably good approximation algorithm for the minimum-time trajectory problem. Our algorithm differs from previous work in three ways. First, it is possible to bound the goodness of the approximation by an error term ϵ. Second, we can polynomially bound the running time (complexity) of our algorithm. Third, we can express the complexity as a polynomial function of the error term. Hence, one supplies the algorithm with the geometric obstacles, dynamics bounds, and the error term ϵ. The algorithm returns a solution that is ϵ-close to optimal, and promises to spend only a polynomial (in $(\frac{1}{\epsilon})$) amount to time computing the answer. In this paper, we describe the algorithm and explain the results in simple terms. We show how it can be applied to robotics, and report on an implementation and experiments.

url: http://hdl.handle.net/1813/6788
date: 2007-04-23
creator: Ierardi, Doug J.
viewed: 81
title: Quantifier Elimination in the First-Order Theory of Algebraically Closed Fields
abstract: We consider the problem of deciding whether a set of multivariate polynomials with coefficients in any field F have a common algebraic solution. In this paper we develop a fast parallel algorithm for solving

this decision problem. Since the proposed algorithm is algebraic, it easily yields a procedure for quantifier elimination in the theory of an arbitrary algebraically closed field. More precisely, we show how to decide whether m polynomials in n variables, each of degree at most d, with coefficients in an arbitrary field F have a common zero in the algebraic closure of F, using sequential time $m^{n + O(1)} d^{n^{2} + O(n)}$, or parallel time $O(n^{3} \log^{3} d \log m)$ with $m^{n + O(1)} d^{n^{2} + O(n)}$ processors, in the operations of the coefficient field F. Using randomization, this may be improved to $m^{O(1)} d^{O(n)}$ time. In addition, the construction is used give a direct EXSPACE algorithm for quantifier elimination in the theory of an algebraically-closed field, which runs in PSPACE or parallel polynomial time when restricted to formulas with a fixed number of alternations of quantifiers.

url: http://hdl.handle.net/1813/6789
date: 2007-04-23
creator: Birman, Kenneth P.;Kane, Kenneth P.
viewed: 33
title: Causally Consistent Recovery of Partially Replicated Logs
abstract: An algorithm is presented for the consistent recovery of replicated data in a client-server system. The algorithm is based on logging and is similar to the optimistic techniques that are well known in the literature. However, unlike in existing optimistic techniques, explicit dependency information is not maintained. Instead, dependency information is estimated from the ordering of messages found in servers' logs. These dependency estimates can, in general, be expensive to compute. It is therefore shown how inexpensive estimates can be applied when a system is well structured.

url: http://hdl.handle.net/1813/6790
date: 2007-04-23
creator: Hendrickson, Bruce A.
viewed: 14
title: Conditions Unique Graph Embeddings
abstract: The graph embedding problem is that of computing the relative locations of a set of vertices placed in Euclidean space relying only upon some set of inter-vertex distance measurements. This paper is concerned with the closely related problem of determining whether or not a graph has a unique embedding. Both these problems are NP-hard, but the proofs rely upon special combinations of edge lengths. If we assume the edge lengths are unrelated then the uniqueness question can be approached from a purely graph theoretic framework that ignores edge lenghts. This paper identifies three necessary graph theoretic conditions for a graph to have a unique embedding in any dimension. Efficient sequential and NC algorithms are presented for each condition, although these algorithms have very different flavors in different dimensions.

url: http://hdl.handle.net/1813/6791
date: 2007-04-23
creator: Bilardi, Gianfranco;Herley, Kieran T.
viewed: 17
title: Deterministic Simulations of PRAMs on Bounded Degree Networks
abstract: The problem of simulating a PRAM with n processors and memory size $m \geq n$ on an n-node bounded degree network is considered. A scheme is presented which simulates an arbitrary PRAM step in $O ((\log n \log m)/\log \log n)$ time in the worst case on an expander-based network. By extending a previously established lower bound, it is shown that the proposed simulation is optimal whenever $\Omega (n^{1 + \epsilon}) \leq m \leq O(2^{(\log n)\alpha})$ for some $\epsilon greater than O$ and some $\alpha > O$.

url: http://hdl.handle.net/1813/6792
date: 2007-04-23
creator: Ekanadham, Kattamuri;Pingali, Keshav
viewed: 34
title: Accumulators: New Logic Variable Abstractions for Functional Languages
abstract: Much attention has been focused by the declarative languages community on combining the functional and logic programming paradigms. In particular, there are many efforts to incorporate logic variables into functional languages. We propose a generalization of logic variables called accumulators which are eminently suited for incorporation into functional languages. We demonstrate the utility of accumulators by presenting examples which show that accumulators can be used profitably in many scientific applications to enhance storage efficiency and parallelism.

url: http://hdl.handle.net/1813/6793
date: 2007-04-23
creator: Higham, Nicholas J.
viewed: 16
title: Bounding the Error in Gaussian Elimination for Tridiagonal Systems
abstract: If $\hat{x}$ is the computed solution to a tridiagonal system $Ax = b$ obtained by Gaussian elimination, what is the "best" bound available for the error $x - \hat{x}$ and how can it be computed efficiently? This question is answered using backward error analysis, perturbation theory, and properties of the LU factorization of A. For three practically important classes of tridiagonal matrix, those that are symmetric positive definite, totally nonnegative, or are M-matrices, it is shown that $(A + E)\hat{x} = b$ where the backward error matrix E is small componentwise relative to A. For these classes of matrix the appropriate forward error bound involves Skeel's condition number cond(A, x), which we show can be computed exactly in $O(n)$ operations. For diagonally dominant tridiagonal A the same type of backward error result holds and we obtain a useful upper bound for cond(A, x) which can be computed in $O(n)$ operations. We also discuss error bounds and their computation for general tridiagonal matrices.

url: http://hdl.handle.net/1813/6794
date: 2007-04-23
creator: Smith, Maria;Salton, Gerard
viewed: 22
title: On the Application of Syntactic Methodologies in Automatic Text Analysis
abstract: This study summarizes various linguistic approaches proposed for document analysis in information retrieval environments. Included are standard syntactic methods to generate complex content identifiers, and the use of semantic know-how obtained from machine-readable dictionaries and from specially constructed knowledge bases. A particular syntactic analysis methodology is also outlined and its usefulness for the automatic construction of book indexes is examined.

url: http://hdl.handle.net/1813/6795
date: 2007-04-23
creator: Dickerson, Matthew T.
viewed: 17
title: Computing Polynomial Composition Factors and Inverses of Automorphisms in Polynomial Time
abstract: The problem of determining when an endomorphism on a polynomial ring is an automorphism and, when it is, the problem of computing its inverse are long standing problems which have received much attention both recently and in the past [BCW], [N], [NS], [SS]. There has also been much attention given recently to various problems relating to the functional decomposition of polynomials [AT], [BZ], [D], [G1],

[G2], [GKL], [KL]. In this paper, we present the first polynomial time algorithm for computing the left composition factor of a multivariate polynomial decomposition and we use that result in the first polynomial time algorithm for computing the inverse of an automorphism on a polynomial ring. Finally, we show how these algorithms can be used to determine when an endomorphism is an automorphism.

url: http://hdl.handle.net/1813/6796
date: 2007-04-23
creator: Li, Yuying;Conn, Andrew R.
viewed: 15
title: The Computational Structure and Characterization of Nonlinear Discrete Chebyshev Problems
abstract: We present the generalisation of some concepts in linear Chebyshev theory to the nonlinear case. We feel these generalisations capture the inherent structure and characteristics of the best Chebyshev approximation and that they can be usefully exploited in the computation of a solution to the discrete Chebyshev problem.

url: http://hdl.handle.net/1813/6797
date: 2007-04-23
creator: Russell, James R.;Panangaden, Prakash
viewed: 22
title: A Category-Theoretic Semantics for Unbounded Indeterminacy
abstract: In this paper we give a category-theoretic semantics for a simple imperative language featuring unbounded indeterminacy. This semantics satisfies the categorical analogues of continuity and has the meaning of while loops defined as co-limits of ω-diagrams. Furthermore, it collapses via an abstraction function to a semantics that is fully abstract, and coincides with the operational semantics. The abstraction function is the only discontinuous function appearing in our semantics.

url: http://hdl.handle.net/1813/6798
date: 2007-04-23
creator: Jagadeesan, Radhakrishnan
viewed: 72
title: L-domains and Lossless Powerdomains
abstract: The category of L-domains was discovered by Achim Jung [5] while solving the problem of finding maximal cartesian closed categories of algebraic CPO's and continuous functions. In this note we analyse the properties of the lossless powerdomain construction, that is closed on the algebraic-L-Domains. The powerdomain is shown to be isomorphic to a collection of subsets of the domain on which the construction was done. The proof motivates a certain finiteness condition on the inconsistency relations of elements. It is shown that all algebraic CPO's D whose basis $B(D)$ has property M satisfy the condition. In particular, the coherent L-domains [3] satisfy the condition.

url: http://hdl.handle.net/1813/6799
date: 2007-04-23
creator: Vazirani, Vijay V.;Vazirani, Umesh V.
viewed: 84
title: Random Polynomial Time is Equal to Semi-Random Polynomial Time
abstract: We prove that any one-sided error random polynomial time (RP) algorithm can be simulated with a semi-random source at no more than polynomial factor loss in efficiency. i.e. RP=SRP. This contrasts with the fact that a semi-random source is too weak to simulate fair coin flips [SV].

url: http://hdl.handle.net/1813/6800
date: 2007-04-23
creator: Vazirani, Vijay V.;Vazirani, Umesh V.
viewed: 29
title: The Two-Processor Scheduling Problem is in Random NC
abstract: An efficient parallel algorithm (RNC^{2}) for the two-processor scheduling problem is presented. An interesting feature of this algorithm is that it finds a highest level first schedule: such a schedule defines a lexicographically first solution to this problem in a natural way. A key ingredient of the algorithm is a generalization of a theorem of Tutte which establishes a one-to-one correspondence between the bases of the Tutte matrix of a graph and the sets of matches nodes in maximum matchings in the graph.

url: http://hdl.handle.net/1813/6801
date: 2007-04-23
creator: Birman, Kenneth P.;Marzullo, Keith
viewed: 27
title: The Role of Order in Distributed Programs
abstract: We discuss the role of order in building distributed systems. It is our belief that a "principle of event ordering" underlies the wide range of operating systems mechanisms that have been put forward for building robust distributed software. Stated concisely, this principle is that one achieves correct distributed behavior by ordering classes of distributed events that conflict with one another. By focusing on order, one can obtain simplified descriptions and convincingly correct solutions to problems that might otherwise have looked extremely complex. Moreover, we observe that there are a limited number of ways to obtain order, and that the choice made impacts greatly on performance.

url: http://hdl.handle.net/1813/6802
date: 2007-04-23
creator: Ranjan, Desh;Hartmanis, Juris
viewed: 24
title: Space Bounded Computations: Review And New Separation Results
abstract: In this paper, we review the key results about space bounded complexity classes, discuss the central open problems and outline the relevant proof techniques. We show that, for a slightly modified Turing machine model, the low level deterministic and nondeterministic space bounded complexity classes are different. Furthermore, for this computation model, we show that Savitch and Immerman-Szelepcsenyi theorems do not hold in the range lg lg n to lg n. We also discuss some other computation models to bring out and clarify the importance of space constructability and establish some results about these models. We conclude by enumerating a few open problems which arise out of the discussion.

url: http://hdl.handle.net/1813/6803
date: 2007-04-23
creator: Li, Hungwen;Elster, Anne C.
viewed: 44
title: Hypercube Algorithms on the Polymorphic Torus
abstract: The Polymorphic Torus architecture is a reconfigurable, massively parallel finegrained system, which in its two-dimensional (N^{2}) case has a lower wiring complexity than, say, hypercubes. However, due to the dynamic connection features at run-time, it allows several parallel structures such as trees, rings, and hypercubes to be emulated efficiently. In this paper, we consider algorithms that are especially well-suited for hypercubes, i.e. algorithms that take advantage of the relatively high connectivity of the hypercube topology, and show how these algorithms attain comparable bounds on a 2-D Polymorphic Torus. In particular,

algorithms for dense matrix vector multiplication (including using 2 orthogonal trees for the matrix-vector case), sparse matrix-vector multiplication, and the FFT are discussed.

url: http://hdl.handle.net/1813/6804
date: 2007-04-23
creator: Palmer, Richard S.
viewed: 28
title: Computational Complexity of Motion and Stability of Polygons
abstract: The ability to model physical objects and procedures accurately enough to predict their behavior without performing physical experimentation is a fundamental goal of robotics. This facility is prerequisite to offline modeling of assembly tasks, high level robotics languages, and automated assembly planning. This thesis defines and gives algorithms for two classes of physical modeling problems: Mobility problems and Stability problems. The Mobility problem for polygons is that of determining whether, in a configuration of non-intersecting polygons, one or more polygons can be moved (relative to some other polygon in the configuration) without causing intersection. Mobility is shown to be NP-hard. An upper bound for the mobility problem remains an open problem. Translational mobility is the problem of determining whether any polygons can be simultaneously moved by translations without causing intersection. Translational mobility is shown to be NP-complete. Infinitesimal mobility is the problem of determining whether there is a set of velocities for the polygons of the configuration such that no point of a polygon P_{i} that is in contact with another polygon P_{j} has a velocity directed towards the interior of P_{j}. Infinitesimal mobility can be viewed as an approximation to the mobility problem in that any configuration that is mobile is also infinitesimally mobile. Infinitesimal mobility is shown to be NP-complete. The Stability problem for polygons with mass is the problem of determining whether a configuration of polygons is at a static equilibrium point. The stability problem is considered for configurations of polygons with and without friction, and is shown to be NP-hard for both cases. An algorithm is given that distinguishes between configurations that are stable, unstable, and indeterminate. The ability to distinguish indeterminate configurations is important because indeterminate configurations arise when the model of an assembly is not accurate enough to determine whether the assembly is stable. Finally, a restricted class of configurations is developed, the determined configurations, for which a conservative stability problem can be solved in polynomial time. The determined configurations are a natural class in the sense that they preclude a type of contact that "seems unpredictable". If undetermined points are desired or unavoidable, the restricted stability problem can be solved in time exponential in the number of undetermined points in the configuration.

url: http://hdl.handle.net/1813/6805
date: 2007-04-23
creator: Schneider, Fred B.;Lamport, Leslie
viewed: 19
title: Pretending Atomicity
abstract: We present a theorem for deriving properties of a concurrent program by reasoning about a simpler, coarser-grained version. The theorem generalizes a result that Lipton proved for partial correctness and deadlock-freedom. Our theorem applies to all safety properties.

url: http://hdl.handle.net/1813/6806
date: 2007-04-23
creator: Constable, Robert L.
viewed: 75
title: Language Features that Support Program Verification (illustrated in PL/C)
abstract: The author of a program can convince its readers (including himself) that it computes as he intended

by writing into the program text a precise description of what it should do. This description can include a clear proof that the program behaves as advertised. In the future, programming languages may offer far more mechanical assistance in expressing, checking, and processing these descriptions than they do now. However, some existing languages, such as PL/C, provide features which help in these tasks considerably. Here we examine such features applied to simple programs of the type traditionally taught in beginning programming classes. We discuss various proposals for expanding programming languages to provide more assistance of this type. Keywords and phrases: program correctness, automatic program verification, Hoare axioms, Scott induction, recursive programs, least number operator, bounded quantifiers, inductive assertion method, programming language design, very high level programmng languages, PL/I, PL/C, macro facilities.

url: http://hdl.handle.net/1813/6807
date: 2007-04-23
creator: Reusch, Bernd;Kelemen, C.;Demers, Alan J.
viewed: 31
title: On Encryption Systems Realized by Finite Transducers
abstract: NO ABSTRACT SUPPLIED

url: http://hdl.handle.net/1813/6808
date: 2007-04-23
creator: Kadin, Jim;Chang, Richard
viewed: 27
title: The Boolean Hierarchy and the Polynomial Hierarchy: a Closer Connection
abstract: We show that if the Boolean hierarchy collapses to its k^{th} level, then the polynomial hierarchy collapses to the k^{th} level of the difference hierarchy of Σ^{P}_{2} languages.

url: http://hdl.handle.net/1813/6809
date: 2007-04-23
creator: Segre, Alberto M.;Turney, Jennifer
viewed: 28
title: A Framework for Learning in Planning Domains with Uncertainty
abstract: Attempts to apply classical planning techniques to realistic environments have met with two major difficulties. The first is that of average-case inadequacy. As one might expect, the (worst-case) computational characteristics of planning problems are ugly at best; a system that is to operate on problems of any reasonable size must rely on heuristics to reduce the average-case complexity of the problem. The second difficulty is that of uncertainty, or what to do when the real world doesn't work as expected. We have shown in earlier work that particular machine learning techniques are a viable means of addressing the problem of average-case inadequacy [Segre88] in domains without uncertainty. This paper describes a planner operating in a realistic environment that is intended to support the same kind of learning. We report some preliminary experimental results comparing our planner with other approaches to planning in the presence of uncertainty.

url: http://hdl.handle.net/1813/6810
date: 2007-04-23
creator: Segre, Alberto M.;Elkan, Charles P.
viewed: 16
title: Not the Last Word on EBL Algorithms
abstract: This paper describes a new domain-independent explanation-based learning (EBL) algorithm that is able to acquire useful new rules in situations where previous EBL algorithms would fail. The new algorithm

is complete in the sense that every valid rule that can be extracted from an explanation can be extracted by this algorithm. The new algorithm is described inside a framework that provides insight into how the design of successful EBL systems takes into account operationality and imperfect domain theory issues.

url: http://hdl.handle.net/1813/6811
date: 2007-04-23
creator: Taylor, Kimberly E.;Panangaden, Prakash
viewed: 23
title: Concurrent Common Knowledge: A New Definition of Agreement for Asynchronous Systems
abstract: In this paper we discuss a new, knowledge-theoretic definition of agreement appropriate to asynchronous systems. This definition has two important features: first, it uses causality, rather than time, in its definition and, second, this form of agreement is attainable. In analogy with common knowledge, it is called concurrent common knowledge. In defining concurrent common knowledge we give a logic with new model operators and a semantics, both of which are based on causality and consequently capture only the relevant structure of purely asynchronous systems. We give general conditions by which protocols can attain concurrent common knowledge and prove that two simple and efficient algorithms do so. We also present several applications of our logic, including necessary and sufficient local preconditions for the concurrent performance of distributed actions. In general, applications that involve all processes reaching agreement about some property of a consistent global state are protocols that use concurrent common knowledge.

url: http://hdl.handle.net/1813/6812
date: 2007-04-23
creator: Moitra, Abha;Bilardi, Gianfranco
viewed: 16
title: Time Lower Bounds for CREW-PRAM Computation of Monotone Functions
abstract: It is shown that the time to compute a monotone boolean function depending upon n variables on a CREW-PRAM satisfies the lower bound $T = \Omega$(log l + (log n)/l), where l is the size of the largest prime implicant. It is also shown that the bound is existentially tight by constructing a family of monotone functions that can be computed in $T = O$(log l + (log n)/l), even by an EREW-PRAM. The same results hold if l is replaced by L, the size of the largest prime clause. An intermediate result of independent interest is that $S (n,l)$, the size of the largest minimal vertex cover minimized over all (reduced) hypergraphs of n vertices and maximum hyperedge size l, satisfies the bounds $\Omega(n^{1/l}) \leq S (n,l) \leq O (ln^{1/l}).$

url: http://hdl.handle.net/1813/6813
date: 2007-04-23
creator: Moitra, Dipen
viewed: 17
title: Efficient Parallel Algorithms for Covering Binary Images
abstract: Given a black and white image, represented by an array of $\surd$ n x $\surd$ n binary valued pixels, we wish to cover the black pixels with a minimal set of (possible overlapping) maximal squares. It was recently shown that obtaining a minimum cover with squares for a polygonal binary image having holes is NP-hard. We derive a processor-time-optional parallel algorithm for the minimal square cover problem, which for any desired computation time T is [log n, n] runs on an EREW-PRAM with (n/T) processors. We also outline an implementation on a mesh architecture which runs in O ($\surd$ n) time, and is P-T-optimal. Finally, we also show how to obtain a speedup in the running time of our algorithm when polymorphic communication primitives are available on the mesh. The cornerstone of our algorithm is a novel data structure, the cover graph, which compactly represents the covering relationships between the maximal squares of the image.

The size of the cover graph is linear in the number of pixels. This algorithm has applications to problems in VLSI mask generation, incremental update of raster displays, and image compression.

url: http://hdl.handle.net/1813/6814
date: 2007-04-23
creator: Birman, Kenneth P.
viewed: 20
title: How Robust Are Distributed Systems?
abstract: No abstract is available.

url: http://hdl.handle.net/1813/6815
date: 2007-04-23
creator: Novick, Mark B.
viewed: 31
title: Logarithmic Time Parallel Algorithms for Recognizing Comparability and Interval Graphs
abstract: We give fast parallel algorithms for recognizing ad representing comparability graphs that can be transitively oriented, and interval graphs, the intersection graphs of intervals along the real line. Under the CRCW PRAM model, both algorithms use $O(n^{3})$ processors in O(log n) time to check if a graph belongs to the desired class, and if it does then a valid representation of the graph can be produced. The algorithms gain their efficiency by using fast algorithms for finding the modular decomposition of a graph. Both problems were known to be in NC, but the known algorithms require more time than ours does.

url: http://hdl.handle.net/1813/6816
date: 2007-04-23
creator: Novick, Mark B.
viewed: 43
title: Fast Parallel Algorithms for the Modular Decomposition
abstract: A module in a graph is like a black box: all the vertices in the module look the same to vertices not in the module. This paper gives the first NC algorithm for finding the modular decomposition of a graph. The algorithm runs in O(log n) time using $O(n^{3})$ processors on a CRCW PRAM. This decomposition is used to obtain fast sequential and parallel algorithms for solving graph problems on graphs of bounded module size, e.g. the class of cographs where each module with more than one vertex is either disconnected or its complement is disconnected. These graph problems include minimum coloring, maximum clique, matching, Hamiltonian circuit, and maximum cut. Many of these problems can be solved with $O(n^{3})$ processors in O(log n) time. All of them can be solved in NC. Our modular decomposition algorithm can be used to obtain more efficient algorithms for recognizing and orienting comparability graphs.

url: http://hdl.handle.net/1813/6817
date: 2007-04-23
creator: Rohl, J.S.
viewed: 13
title: Recursive and Iterative Functions for Generating Fibonacci Numbers
abstract: As reference to the popular computing press will confirm, there is a great deal of misunderstanding about the efficient calculation of Fibonacci numbers. As the “obvious” iterative version is linear and the “obvious” recursive version is exponential, many assume that recursion is inherently less efficient than iteration. Even in the technical press, the more efficient logarithmic versions are given in an abstract way, which makes their use rather inconvenient. This report gives complete functions, both iterative and recursive, for the linear and logarithmic algorithms.

url: http://hdl.handle.net/1813/6818
date: 2007-04-23
creator: Del Vecchio, Peter;Basin, David A.
viewed: 83
title: Verification of Combinational Logic in Nuprl
abstract: We present a case study of hardware specification and verification in the Nuprl Proof Development System. Within Nuprl we have built a specialized environment consisting of tactics, definitions, and theorems for specifying and reasoning about hardware. Such reasoning typically consists of term-rewriting, case-analysis, induction, and arithmetic reasoning. We have built tools that provide high-level assistance for these tasks. The hardware component that we have proven is the front end of a floating-point adder/subtractor. This component, the MAEC (Mantissa Adjuster and Exponent Calculator), has 5459 transistors and has been proven down to the transistor level. As the circuit has 118 inputs and 107 outputs, verification by traditional methods such as case analysis would have been a practical impossibility.

url: http://hdl.handle.net/1813/6819
date: 2007-04-23
creator: Rohl, J.S.
viewed: 18
title: Reversing is Not Inherent in Lexicographical Permutation Generation
abstract: In his comprehensive 1977 survey of permutation generation methods, Sedgewick [4] stated that "(reversing) seems to be inherent in lexicographical (permutation) generation". It is the purpose of this paper to give an algorithm which does not use reversing and to show its relationship to the classical reversing algorithm of Ord-Smith [3]. We also give a number of related algorithms to illustrate the flexibility of the new algorithm.

url: http://hdl.handle.net/1813/6820
date: 2007-04-23
creator: Basin, David A.
viewed: 18
title: Equality of Terms Containing Associative-Commutative Functions and Commutative Binding Operators is Isomorphism Complete
abstract: We demonstrate that deciding if two terms containing uninterpreted associative-commutative function symbols and commutative variable binding operators are equal is polynomially equivalent to determining if two graphs are isomorphic. The reductions we use provide insight into this result and suggest polynomial time special cases.

url: http://hdl.handle.net/1813/6821
date: 2007-04-23
creator: Howe, Douglas J.;Constable, Robert L.
viewed: 34
title: Nuprl as a General Logic
abstract: Study of the architecture and design of proof development systems has become important lately as their use has spread and become closely tied to programming environments. One of the central issues is how to provide a general framework for defining and using a variety of logics in such systems; in particular, whether it is better to staart with a simple core system, such as the typed lambda-calculus with dependent function types, or start with a very rich theory providing a formalized metatheory. The first approach is exemplified by the Edinburgh LF. Here we illustrated the second approach by showing how to use Nuprl

as a framework for defining logics in the style of the LF. Central to the viability of the second apprroach is a method of showing that the encoding of user defined logics in Nuprl is faithful. This paper presents a new semantic method to solve the problem. The method is applicable to the LF as well, and seems simpler than the syntactic methods that previously were used and which seem to hinder the use of rich thoeries as logical frameworks.

url: http://hdl.handle.net/1813/6822
date: 2007-04-23
creator: Russell, James R.
viewed: 26
title: Full Abstraction for Nondeterministic Dataflow Networks
abstract: We discuss the problem of finding fully abstract semantic models for nondeterministic dataflow networks. We present the result that there exist nondeterministic networks using only bounded choice for which the input-output relation is not compositional. We go on to show that the trace semantics is fully abstract for all nondeterministic as well as deterministic networks.

url: http://hdl.handle.net/1813/6823
date: 2007-04-23
creator: Dickerson, Matthew T.
viewed: 35
title: The Functional Decomposition of Polynomials
abstract: Let $f(\vec{x}), h_{1}(\vec{x}),...,h_{d}(\vec{x})$ and $g(\vec{x})$ be elements of the polynomial ring $K [\vec{x}]$ (or "polynomials over K"). If $f(\vec{x}) = g(h_{1}(\vec({x}),..., h_{d}(\vec{x})),$ then we call $g, h_{1},..., h{d}$ a functional decomposition of f. Polynomial decomposition is an important and interesting problem with a number of applications in computer scinece and computational algebra. Problems related to the decomposition of polynomials have received much attention in the past five years [AT85, BZ85, KL86, Dic87, vzGKL87, vzG87, vzG88, Dic88, KL89] as well as in the less recent past [Rit22, Eng41, Lev41, FM69, DW74]. In fact, the decomposition of polynomials is considered important enough that most major computational algebra systems (SCRATCHPAD II, MAPLE, MATHEMATICA) support polynomial decomposition for univariate polynomials. In this thesis, we examine various problems related to the functional decomposition of polynomials. We will give a brief history of polynomial decomposition, and then give a number of new results, including the first polynomial time algorithms for two important decomposition problems and a proof of the NP-completeness of another interesting polynomial decomposition problem. We will also discuss some ot the applications of polynomial decomposition to problems such as polynomial factorization and computing the inverse of an automorphism over a multivariate polynomial ring. For the latter, we will give the first known polyomial time algorithm.

url: http://hdl.handle.net/1813/6824
date: 2007-04-23
creator: Higham, Nicholas J.
viewed: 29
title: How Accurate is Gaussian Elimination?
abstract: J.H. Wilkinson put Gaussian elimination (GE) on a sound numerical footing in the 1960's when he showed that with partial pivoting the method is stable in the sense of yielding a small backward error. He also derived bounds proportional to the condition number $\kappa(A)$ for the forward error $\| x - \hat{x} \|$, where $\hat{x}$ is the computed solution to $Ax = b$. More recent work has furthered our understanding of GE, largely through the use of componentwise rather than normwise analysis. We survey what is known about the accuracy of GE in both the forward and backward error senses. Particular topics

include: classes of matrix for which it is advantageous not to pivot; how to estimate or compute the backward error; iterative refinement in single precision; and how to compute efficiently a bound on the forward error. Key Words: Gaussian elimination, partial pivoting, rounding error analysis, backward error, forward error, condition number, iterative refinement in single precision, growth factor, componentwise bounds, condition estimator.

url: http://hdl.handle.net/1813/6825
date: 2007-04-23
creator: Higham, Nicholas J.
viewed: 16
title: A Collection of Test Matrices in MATLAB
abstract: We present a collection of forty-four parametrized test matrices. The matrices are mostly square, dense, nonrandom, and of arbitrary dimension. The collection includes matrices with known inverses or known eigenvalues; ill-conditioned or rank deficient matrices; and symmetric, positive definite, orthogonal, defective, involuntary, and totally positive matrices. For each matrix we give a MATLAB M-file that generates it, and for small dimensions, a printout of the matrix, pictures of it, and a plot of its field of values.

url: http://hdl.handle.net/1813/6826
date: 2007-04-23
creator: Li, Yuying;Coleman, Thomas F.
viewed: 16
title: A Global and Quadratic Affine Scaling Method for Linear L_{1} Problems.
abstract: Recently, various interior point algorithms - related to the Karmarkar algorithm - have been developed for linear programming. In this paper, we first show how this "interior point" philosophy can be adapted to the linear l_{1} problem (in which there are no feasibility constraints) to yield a globally convergent algorithm. We then show that the linear algorithm can be modified to provide a globally and ultimately quadratically convergent algorithm. This modified algorithm is significantly more efficient in practice: we present numerical results to support this claim.

url: http://hdl.handle.net/1813/6827
date: 2007-04-23
creator: Buckley, Chris;Salton, Gerard
viewed: 22
title: A Comparison Between Statistically and Sytactically Generated Term Phrases
abstract: It is customary to use single terms (words) or terms in context (phrases) as indexing units for the representation of natural-language text content. There is evidence that term phrases may provide some advantages over the use of single terms for text content representation. This note presents an evaluation of the expected usefulness of automatic term phrase generation systems involving syntactic processing compared with methods based only on the statistical co-occurance characteristics between individual text words.

url: http://hdl.handle.net/1813/6828
date: 2007-04-23
creator: Soneoka, Terunao
viewed: 31
title: Super Edge-Connectivity of Dense Digraphs and Graphs
abstract: Super-λ is a more refined network reliability index than edge-connectivity; G is super-λ if every minimum edge-cut set is trivial (the set of edges incident at a node with the minimum degree δ). This paper clarifies the relations between diameter and super-λ; enlarging the order (the

number of nodes) n under the given maximum degree Δ and a diameter D results in not only maximizing edge-connectivity but also minimizing the number of minimum edge-cut sets, thus attaining super-λ. The following sufficient conditions for digraph and graph G to be super-λ are derived. Digraph G is super-λ if $n greater than \delta (\frac{\Delta^{D-1}-1}{\Delta -1} + 1) + \ Delta^{D-1}$ Digraph G is super-λ if $n greater than \delta (\frac{(\Delta-1)^{D-1}-1}{\Delta -2} + 1) + (\Delta-1)^{D-1}$ These conditions are best possible. From these, de Bruijn digraph $B(d,D)$, Kautz digraph $K(d,D)$, and most of the densest known graphs (listed in [3,9] are shown to be super-λ. Also, the digraph $G^{\ast}_{B}(n,d)$ proposed in [24] as a maximally connected d-regular digraph with quasiminimal diameter (at most one larger than the lower bound) is proved to be super-λ for any d greater than 2 and any order n greater than d^{3}.

url: http://hdl.handle.net/1813/6829
date: 2007-04-23
creator: Andrews, Gregory R.
viewed: 28
title: Partitions and Principles for Secure Operating Systems
abstract: As part of the general goal of providing secure computer systems, the design of verifiably secure operating systems is one of the most important tasks. This paper addresses the problem by defining security in terms of a model and proposing a set of principles which we feel should be satisfied in a secure operating system. Informally, an operating system is secure if its users completely control the use of all information which they introduce. Four key partitions are identified: user interface functions, user invoked services, background services, and the security kernel. Principles are then defined to insure that interface functions provide a safe initial environment for executing user programs, user called services are confined, background services have no access to user information, and the security kernel adequately protects information storage.

url: http://hdl.handle.net/1813/6830
date: 2007-04-23
creator: Ierardi, Doug J.
viewed: 32
title: The Complexity of Quantifier Elimination in the Theory of an Algebraically Closed Field
abstract: This thesis addresses several classic problems in algebraic and symbolic computation related to the solvability of systems of polynomial equations. We develop a parallel algebraic procedure for deciding when a set of multivariate polynomial equations with coefficients in an arbitrary field K have a common solution in an algebraic closure of this field. All computation required by these algorithms takes place over K, the field of definition, and hence does not require explicit construction or approximation of solutions. The decision procedure is subsequently extended to yield an algorithm for deciding when solutions exist for arbitrary Boolean combinations of polynomial equations over an algebraically closed field. Modifications are introduced to compute projections of algebraic and semi-algebraic sets, producing an exponential-space algorithm for determining the truth of sentences in the theory of an arbitrary algebraically closed field. In addition, this algorithm can be executed in polynomial space (PSPACE) when restricted to sentences with a bounded number of quantifier alternations. The algebraic nature of the construction also allows us to develop naturally a quantifier elimination procedure for formulas in this theory within similar time and space bounds. Finally, we show that these results are nearly optimal in a common model of parallel arithmetic computation. We also show how these methods can be used to compute the dimension of an arbitrary algebraic set. A variety of other applications-including the construction and approximation of solutions for systems of multivariate polynomial equations and the isolation of real zones-are investigated.

url: http://hdl.handle.net/1813/6831

date: 2007-04-23
creator: Andrews, Gregory R.
viewed: 19
title: Message Classes: An Approach to Process Synchronization
abstract: In multiprogramming systems, parallel processes compete for access to shared resources and cooperate by exchanging information. Semaphores are a useful means for controlling competition and synchronizing execution and inter-process messages are useful for communication. Neither semaphores nor inter-process message, however, are natural for solving both problems. This paper introduces a new approach, message classes, which combines and extends features of both semaphores and message passing. Using message classes, numerous mutual exclusion, producer/consumer, process communication, and resource allocation problems can be readily solved.

url: http://hdl.handle.net/1813/6832
date: 2007-04-23
creator: Babaoglu, Ozalp
viewed: 35
title: Fault-Tolerant Computing Based on Mach
abstract: We consider the problem of providing automatic and transparent fault tolerance to arbitrary user computations based on the Mach operating system. Among the several alternatives for structuring such a system, we pursue the "task-pair backup" paradigm in detail and outline how it might be supported by Mach. Some of the new system calls and protocols that need to be incorporated into the Mach kernel and server tasks are sketched.

url: http://hdl.handle.net/1813/6833
date: 2007-04-23
creator: Salton, Gerard
viewed: 28
title: A Comparison of Book Indexing Methods
abstract: Several book indexing methods are introduced based in part on statistical and in part on syntactic analysis methods to process the text of documents. These indexing methods are used to construct global indexes for two book chapters covering the areas of text compression and text encryption, respectively. An attempt is made to evaluate the adequacy of the several indexing products.

url: http://hdl.handle.net/1813/6834
date: 2007-04-23
creator: Peckham, Stephen B.
viewed: 68
title: Maintaining Tree Projections in Amortized O(log n) Time.
abstract: The projection of a set of marked nodes in a tree can be represented by a structure tree, that is, a subtree containing the marked nodes and the lowest common ancestors of all pairs of marked nodes. As an application modifies a forest of trees by linking and cutting trees and by marking and unmarking nodes, the structure tree associated with each tree must be updated in order to reflect the current set of marked nodes. Previous algorithms have used $O(n)$ time per operation [Hoover 87] to maintain structure trees. This algorithm makes use of self-adjusting binary trees [Sleator and Tarjan 85] and reduces the running time to amortized O(log n) per operation.

url: http://hdl.handle.net/1813/6835
date: 2007-04-23

creator: Vazirani, Vijay V.
viewed: 26
title: A Theory of Alternating Paths and Blossoms for Proving Correctness of the $O(\sqrt{VE})$ General Graph Matching Algorithm
abstract: No abstract is available.

url: http://hdl.handle.net/1813/6836
date: 2007-04-23
creator: Schneider, Fred B.;Klarlund, Nils
viewed: 73
title: Verifying Safety Properties Using Non-deterministic Infinite-state Automata
abstract: A new class of infinite-state automata, called safety automata, is introduced. Any safety property can be specified by using such an automaton. Sound and complete proof obligations for establishing that an implementation satisfies the property specified by a safety automaton are given.

url: http://hdl.handle.net/1813/6837
date: 2007-04-23
creator: Schneider, Fred B.
viewed: 12
title: Simpler Proofs for Concurrent Reading and Writing
abstract: Simplified proofs are given for Lamport's protocol to coordinate concurrent reading and writing.

url: http://hdl.handle.net/1813/6838
date: 2007-04-23
creator: Torgerson, Solveig
viewed: 25
title: Automatic Design of Relational Databases
abstract: Advances in relational database technology have made available relational database systems that support state of the art query languages and query processing algorithms. However, because database systems do not include adequate tools for database design, their use and accessibility is hampered by major difficulties that users experience in the process of designing a database. In this dissertation, we present methods and algorithms for automating the design of relational databases and describe a prototype design tool. Unlike researchers who have advocated the use of higher level data models, we focus on the pure relational model, because of its sound theoretical foundation and investigate issues in automatic design of relational databases. We present a new graph representation for functional dependencies, which simplifies and enhances several design algorithms, such as algorithms for computing closures, keys, and projecting dependency sets. We define the basis $B(F)$, a compact representation of F^{+}, which is used to find multiple BCNF decompositions. The basis also provides a way to find the generator of the F-closed sets, an essential component in the computation of Armstrong relations, which are relations representing a set of functional dependencies. We study the inference of multivalued dependencies from an acyclic relational scheme. These multivalued dependencies capture the relationship between the relations in the database. For the inference of functional dependencies within a relation, we optimize previously proposed algorithms. Queries can be used to rate candidate schemes according to how queries perform against them. We present an algorithm for finding the exact query formulation for a particular design, given a scheme independent definition of the query. Multiple ways of accessing the data or no way of accessing the data consistently can be a result indicating that the current design is not valid. Until now, there has been limited experience with feasibility and performance aspects of automatic relational design. We describe a prototype design tool and present a detailed performance study of the dependency inference algorithms implemented in

this prototype.

url: http://hdl.handle.net/1813/6839
date: 2007-04-23
creator: Schneider, Fred B.;McCurley, E. Robert
viewed: 17
title: An Assertional Characterization of Serializability
abstract: Serializability is usually defined operationally in terms of sequences of operations. This paper gives another definition of serializability-in terms of sequences of states. It also shows how this definition can be used to prove correctness of solutions to the concurrency control problem.

url: http://hdl.handle.net/1813/6840
date: 2007-04-23
creator: Aizikowitz, Jacob I.
viewed: 25
title: Designing Distributed Services Using Refinement Mappings
abstract: The thesis addresses the design of multiple-server implementations for services in distributed systems-a generalization of the replication management problem. A frequently used correctness criteria for replication management is that clients of a service not be able to distinguish a single-server implementation from on that involves multiple servers. Our approach formalizes this idea. It is based on viewing a single-server implementation of a service as a specification of that service. A multiple-server implementation is considered correct if it implements this single-server based specification. We show how program proof outlines can be viewed as specifications and, using refinement mappings, define what it means for one proof outline to implement another. The notion of a structural refinement, which formalizes the relationship between a program and the result of performing step-wise refinement, is defined. When one proof outline is a structural refinement of the other, simplified proof obligations can be used to show that the one implements the other. Finally, a methodology for designing a multiple-server implementation of a service is presented. The methodology is based on structural refinement and on viewing proof outlines as specifications. A designer defines a refinement mapping to express the relationship between the state space of a given single-server implementation of a service and the state space of the desired multiple-server implementation. Using this refinement mapping, a provably correct multiple-server implementation is derived from the single server one. Different refinement mappings as well as different single-server based specifications result in different implementations. Examples illustrate the concepts and the methodology.

url: http://hdl.handle.net/1813/6841
date: 2007-04-23
creator: Lutz, Earlin D.
viewed: 24
title: Some Proofs of Transforms
abstract: Three simple examples of data refinement-replacement of an abstract program fragment and its variables by a more concrete fragment and variables-are presented in the Polya transform notation. Correctness of each transformation is derived using the formulations of Prinz-Gries, Morris, and Chen/Udding, which are formally equivalent but require different proof strategies. This allows comparison of the three formulations based on ease of use.

url: http://hdl.handle.net/1813/6842
date: 2007-04-23
creator: Marzullo, Keith;Birman, Kenneth P.;Siegel, Alexander

viewed: 33
title: Deceit: A Flexible Distributed File System
abstract: Deceit, a distributed file system being developed at Cornell, focuses on flexible file semantics in relation to efficiency, scalability, and reliability. Deceit servers are interchangeable and collectively provide the illusion of a single, large server machine to any clients of the Deceit service. Non-volatile replicas of each file are stored on a subset of the file servers. The user is able to set parameters on a file to achieve different levels of availability, performance, and one-copy serializability. Deceit also supports a file version control mechanism. In contrast with many recent DFS efforts, Deceit can behave like a plain Sun Network File System server and can be used by any NFS client without modifying any client software. The current Deceit prototype uses the ISIS Distributed Programming Environment for all communication and process group management, an approach that reduces system complexity and increases system robustness.

url: http://hdl.handle.net/1813/6843
date: 2007-04-23
creator: Goyal, Suresh
viewed: 31
title: Second Order Kinematic Constraint Between Two Bodies Rolling, Twisting and Slipping Against Each Other While Maintaining Point Contact
abstract: The second order kinematic constraint (acceleration constraint) between two rigid bodies that are rolling, twisting, and slipping against each other while maintaining point contact, is derived by differentiation of the first order constraint and by including the geometry of the surfaces at their contact. This constraint is derived with a view to facilitate the simulation of such motion with general purpose dynamics simulators, and more specifically for the Newton dynamic simulator developed at Cornell University. The constraint is first derived for planar motion and then generalized for motion in three dimensions. Some simple, but representative, examples are presented.

url: http://hdl.handle.net/1813/6844
date: 2007-04-23
creator: Kahn, Peter J.;Hopcroft, John E.
viewed: 79
title: A Paradigm for Robust Geometric Algorithms
abstract: No abstract is available.

url: http://hdl.handle.net/1813/6845
date: 2007-04-23
creator: Schmidt, Erik Meineche;Hopcroft, John E.;Fortune, Steven
viewed: 13
title: The Complexity of Equivalence and Containment for Free Single Variable Program Schemes
abstract: Non-containment for free single variable program schemes is shown to be NP-complete. A polynomial time algorithm for deciding equivalence of two free schemes, provided one of them has the predicates appearing in the same order in all executions, is given. However, the ordering of a free scheme is shown to lead to an exponential increase in size.

url: http://hdl.handle.net/1813/6846
date: 2007-04-23
creator: Russell, James R.
viewed: 23
title: On Oraclizable Networks and Kahn's Principle

abstract: In this paper we investigate generalizations of Kahn's principle to nondeterministic dataflow networks. Specifically, we show that for the class of "oraclizable" networks a semantic model in which networks are represented by certain sets of continuous functions is fully abstract and has the fixed-point property. We go on to show that the oraclizable networks are the largest class representable by this model, and are a proper superclass of the networks implementable with the infinity fair merge primitive. Finally, we use this characterization to show that infinity fair merge networks and oraclizable networks are proper subclasses of the networks with Egli-Milner monotone input-output relations.

url: http://hdl.handle.net/1813/6847
date: 2007-04-23
creator: Ausiello, Giorgio
viewed: 26
title: Simple Programs on Strings and Their Decision Problems
abstract: Classes of simple programs operating on srings are considered. Their power as acceptors and their power as generation devices are compared and consequences on upper bounds and lower bounds for several decision problems are derived. It is shown that even for such a small class of programs some problems are undecidable.

url: http://hdl.handle.net/1813/6848
date: 2007-04-23
creator: Salton, Gerard
viewed: 24
title: Cataloging Software Packages for Automatic Document Processing
abstract: Considerable advances have been made in the last few years in the development of hardware structures useful for the implementation of real-time document processing systems and on-line information retrieval. At the same time, relatively little is known about the software packages most appropriate for the new technology. Following certain proposals for the creation of national and international registries of software packages, a sample catalog of software routines is developed for use in modern automatic documentation systems.

url: http://hdl.handle.net/1813/6849
date: 2007-04-23
creator: Russell, James R.;Murthy, Chetan R.
viewed: 26
title: A Constructive Proof of Higman's Lemma
abstract: Higman's Lemma is a special case of the more general Kruskal's tree embedding theorem and the graph minor theorem. Prior to this work, only classical (and impredicative) proofs of the Lemma were known. Recently, there has been much interest in developing a constructive proof of the Lemma, primarily via Friedman's A-translation. In this paper we present a direct constructive proof. We achieve this by reducing the problem to a construction of certain sets of sequential regular expressions. We then exhibit a well-founded order on such sets, and the Lemma then follows by induction.

url: http://hdl.handle.net/1813/6850
date: 2007-04-23
creator: Pingali, Keshav;Beck, Micah
viewed: 34
title: From Control Flow to Dataflow
abstract: Are imperative languages tied inseparably to the von Neumann model or can they be implemented

in some natural way on dataflow architectures? In this paper, we show how imperative language programs can be translated into dataflow graphs and executed on a dataflow machine like Monsoon. This translation can exploit both fine-grain and coarse-grain parallelism in imperative language programs. More importantly, we establish a close connection between our work and current research in the imperative languages community on data dependencies, control dependencies, program dependence graphs, and static single assignment form. These results suggest that dataflow graphs can serve as an executable intermediate representation in parallelizing compilers.

url: http://hdl.handle.net/1813/6851
date: 2007-04-23
creator: Herley, Kieran T.
viewed: 17
title: Improved Bounds for the Token Distribution Problem
abstract: The problem of packet routing on bounded degree networks is considered. An algorithm is presented that can route n packets in O(log $n + K)$ time on a particular n-node expander-based network provided that no more than K packets share the same source or destination.

url: http://hdl.handle.net/1813/6852
date: 2007-04-23
creator: Ricciardi, Aleta M.
viewed: 15
title: Completeness of a Temporal Logic for Asynchronous Systems
abstract: In this paper, we define a variant of temporal logic that is designed to capture the temporal and causal aspects of asynchronous distributed systems. In these systems, the usual physical concept of time based upon the notion of a global clock is relegated to a secondary role; causal dependency or necessary temporal precedence is fundamental. Causal dependence is just temporal order locally; globally it is based on communication. An instant of time is replaced by a consistent cut. The semantics of most temporal logics have been based on computation sequences, either linear or branching time. In these models, one views an execution of a system as a single sequence of events. In such models, a "spurious" linearization is introduced, effectively disregarding concurrency. Recently, however, partially ordered models have been considered because, it is argued, that they more accurately represent the system being studied. The main technical contribution of this paper is to show that such a logic is complete for the class of models defined by executions of asynchronous systems.

url: http://hdl.handle.net/1813/6853
date: 2007-04-23
creator: Xavier, Patrick G.;Pai, Dinesh K.;Donald, Bruce Randall
viewed: 36
title: What Should a Roboticist do Next? A Progress Report From the Cornell Computer Science Robotics Laboratory
abstract: The most important intellectual capital of a research laboratory is its coherent vision of science, research and progress. In this progress report, we identify key areas of research, describe the progress we have made in attacking these areas, and discuss our plans for future work. Our primary goal is to bring robotics science closer to its goal of task-level planning. We approach this goal through a blend of theory, implementation, and experimentation. A major impediment to developing truly task-level robotic systems has been the very hard algorithmic problems that arise in task-level robot planning. We have identified several key areas on which to concentrate in developing new algorithmic technologies to crack these problems. Roughly speaking, these areas are: 1. Basic research in compliant motion planning under uncertainty. This

research will result in algorithms and systems that can assemble mechanical parts using compliant motion strategies, despite uncertainty and errors in sensing, control, and modeling. 2. Basic research in planning with full dynamics. It is vital that robots execute tasks quickly, and take dynamics into account. Our research on kinodynamic planning provides the first provably good approximation algorithms for planning nearly time-optimal collision-avoiding paths that respect dynamics bounds. 3. Basic research in design for assembly. The design of mechanical devices and the planning to assemble them should not be independent activities. We introduce a new, fully algorithmic, combinatorially precise approach to designing devices so that they are easy to assemble and (optionally) hard to disassemble. Our analysis can be used to validate good designs, and can be iterated to generate improved designs.

url: http://hdl.handle.net/1813/6854
date: 2007-04-23
creator: Smith, Geoffrey S.
viewed: 32
title: Overloading and Bounded Polymorphism
abstract: We present an extension of the Hindley/Milner polymorphic type system that deals with overloading. The system uses a kind of bounded polymorphic type to describe the nonuniform polymorphism resulting from the use of overloaded identifiers. We consider the type inference problem for our system and show that it is undecidable. Restrictions are proposed to cope with this limitation.

url: http://hdl.handle.net/1813/6855
date: 2007-04-23
creator: Stark, Eugene W.;Shanbhogue, Vasant;Panangaden, Prakash
viewed: 24
title: Stabilitly and Sequentiality in Dataflow Networks
abstract: The class of monotone input/output automata has been shown in the authors' previous work to be a useful operational model for a dataflow-style networks of communicating processes. An interesting class of problems arising from this model are those that concern the relationship between the input/output behavior of automata to the structure of their transition graphs. In this paper, we restrict our attention to the subclass of determinate automata, which compute continuous functions, and we characterize classes of determinate automata that compute: (1) the class of functions that are stable in the sense of Berry, and (2) the class of functions that are sequential in the sense of Kahn and Plotkin.

url: http://hdl.handle.net/1813/6856
date: 2007-04-23
creator: Jagadeesan, Radhakrishnan
viewed: 32
title: A Categorical Powerdomain Construction
abstract: The class of countably based bifinites (SFP objects) is the usual mathematical framework for carrying out the constructions that arise in the semantics of programming languages. However, A. Jung showed that the construction used to define the domain-theoretic semantics of polymorphic lambda calculus, is not closed on this category. This motivates the search for a suitable category that is closed under all the constructions used in programming language semantics. T. Coquand developed categories of embeddings as a categorical generalization of the domain-theoretic structures used to give semantics of polymorphism. In this paper, we present a category- theoretic powerdomain construction that is closed on the (extensional) categories of embeddings. The construction is shown to have universal properties that resemble the universal properties of the Plotkin powerdomain.

url: http://hdl.handle.net/1813/6857
date: 2007-04-23
creator: Bilardi, Gianfranco;Kapur, Shyam
viewed: 31
title: Inductive Inference without Overgeneralization from Positive Examples
abstract: Language learnability is investigated in the Gold paradigm of inductive inference from positive data. Angluin gave a characterization of learnable families in this framework. Here, learnability is studied when the learner obeys certain constraints. These constraints have been suggested by some studies of child language acquisition. Learnable families are characterized for learners with the following types of constraints: (a) conservative, consistent, and responsive, (b) conservative and responsive, (c) conservative and consistent, and (d) conservative. It is shown that the class of learnable families strictly increases going from (a) to (b) and from (b) to (c), while it stays the same going from (c) to (d).

url: http://hdl.handle.net/1813/6858
date: 2007-04-23
creator: Panangaden, Prakash;Jagadeesan, Radhakrishnan
viewed: 33
title: A Domain-Theoretic Model for a Higher-Order Process Calculus
abstract: In this paper we study a higher-order process calculus, a restriction of one due to Boudol, and develop an abstract, model for it. By abstract we mean that the model is constructed domain-theoretically and reflects a certain conceptual viewpoint about observability. It is not constructed from the syntax of the calculus or from computation sequences. We describe a new powerdomain construction that can be given additional algebraic structure that allows one to model concurrent composition, in the same sense that Plotkin's powerdomain can have a continuous binary operation defined on it to model choice. We show that the model constructed this way is adequate with respect to the operational semantics. The model that we develop and our analysis of it is closely related to the work of Abramsky and Ong on the lazy lambda calculus.

url: http://hdl.handle.net/1813/6859
date: 2007-04-23
creator: Chang, Richard
viewed: 15
title: An Example of a Theorem that has Contradictory Relativizations and a Diagonalization Proof
abstract: We construct a computable space bound $S(n)$, with $n^{2} less than S(n) less than n^{3}$ and show by diagonalization that DSPACE [$S(n)$] = DSPACE [$S(n)$ log n]. Moreover, we can show that there exists an oracle A such that DSPACE [$S(n)$] $\neq$ DSPACE^{A}[$S(n)$ log n]. This is a counterexample to the belief that is a theorem has contradictory relativizations, then is cannot be proved using standard techniques like diagonalization [7].

url: http://hdl.handle.net/1813/6860
date: 2007-04-23
creator: Donald, Bruce Randall
viewed: 12
title: Planning and Executing Robot Assembly Strategies in the Presence of Uncertainty
abstract: Robot control systems are subject to significant uncertainty and error. Typical robots are also equipped with sensors-force sensors, kinesthetic positions sensors, tactile sensors, vision, and so forth. However, these sensors are also subject to significant uncertainty. Finally, the geometrical models of the robot and the environment (part, obstacles, etc.) cannot be exact-they are accurate only to manufacturing tolerances,

or to the accuracy of the sensors used to acquire the models. Uncertainty is an absolutely fundamental problem in robotics, and plans produced under the assumption of no uncertainty are meaningless. What is needed is a principled theory of planning in the presence of uncertainty. Such a theory must not only be computational, but must also take uncertainty into account a priori. In motion planning with uncertainty, we exploit compliant motion-sliding on surfaces-in order to effect a "structural" reduction in uncertainty. Such compliant motion plans can be synthesized from a computational analysis of the geometry of the holonomic constraints. We will present a precise framework for motion planning with uncertainty. In particular, given geometric bounds on the uncertainty in sensing and control, we develop algorithms for generating and verifying compliant motion strategies that are guaranteed to succeed as long as the sensing and control uncertainties lie within the specified bounds. The first results in this theory begin with Lozano-Perez, Mason, and Taylor [LMT], with subsequent contributions by Mason [MA2], Erdmann [E], Donald [D], and others. This research has led to a theoretical computational framework for motion planning with uncertainty, which we explore in this focused survey paper.

url: http://hdl.handle.net/1813/6861
date: 2007-04-23
creator: Ranjan, Desh;Panconesi, Alessandro
viewed: 79
title: Quantifiers and Approximation
abstract: We investigate the relationship between logical expressibility of NP optimization problems and their approximation properties. First such attempt was made by Papadimitriou and Yannakakis, who defined the class of NPO problems MAX NP. We show that many important optimization problems do not belong to MAX NP and that in fact there are problems in P which are not is MAXNP. The problems we consider fit naturally in a new complexity class that we call MAX II sub 1. We prove that several natural optimization problems are complete for MAX II sub 1 under approximation preserving reductions. All these complete problems are non-approximable unless P=NP. This motivates the definition of subclasses of MAX II sub 1 that only contain problems which are presumably easier with respect to approximation. In particular, the class that we call RMAX(2), contains approximable problems and problems like MAX CLIQUE that are not known to be non-approximable. We prove that MAX CLIQUE and other natural optimization problems are complete for RMAX(2). All the complete problems in RMAX(2) share the interesting property that they either are non-approximable or are approximable to any degree of accuracy.

url: http://hdl.handle.net/1813/6862
date: 2007-04-23
creator: Thomas, Stephen Walter
viewed: 17
title: Sequential Estimation Techniques for Quasi-Newton Algorithms
abstract: Let F be a mapping from real n-dimensional Euclidean space into itself. In terms of solving for a zero of F, the quasi-Newton algorithms are based on the generalized Newton iteration $x_{k+1} = x_{k} - B_{k}^{-1}F(x_{k})$, where $\{B_{k}\}$ is a sequence of nonsingular matrices. In this thesis some geometrical sequential estimation techniques are applied to the calculation of a B_{k} as an estimate for the Jacobian matrix $F'(x_{k})$. The resulting estimators manifest themselves as either rank-one or rank-two, symmetric updates for B_{k}, together with an update for a matrix which is descriptive of the error $E_{k} = B_{k} - F'(x_{k})$. These updates are in fact shown to produce optimal estimates in the sense that they minimize the set size of a certain bound for the error matrix E_{k}. It is shown that the use of the new updates in conjunction with the generalized Newton iteration produces locally and Q-superlinearly convergent algorithms. Moreover, under the requirement that the steps taken by the algorithm satisfy a uniform linear independence condition, it is shown that the R-order of convergence associated with the

symmetric update is at least as large as the positive root of $t^{n+1} - t^{n} - 1 = 0$. A similar but somewhat lower rate of convergence bound is proved for the rank-one update. The symmetric update is implemented in an algorithm for unconstrained optimization which employs Powell's dog-leg step direction/length strategy as a globalization technique. Analysis is presented which, under mild conditions on the function to be minimized, shows that the algorithm is globally and Q-superlinearly convergent. The results of some numerical experiments are presented which show that the algorithm's performance compares favorably with Powell's very successful MINFA.

url: http://hdl.handle.net/1813/6863
date: 2007-04-23
creator: Basin, David A.
viewed: 15
title: Building Problem Solving Environments In Constructive Type Theory
abstract: We have developed powerful environments within the Nuprl Proof Development System for problem solving in diverse domains. Definitions, proofs, and programs are constructed naturally and at a high-level in these environments, with decision procedures and other tactics providing a degree of automation approaching that found in more specialized theorem provers. Our environments have a wide range of applications that include: Ramsey theory, hardware specification and verification, combinational logic synthesis from proofs, CMOS circuit synthesis from boolean expressions, recursion theory, and partial program development. Several of these applications establish new theorem proving paradigms. We also provide an account of rewriting in type theory and related decision procedures. We have implemented a very general rewrite package for reasoning about arbitrary user defined relations, and we have used this package to construct a number of sophisticated term normalizers, simplifiers, and equality decision procedures. We demonstrate that one of these decision problems deciding if two terms containing otherwise uninterpreted associative-commutative function symbols and commutative variable binding operators are equal, is polynomially equivalent to determining if two graphs are isomorphic.

url: http://hdl.handle.net/1813/6864
date: 2007-04-23
creator: Vazirani, Vijay V.;Khuller, Samir
viewed: 14
title: Planar Graph Coloring is Not Self-Reducible Assuming $P \neq NP$
abstract: No abstract is available.

url: http://hdl.handle.net/1813/6865
date: 2007-04-23
creator: Marzullo, Keith;Shah, Amitabh
viewed: 14
title: Trade-offs Between Replication and Availability in Distributed Databases
abstract: Distributed databases are generally built on top of standard communication facilities such as leased phone lines. Often several applications, running in different databases, use the same network for their communication. But the applications that run in these databases have grown increasingly more complex and demanding in their availability requirements, often with temporal constraints (such as real-time databases). We argue in this paper that there is a need for dedicated communication networks designed for specific applications. To design such networks, we argue that it is necessary to analyze the data access patterns in the applications that run on the top of the networks. Such analysis would give a network designer an insight into where and how much to replicate the data in the system. Replication can increase availability of data, but too much replication can also hamper it. Thus, for a given application, there exists a right balance

between replication and availability. Our goal is to find this balance and show how to design a network of the cheapest cost that achieves it. In this paper, we take the first step towards the design problem by precisely characterizing the trade-offs between replication and availability and suggest a network design strategy to exploit these trade-offs.

url: http://hdl.handle.net/1813/6866
date: 2007-04-23
creator: Bloom, Bard
viewed: 21
title: Partial Traces and the Semantics and Logic of CCS-Like Languages
abstract: We consider the theory of CCS-Like languages when partial traces (simply finite sequences of actions that the process may perform) are the only observation. We characterize process equivalence, giving relational, logical, and operational definitions and showing that they coincide. This relation is adequate for all languages defined by a class of CCS-like rules; it is fully abstract for any language including process copying and controlled communication poeration. We also give a complete inequational axiom system for this notion of process equivalence for finite processes.

url: http://hdl.handle.net/1813/6867
date: 2007-04-23
creator: Kane, Kenneth P.
viewed: 22
title: Log-Based Recovery in Asychronous Distributed Systems
abstract: Replication has been shown to be an important tool in the design of high- performance and highly-available distributed systems. When applied to data, however, replication significantly complicates the problem of maintaining consistency within a system. This problem is further complicated when repositories of the data can potentially fail and recover. In this dissertation, we describe a log-based mechanism for restoring consistent states to replicated data objects after failures. A variety of techniques have been proposed for implementing consistency in a system. Most of these techniques focus on preserving a form of consistency based on serialization of updates. Although serializable consistency is useful for building a large number of applications, there are also many applications that do not require the full strength of consistency that serializability provides. For these applications, the cost of implementing serializable consistency can be prohibitive. A number of weaker and less expensive consistency forms have therefore been proposed for building such applications. In this dissertation, we focus on preserving a causal form of consistency based on the notion of virtual time. Causal consistency has been shown to apply to a variety of applications, including distributed simulation, task decomposition, and mail delivery systems. Several mechanisms have been proposed for implementing causally consistent recovery, most notably those of Strom and Yemini, and Johnson and Zwaenepoel. Our mechanism differs from these in two major respects. First, we implement a roll-forward style of recovery. A functioning process is never required to roll-back its state in order to achieve consistency with a recovering process. Second, our mechanism does not require any explicit information about the causal dependencies between updates. Instead, all necessary dependency information is inferred from the orders in which updates are logged by the object servers. Our basic recovery technique appears to be applicable to forms of consistency other than causal consistency. In particular, we show how our recovery technique can be modified to support an atomic form of consistency that we call grouping consistency. By combining grouping consistency with causal consistency, it may even be possible to implement serializable consistency within our mechanism.

url: http://hdl.handle.net/1813/6868
date: 2007-04-23

creator: Reppy, John H.
viewed: 15
title: First-Class Synchronous Operations in Standard ML
abstract: In [Reppy88], we introduced a new language mechanism, first-class synchronous operations, for synchronous message passing. In our approach, synchronous operations are represented by first-class values called events. Events can be combined in various ways, allowing a user to define new synchronization abstractions (e.g., remote procedure call), which have equal status with the built-in operations. This paper describes this mechanism and presents a new implementation of events as part of a coroutine package for Standard ML. The coroutine package is written entirely in SML, using first-class continuations, and provides very light-weight processes. First-class continuations provide a natural way to represent events that closely follows an operational semantics for events.

url: http://hdl.handle.net/1813/6869
date: 2007-04-23
creator: Critchlow, Carol M.
viewed: 19
title: On Inhibition and Atomicity in Asynchronous Consistent-cut Protocols
abstract: In this paper, we investigate the existence of non-inhibitory consistent-cut protocols: protocols which create without interfering with the actions of the system in which they are running. Specifically, we consider systems in which processors have only three kinds of events: sends, receives, and internal events (which do not involve communication with another processor). We show that there is no non-inhibitory consistent-cut protocol for such systems.

url: http://hdl.handle.net/1813/6870
date: 2007-04-23
creator: Elster, Anne C.;Cavallaro, Joseph R.
viewed: 19
title: Complex Matrix Factorizations with CORDIC Arithmetic
abstract: Matrix factorizations are important in many real-time signal processing applications. In order to improve the performance of these algorithms, special purpose VLSI processor arrays are being developed. Recently, the Coordinate Rotation Digital Computer (CORDIC) algorithms have been applied to the QR Decomposition (QRD) and the Singular Value Decomposition (SVD). In this paper, the CORDIC arithmetic algorithms are extended to deal with complex data. Novel CORDIC VLSI architectures for the QRD of a complex matrix, the Eigenvalue Decomposition of a Hermitian matrix, and the SVD of a complex matrix are presented. These architectures are suitable for VLSI implementation.

url: http://hdl.handle.net/1813/6871
date: 2007-04-23
creator: Ghosal, Dipak;Shah, Amitabh
viewed: 15
title: A Stochastic Analysis of the Performance of Distributed Databases With Site and Link Failures
abstract: A stochastic model for analyzing the performance of a distributed database is proposed. The database is prone to site and link failures, possible leading to a partition of the underlying communication network. The system model is parametrized to support very general assumptions about data replication, transaction access patterns and network connectivity. For concreteness of analysis, a concurrency control protocol based on Thomas' Majority Consensus protocol and the Two-Phase Commit Protocol is used. A new performance measure called expected system degradation is proposed; this measure is a combination of availability of data and the transaction response time; this is the first step towards the ultimate goal of

defining the notion of availability for real-time transaction systems. The model allows a database designer to analyse the expected system performance and choose the right input parameters that emphasize the relative importance of availability and response times.

url: http://hdl.handle.net/1813/6872
date: 2007-04-23
creator: Bloom, Bard
viewed: 82
title: Can LCF Be Topped? Flat Lattice Models of Typed λ-Calculus
abstract: Plotkin, [Plo77], examines the denotational semantics of PCF (essentially typed λ-calculus with arithmetic and looping). The standard Scott semantics $\bigvee$ is computationally adequate but not fully abstract; with the addition of some parallel facilities, it becomes fully abstract, and with the addition of an existential operator, denotationally universal. We consider carrying out the same program for $\diamondsuit$, the Scott models built from flat lattices rather than flat cpo's. Surprisingly, no computable extension of PCF can be denotationally universal; perfectly reasonable semantic values such as supremum and Plotkin's "parallel or" cannot be definable. There is an unenlightening fully abstract extension $\pounds_{A}$(approx), based on Godel numbering and syntactic analysis. Unfortunately, this is the best we can do; operators defined by PCF-style rules cannot give a fully abstract language. (There is a natural and desirable property, operation extensionality, which prevents full abstraction with respect to $\diamondsuit$.) However, we show that Plotkin's program can be carried out for a non-confluent evaluator.

url: http://hdl.handle.net/1813/6873
date: 2007-04-23
creator: Novick, Mark B.
viewed: 58
title: Generalized PQ-trees
abstract: We introduce a new data structure, which we call generalized PQ-trees because they behave like Booth and Lueker's PQ-trees. Given a ground set of n elements S, and $A = \{A_{1},\ldots,A_{k}\}$ a collection of subsets of S, generalized PQ-trees allow us to efficiently represent which subsets of S never partially overlap with sets in A. We give an $O(kn)$ time sequential algorithm and an $O(kn)$ processor parallel algorithm for computing the generalized PQ-tree. Our new data structure can be used to speed up other researchers algorithms for recognizing interval and parity graphs.

url: http://hdl.handle.net/1813/6874
date: 2007-04-23
creator: Novick, Mark B.
viewed: 87
title: Parallel Algorithms for the Split Decomposition
abstract: We give a new $O(n^{2})$ time algorithm for finding Cunningham's split decomposition of an arbitrary undirected graph. We can convert this algorithm to an NC algorithm that uses only $O(n^{3})$ processors. The related composition operation is a generalization of the modular (also called substitution of X-join) composition. The split decomposition is useful in recognizing special classes of graphs, such as circle graphs, which are the intersection graphs of arcs of a circle, and parity graphs, because these graphs are closed under the inverse composition operation. The decomposition can also be used to find NC algorithms for some optimization problems on special families of graphs, assuming these problems can be solved in NC for the indecomposable graphs of the decomposition. A new data structure, which we call a generalized PQ-tree, is used to make the algorithm efficient. Generalized PQ-trees make it easy to find sets that trivially intersect (one set is contained in the other or they are disjoint) each other. All the

calculations on these trees can be done efficiently. Two other important parts of the algorithm are finding a breadth-first search tree and performing a modular decomposition of a graph. These computations are the bottlenecks to an efficient parallel algorithm since they are the only parts of the algorithm where $\omega (n^{2})$ processors are required. However, they can be performed in $O(n^{2})$ time sequentially.

url: http://hdl.handle.net/1813/6875
date: 2007-04-23
creator: Nicolau, Alexandru;Pingali, Keshav;Beck, Micah
viewed: 18
title: Static Scheduling for Dynamic Dataflow Machines
abstract: Dataflow machines can "unravel" loops automatically so that many iterations of a loop can execute in parallel. Unbounded loop unraveling can strain the resources available on the machine and, in extreme cases, deadlock can occur due to overcommitment of resources. Previous efforts to address this problem have focused mainly on runtime mechanisms of debatable utility. Loop bounding, a compile-time technique, controls parallelism by introducing dependencies between loop iterations. The loop is given enough resources for the concurrent execution of some number of iterations, say k. The K + 1st iteration uses the same resources as the first iteration and starts only after the first iteration is complete, and so on. Thus, the granularity of resource allocation is based on the rather arbitrary syntactic notion of a loop iteration. In this paper, we argue that loop bounding can lead to inefficient use of resources and propose an alternative way of compiling loops for pipelined execution. We introduce the notion of a stage decomposition of a loop, which defines a partition of a loop iteration into stages. We show how the problem of choosing a stage decomposition for a particular loop can be tackled by applying compile-time analyses and static scheduling techniques. Such techniques have been developed for scheduling loops on very long instruction word (VLIW) machines which, like dataflow machines, can exploit fine-grained parallelism in programs. These analyses permit the compiler to allocate resources according to expected patterns of usage, thus reducing overall resource requirements. Finally, we show how our schema can be implemented on the Monsoon dataflow machine being built at M.I.T.

url: http://hdl.handle.net/1813/6876
date: 2007-04-23
creator: Vazirani, Vijay V.;Mitchell, Stephen G.;Khuller, Samir
viewed: 16
title: Processor Efficient Parallel Algorithms for the Two Disjoint Paths Problem, and for Finding a Kuratowski Homeomorph
abstract: We give an NC algorithm for finding vertex disjoint s_{1}, t_{1} and s_{2}, t_{2} paths in an undirected graph G. An important step in solving the general problem is solving the planar case. A new structural property yields the parallelization, as well as a simpler linear time sequential algorithm for this case. We extend the algorithm to the non-planar case by giving an NC algorithm for finding a Kuratowski homeomorph, and, in particular, a homeomorph of $K_{3}, 3$, in a non-planar graph. Our algorithms are processor efficient; in each case, the processor-time product of our algorithms is within a polylogarithmic factor of the best known sequential algorithm.

url: http://hdl.handle.net/1813/6877
date: 2007-04-23
creator: Hartmanis, Juris
viewed: 17
title: On the Importance of Being II2-Hard
abstract: In this column, we show how a variety of interesting results in theory of computation all follow from

a simple observation about $\prod _{2}$-complete sets of total machines. We easily derive: a) representation independent independence results, b) non-recursive succinctness relations between different representations of languages, c) the existence of incomplete languages in various complexity classes.

url: http://hdl.handle.net/1813/6878
date: 2007-04-23
creator: Tiuryn, Jerzy;Kozen, Dexter
viewed: 31
title: Logics of Programs
abstract: None Available

url: http://hdl.handle.net/1813/6879
date: 2007-04-23
creator: Zippel, Richard
viewed: 17
title: Interpolating Polynomials from Their Values
abstract: A fundamental technique used by many algorithms in computer algebra is interpolating polynomials from their values. This paper discusses two algorithms for solving this problem for sparse multivariate polynomials, an updated version of a probabilistic one and a new deterministic technique that uses some ideas due to Ben-Or and Tiwari (1988). In addition, algorithms are presented for quickly finding points that are not zeroes of sparse multivariate polynomials - the zero avoidance problem.

url: http://hdl.handle.net/1813/6880
date: 2007-04-23
creator: Kedem, Klara;Chew, L. Paul
viewed: 18
title: Placing the Largest Similar Copy of a Convex Polygon Among Polygonal Obstacles
abstract: Given a convex polygon P and an environment consisting of polygonal obstacles, we find the largest similar copy of P that does not intersect any of the obstacles. Allowing translation, rotation, and change-of-size, our method combines a new notion of Delaunay triangulation for points and edges with the well-known functions based on Davenport-Schinzel sequences producing an almost quadratic algorithm for the problem. Namely, if P is a convex k-gon and if Q has n corners and edges then we can find the placement of the largest similar copy of P in the environment Q in time $O (k^{4}n \lambda_{4}(kn)$ log$n$), where \lambda_{4} is one of the almost-linear functions related to Davenport-Schinzel sequences. If the environment consists only of points then we can find the placement of the largest similar copy of P in time $O (k^{2}n \lambda_{3}(kn)$ log n).

url: http://hdl.handle.net/1813/6881
date: 2007-04-23
creator: Zippel, Richard
viewed: 21
title: An Explicit Separation of Relativised Random and Polynomial Time and Relativised Deterministic Polynomial Time
abstract: Inthis note, we demonstrate that a certain class of naturally occuring problems involving an oracle are solvable in random polynomial time, but not in deterministic polynomial time. This class of problems is especially interesting because a very slight change in the parameters of the problem yields one that does have a polynomial solution.

url: http://hdl.handle.net/1813/6882
date: 2007-04-23
creator: Schneider, Fred B.;Gries, David;Widom, Jennifer
viewed: 14
title: Trace-Based Network Proof Systems: Expressiveness and Completeness
abstract: We consider incomplete trace-based network proof systems for safety properties, identifying extensions that are necessary and sufficient to achieve relative completeness. We then consider the expressiveness required of any trace logic that encodes these extensions.

url: http://hdl.handle.net/1813/6883
date: 2007-04-23
creator: Beck, Micah
viewed: 16
title: TransFig: Portable Figures for TEX Version 1.4-TFX Release 4
abstract: TransFig is a mechanism for integrating figures into TEX documents. Several "graphics languages" exist which achieve such integration, but none is widely enough used to be called a standard. TransFig's goal is to maintain the portability of TEX documents across printers and operating environments. The central mechanism in TransFig is Fig code, a graphics editor. TransFig provides an automatic and uniform way to Translate Fig code into various graphics languages and to integrate that code into a TEX document.

url: http://hdl.handle.net/1813/6884
date: 2007-04-23
creator: Walz, Janet
viewed: 43
title: Extending Attribute Grammar and Type Inference Algorithms
abstract: Gated attribute grammars and error-tolerant unification expand upon the usual views of attribute grammars and unification. Normally, attribute grammars are constrained to be noncircular; gated attribute grammars allow fairly general circularities. Most unification algorithms do not behave well when given inconsistent input; the new unification paradigm proposed here not only tolerates inconsistencies but extracts information from them. The expanded views prove to be useful in interactive language-based programming environments. Generalized unification allows the environment to help the user find the sources of type errors in a program, while gated attribute grammars allow the environment to provide an interpreter for incremental reevaluation of programs after small changes to the code. The defining feature of gated attribute grammars is the appearance of a gate attribute (indicating where cycle evaluation should begin and end) within every cycle. Attributes are ordered by collapsing strongly connected components in the dependency graph and topologically sorting the result. The smaller dependency graph for each component (ignoring edges leading to the gate) can be recursively collapsed to provide further ordering. use of the evaluation order defined in this manner allows gated attribute grammars to do without the restrictions on functions within a component needed by the other varieties of circular attribute grammars. Initial and incremental evaluation algorithms are given, as well as a sample grammar allowing an editor for a small language to become an incremental interpreter. Counting unification defines unique solutions to sets of input equations that contain conflicting type information. These solutions are derived from the potential variable constraints implied by the input equations. For each type variable, each branch (a portion of a constraint) is assigned a weight indicating the number of times the input set implied such a constraint. When the input equations are derived from the static analysis of a program, the relative branch weights for a conflicting variable give the overall pattern of uses of that variable and can direct attention to parts of the program that disagree with the majority of uses. A number of error-tolerant unification algorithms are presented.

url: http://hdl.handle.net/1813/6885
date: 2007-04-23
creator: Jagadeesan, Radhakrishnan;Panangaden, Prakash;Pingali, Keshav
viewed: 37
title: A Fully Abstract Semantics for a Functional Language with Logic Variables
abstract: We present a novel denotational semantics for a functional language with logic variables intended for parallel execution. The intuition behind this semantics is that equations represent equational constraints on data. Thus, a system of equations can be viewed as defining a set of possibly inconsistent constraints. The semantics is couched in terms of closure operators on a Scott domain. This allows one to abstract away from all the complexities associated with operational reasoning expressed in terms of concurrent threads of execution. We define a structural operational semantics for the language that expresses precisely the concurrent execution model that we have in mind. We show that the abstract denotational semantics is fully abstract with respect to the operational semantics. This is surprising, given how very different the two semantic descriptions are. It also shows that thinking in terms of constraints is an accurate substitute for thinking in terms of explicit parallel execution. The proof of full abstraction is complicated by the fact that there are potentially infinite objects in the domain.

url: http://hdl.handle.net/1813/6886
date: 2007-04-23
creator: Khuller, Samir
viewed: 85
title: Parallel Algorithms for the Subgraph Homeomorphism Problem
abstract: The subgraph homeomorphism problem for a fixed graph H is stated as follows: given a graph G, determine whether G has a subgraph homeomorphic to H, and obtain it. We study the parallel complexity of this problem for various pattern graphs H and present fast NC algorithms for versions of this problem. We also present an efficient NC algorithm to check if a given graph is outer-planar and to obtain its forbidden homeomorphs K_{4} or $K_{2,3}$ if it is not.

url: http://hdl.handle.net/1813/6888
date: 2007-04-23
creator: Panangaden, Prakash;McAllester, David
viewed: 20
title: Nonexpressibility of Fairness and Signaling
abstract: In this paper, we establish new expressiveness results for indeterminate dataflow primitives. We consider choice primitives with three differing fairness assumptions and show that they are strictly inequivalent in expressive power. We also show that the ability to announce choices enhances the expressive power of two of the primitives. These results are proved using a very crude semantics and thus apply in any reasonable theory of process equivalence.

url: http://hdl.handle.net/1813/6889
date: 2007-04-23
creator: Dubhashi, Devdatt P.
viewed: 17
title: On p-Separability
abstract: We introduce the notion of p-separability in analogy with the recursion-theoretic notion of recursive separability. The existence of p-inseparable sets in NP is related to structural properties of complexity classes. Sparseness is related to p-separability and structural conditions for the existence of sparse p-inseparable sets NP are given. Using the notion we obtain sets hard for the $\sum_{2}^{0}$ and $\prod_{2}^{0}$ levels

of the Kleene Arithmetic Hierarchy. Some independence results are shown to follow.

url: http://hdl.handle.net/1813/6890
date: 2007-04-23
creator: Novick, Mark B.
viewed: 80
title: NC Algorithms for the Clique Separator Decomposition
abstract: We give the first NC algorithm for finding a clique separator decomposition of a graph, that is, a series of cliques whose removal disconnects the graph. This algorithm allows one to extend a large body of results which were originally formulated for chordal graphs to other classes of graphs. Our algorithm is a parallel version of Tarjan's sequential algorithm for solving this problem. The decomposition can also be used to find NC algorithms for some optimization problems on special families of graphs, assuming these problems can be solved in NC for the prime graphs of the decomposition. These optimization problems include: finding a maximum-weight clique, a minimum coloring, a maximum-weight independent set, and a minimum fill-in elimination ordering. We also give the first parallel algorithms for solving these problems by using the clique separator decomposition. Our maximum-weight independent set alforithm applied to chordal graphs yields the most efficient known parallel algorithm for finding a maximum-weight independent set of a chordal graph.

url: http://hdl.handle.net/1813/6891
date: 2007-04-23
creator: Chrobak, Marek;Naor, Joseph;Novick, Mark B.
viewed: 34
title: Using Bounded Degree Spanning Trees in the Design of Efficient Algorithms on Claw Free Graphs
abstract: Claw-free graphs are graphs that do not have $K_{1,3}$ as an induced subgraph. Line graphs, a special case of claw-free graphs, are the intersection graphs of edges in simple graphs. We show how to compute efficiently in parallel a binary tree that will be a rooted spanning tree of the claw-free graph. Every binary tree contains at least one edge whose removal partitions the tree into two subtrees of nearly equal cardinality, and this separator can be found efficiently in parallel. We solve problems on claw-free graphs by a divide-and-conquer strategy. The advantage of our partition is that the vertices in each set induce a connected subgraph. The problems are solved for the two subgraphs, and then the results are combined to get a solution for the entire graph. Both the problem of finding a perfect matching in claw-free graphs and the problem of reconstructing a root graph from a line graph are amenable to this approach. We present a nearly optimal parallel NC algorithm for computing a perfect matching that runs in time $O(log^{2}n)$ with $O(n + m)$ processors on an EREW PRAM. Also, we present an efficient parallel reconstruction of root graphs form line graphs. If G = (V,E) denotes a line graph, then the algorithm runs in $O(log\vert V \vert)$ time using $O(\vert E \vert)$ processors in the CRCW PRAM model. It is optimal up to a polylogarithmic factor. Previously, it was known how to reconstruct the root graph in NC using a large (though polynomial) number of processors; this is the first algorithm that employs a linear number of processors.

url: http://hdl.handle.net/1813/6892
date: 2007-04-23
creator: Karasick, Michael S.
viewed: 29
title: On the Representation and Manipulation of Rigid Solids
abstract: Solid modeling studies how to represent geometric properties of solids by computer. A fundamental operation is the construction of representations of solids. Algorithms for set ooperations construct boundary representations of solids from boundary representations of other solids. A correct and efficient intersection

algorithm for polyhedral solids that uses boundary representations is described. A finite-precision implementation of the slgorithm uses incidence tests that use symbolic inference in order to limit errors due to finite-precision approximations. The incidence tests are described and experimental evidence is presented to show that the incidence tests are both empirically reliable and practical. The intersection algorithm uses a new boundary representation called the Star-Edge representation. A complementation algorithm for solids that uses the new representation is given, and an algorithm is given that uses the new representation to determine if two boundary representations describe the same solid. A canonical boundary representation for solids is described and used to prove a lower bound for the same-object problem.

url: http://hdl.handle.net/1813/6893
date: 2007-04-23
creator: Moitra, Abha;Wagner, Catherine
viewed: 28
title: Complete, Effective and Abstract System For Reasoning About Networks of Processes
abstract: We present a complete recursive set of axioms for reasoning about networks of bounded asynchronous processes with finite resources. We also present an effective procedure for hiding internal channels of a network. Our processes use finite resources and bounded asynchronous communication. Such processes and networks can be physically realized. Our processes can be specified by means of regular expressions and do not require the full theory of arithmetic. The assertion language we use exploits this fact and allows us to specify all such processes and networks and obtain a complete and effective use of Ehrenfeucht games. An algorithm for channel hiding follows from the way these processes can be modeled.

url: http://hdl.handle.net/1813/6894
date: 2007-04-23
creator: Mowshowitz, Abbe
viewed: 15
title: Computing Power and Political Opportunism
abstract: NO ABSTRACT SUPPLIED

url: http://hdl.handle.net/1813/6895
date: 2007-04-23
creator: Salton, Gerard
viewed: 35
title: A Syntactic Approach to Automatic Book Indexing
abstract: Automatic publishing systems are now widely used to produce books and documents of many types. As a result, large masses of text become available in machine readable form for automatic processing. This study describes automatic methods to generate back-of-the-book indexes, based on a syntactic analysis of the text of book chapters followed by a phrase generation system that identifies meaningful book indexing entries.

url: http://hdl.handle.net/1813/6896
date: 2007-04-23
creator: Briggs, Amy
viewed: 15
title: An Efficient Algorithm for One-Step Planar Compliant Motion Planning with Uncertainty
abstract: Uncertainty in the executin of robot motion plans must be accounted for in the geometric computations from which plans are obtained, especially in the case where position sensing is inaccurate. We give an $O(n^{2} log n)$ algorithm to find a single commanded motion direction which will guarantee

a successful motion in the plane from a specified start to a specified goal whenever such a one-step motion is possible. The plans account for uncertainty in the start position and in robot control, and anticipate that the robot may stick on or slide along obstacle surfaces with which it comes in contact. This bound improves on the best previous bound by a quadratic factor, and is achieved in part by a new analysis of the geometric complexity of the backprojection of the goal as a function of commanded motion direction.

url: http://hdl.handle.net/1813/6897
date: 2007-04-23
creator: Yang, Xue Dong
viewed: 31
title: An Improved Algorithm for Labeling Connected Components in a Binary Image
abstract: In this note, we present an improved algorithm to Schwartz, Sharir and Siegel's algorithm [8] for labeling the connected components of a binary image. Our algorithm uses the same bracket marking mechanism as is used in the original algorithm to associate equivalent groups. The main improvement of our algorithm is that it reduces the three scans on each line required by the original algorithm in its first pass into only one scan by using a recursive group-boundary dynamic tracking technique, while maintaining the computation on each pixel during scan still a constant time. This algorithm is fast enough to handle images in real time and simple enough to allow an easy and very economical hardware implementation.

url: http://hdl.handle.net/1813/6898
date: 2007-04-23
creator: Howe, Douglas J.;Constable, Robert L.
viewed: 30
title: Implementing Metamathematics as an Approach to Automatic Theorem Proving
abstract: A simple but important algorithm used to support automated reasoning is called matching: given two terms it produces a substitution, if one exists, that maps the first term to the second. In this paper the matching algorithm is used to illustrate the approach to automating reasoning suggested in the title. In Section 3 the algorithm is derived and verified in the Nuprl proof development system following exactly an informal presentation of it in Section 2. The example serves to introduce a particular automated reasoning system, Nuprl, as well as the idea of deriving programs from constructive proofs. The treatment of this example also suggests how these systems can be soundly extended by the addition of constructive metatheorems about themselves to their libraries of results.

url: http://hdl.handle.net/1813/6899
date: 2007-04-23
creator: Chew, L. Paul
viewed: 35
title: Guaranteed-Quality Triangular Meshes
abstract: There are a number of applications for which it is desirable to divide a given region in the plane into nicely shaped triangles. One important such application is the finite element method, a method widely used to obtain approximate solutions to a wide variety of engineering problems. For this kind of application, not just any triangulation will do; error bounds are best if all the triangles are as close as possible to equilateral triangles. Presently, either these triangles are produced by hand or they are produced automatically using one of a number of heuristic techniques. For these heuristic techniques, certain cases can require human intervention to eliminate flat triangles. In this paper, we present an efficient new technique (based on Delauney triangulations) for automatically producing desirable triangulations. Unlike most previous techniques, this one comes with a guarantee: the angles in the resulting triangles are all between 30 and 120 degrees, and the edge lengths are all between h and 2h where h is a parameter chosen by the user.

Additional useful properties include (1) the worst-case time to produce a triangulation is linear in the final number of triangles, and (2) the user can control the element density, producing smaller triangles in areas where more accuracy is desired.

url: http://hdl.handle.net/1813/6900
date: 2007-04-23
creator: Higham, Nicholas J.
viewed: 17
title: Exploiting Fast Matrix Multiplication Within the Level 3 BLAS
abstract: The Level 3 BLAS (BLAS3) are a set of specifications of Fortran 77 subprograms for carrying out matrix multiplications and the solution of triangular systems with multiple right-hand sides. They are intended to provide efficient and portable building blocks for linear algebra algorithms on high performance computers. We describe algorithms for the BLAS3 operations that are asymptotically faster than the conventional ones. These algorithms are based on Strassen's method for fast matrix multiplication, which is now recognized to be a practically useful technique once matrix dimensions exceed about 100. We pay particular attention to the numerical stability of these "fast BLAS3". Error bounds are given and their significance is explained and illustrated with the aid of numerical experiments. Our conclusion is that fast BLAS3, although not as strongly stable as conventional implementations, are stable enough to be suitable for many applications.

url: http://hdl.handle.net/1813/6901
date: 2007-04-23
creator: Yao, Y. Y.;Bollmann, P.;Wong, S. K. M.
viewed: 34
title: Information Retrieval Based on Axiomatic Decision Theory
abstract: The main objective of this paper is to establish a coherent framework for information retrieval based on the axiomatic decision theory. In information retrieval one has to deal with two difficult problems (knowledge representation and query formulation), both of which are absent in conventional database systems. It is argued that the axiomatic decision theory provides a useful framework to study these complex issues. Two quantitative representation systems are introduced. One is developed from the expected utility model and the other is derived from the concepts of evidential reasoning. An inductive learning algorithm is suggested for constructing a user query. The experimental results seem to provide some support for the theoretical arguments presented here. Although the focus in this paper is mainly on information retrieval, the current work may be viewed as a preliminary effort towards unifying symbolic and numeric reasoning with incomplete or uncertain information.

url: http://hdl.handle.net/1813/6902
date: 2007-04-23
creator: Huttenlocher, Daniel P.;Hopcroft, John E.
viewed: 34
title: On Planar Point Matching Under Affine Transformation
abstract:

url: http://hdl.handle.net/1813/6903
date: 2007-04-23
creator: Cremer, James F.
viewed: 19
title: An Architecture for General Purpose Physical System Simulation--Integrating Geometry, Dynamics, and Control

abstract: Simulation of physical systems has long been of interest to scientists and engineers, and significant efforts have been directed toward the development of general purpose computer aided design and analysis systems. To date, however, success has been largely limited to the production of tools suited only for particular aspects of design: computer aided design systems have primarily emphasized specification of geometry; simulation systems from the mechanical engineering field have concentrated mainly on formulation and integration of an unchanging set of equations describing object behavior; and work by computer graphics and animation researchers has been aimed at producing good-looking animations without much regard for whether the generated motions were physically realistic. Flexible systems integrating all aspects of design and analysis have not yet been built. This thesis addresses the issues involved in developing fundamentally more powerful simulation systems. A system architecture for general purpose physical system simulation is proposed, and a prototype implementation, the newton system, is described. The architecture is based on a rich model-based object representation and provides a level of automatic analysis that encourages the kind of experimentation necessary for successful design. In particular, it is argued that by using geometric modeling techniques to include a full description of object geometry, previously difficult-to-incorporate simulation system features, such as collision detection and resolution, can be handled much more naturally. The Newton architecture incorporates a uniform exceptional event handling mechanism that allows the system to respond to a variety of simulation events that necessitate modification of object behavior descriptions. Combined with a general method for the formulation of object motion equations, the event handling mechanism supports automatic handling of collisions, changing contact relationships, control program state changes, and other events that can cause discontinuities in object motions.

url: http://hdl.handle.net/1813/6904
date: 2007-04-23
creator: Yao, Y. Y.;Wong, S. K. M.
viewed: 33
title: Experiments with Generalized Binary Probabilistic Independence Model
abstract: This paper reports experiments with the generalized binary probabilistic independence model in which more complete statistical information is used. Two basic sets of experiments, referred to as nonpredictive and predictive, have been performed on two standard test collections. In the nonpredictive experiments, the complete relevance information was used to determine the optimal performance of the model. On the other hand, in the predictive experiments only partial relevance information was used to demonstrate the predictive power of the model. Although a simple method for estimating the parameters was used in the designed tests, significant improvements were obtained for both test collections. These preliminary results suggest that further work on the generalized model is worthwhile.

url: http://hdl.handle.net/1813/6905
date: 2007-04-23
creator: Araya, Jose E.;Salton, Gerard
viewed: 33
title: On the Use of Clustered File Organization in Information Search and Retrieval
abstract: In modern retrieval environments, collection searches are normally conducted on-line under user control. Iterative collection searches can then be performed where tentative queries are initially processed, to be successively improved and refined during the search process. When searches are carried out directly by the users, classified document organizations are especially useful, because collection browsing becomes possible, and access is provided to complete groups of related documents. The state-of-the-art in automatic document classification is summarized in the present study, and evaluation data are provided to demonstrate the effectiveness and efficiency of clustered file search operations.

url: http://hdl.handle.net/1813/6906
date: 2007-04-23
creator: Yao, Y. Y.;Wong, S. K. M.
viewed: 34
title: A Note on Inverse Document Frequency Weighting Scheme
abstract: Based on the Shannon information theory, a measure for term value is introduced. This study is an attempt to provide a theoretical justification for the inverse document frequency (IDF) weighting scheme. The argument presented in this paper is somewhat different from those suggested earlier. It is shown that IDF weights can be derived from the proposed approach by assuming that each index term has an even distribution within a subset of documents. A critical comment on the signal-noise ratio (S/N) weighting method is also included.

url: http://hdl.handle.net/1813/6907
date: 2007-04-23
creator: Volpano, Dennis M.
viewed: 19
title: Towards a Notion of Module for Data Abstraction
abstract: Traditionally, programming languages support data abstraction through some kind of module construct for partitioning large systems into manageable units. These constructs typically control access to data since program decomposition is usually guided by information hiding. As mechanisms for encapsulating implementations of data types, however, such constructs are too inflexible. Substituting one implementation (module) for another, in a client, may require the client to be revised for reasons related to representation. A more flexible notion of module is presented that is designed solely for the purpose of encapsulating implementations of data types. D.3 [Software]: Programming Languages; D.3.2 [Programming Languages]: Language Classifications - applicative languages; D.3.3 [Programming Languages]: Language Constructs - abstract data types, modules, packages; D.3.4 [Programming Languages]: Processors - compilers; F.3 [Theory of Computation]: Logics and Meanings of Programs; F.3.3 [Logics and Meanings of Programs]: Studies of Program Constructs - type structure. Additional Key Words and Phrases: representation independence, modules, functional programming, types.

url: http://hdl.handle.net/1813/6908
date: 2007-04-23
creator: Buckley, Chris;Salton, Gerard;Yao, Y. Y.;Wong, S. K. M.
viewed: 32
title: Formalization and Evaluation of Linear Relevance Feedback
abstract: This study outlines an adaptive method which constructs improved query vectors based on the user preference judgments on sample document pairs. In particular, the user states that some documents are preferred to other documents and the system is then expected to rank the preferred documents ahead of the others. In the adaptive system, all needed parameter values are provided within the model, and a solution query vector is constructed under well defined conditions. Certain relationships between the new adaptive and the conventional relevance feedback systems are discussed and evaluation data are provided to demonstrate the effectiveness of the system.

url: http://hdl.handle.net/1813/6909
date: 2007-04-23
creator: Buckley, Chris;Salton, Gerard
viewed: 24
title: On the Automatic Generation of Content Links in Hypertext

abstract: Text structuring systems that provide links between text portions have been widely proposed as aids for text preparation and text manipulation. In principle, it is easy to follow available links between related text portions; it is much harder, however, to put in place useful links that relate document sections with related text content. An approach is described in this note for the automatic generation of content links based on global term and phrase matches between sentence and document texts. Tentative evaluation data are included to demonstrate the usefulness of the proposed procedures.

url: http://hdl.handle.net/1813/6910
date: 2007-04-23
creator: Hartmanis, Juris
viewed: 29
title: Godel, von Neumann and the P=?NP Problem
abstract: In a 1956 letter, Godel asked von Neumann about the computational complexity of an NP complete problem. In this column, we review the historic setting of this period, discuss Godel's amazing letter and why von Neumann did not solve the P = ?NP problem.

url: http://hdl.handle.net/1813/6911
date: 2007-04-23
creator: Taylor, Kimberly E.
viewed: 22
title: The Role of Inhibition in Asynchronous Consistent-Cut Protocols
abstract: We present results relevant to the development of consistent-cut protocols. Consistent-cut protocols are those which are based on finding a consistent global state in an underlying distributed computation; they are used for a variety of applications such as system checkpointing and deadlock detection. We formally define what it means for a protocol to be non-inhibitory, which intuitively means that it does not prevent any actions from occurring in an underlying system computation. We prove that there is no non-inhibitory consistent-cut protocols for FIFO systems of one message per bidirectional channel (up to $\frac {1}{2} (n^{2} - n$, for completely connected networks). We present two protocols, one non-inhibitory requiring up to two messages between each pair of neighboring nodes in a network and the other inhibitory and requiring only $3(n - 1)$ messages total. In most networks, these results illustrate a tradeoff between the amount of necessary communication and the willingness to inhibit actions of the underlying system. Additionally, our inhibitory protocol also works for non-FIFO systems, thus illustrating that the inhibitory condition is exactly what is required to develop consistent-cut protocols for non-FIFO systems which satisfy our model.

url: http://hdl.handle.net/1813/6912
date: 2007-04-23
creator: Marzullo, Keith
viewed: 13
title: Concurrency Control for Transactions with Priorities
abstract: Priority inversion occurs when a process is delayed by the actions of another process with less priority. With atomic transactions, the concurrency control mechanism can cause delays, and without taking priorities into account can be a source of priority inversion. In this paper, three traditional concurrency control algorithms are extended so that they are free from unbounded priority inversion. Keywords: Priority inversion, concurrency control, real-time databases.

url: http://hdl.handle.net/1813/6913
date: 2007-04-23
creator: Williams, John H.;Szymanski, Thomas G.

viewed: 31
title: Non-Canonical Extensions of Bottom-Up Parsing Techniques
abstract: A bottom-up parsing technique which can make non-leftmost possible reductions in sentential forms is said to be non-canonical. Nearly every existing parsing technique can be extended to a non-canonical method which operates on larger classes of grammars and languages than the original technique. Moreover, the resulting parsers run in time linearly proportional to the length of their input strings. Several such extensions are defined and analyzed from the points of view of both power and decidability. The results are presented in terms of a general bottom-up parsing model which yields a common decision procedure for testing membership in many of the existing and extended classes.

url: http://hdl.handle.net/1813/6914
date: 2007-04-23
creator: Panangaden, Prakash;Critchlow, Carol M.
viewed: 38
title: The Expressive Power of Delay Operators in SCCS
abstract: We investigate the relative expressive power of finite delay operators in SCCS. These were introduced by Milner and by Hennessy to study fairness properties of processes in the context of SCCS. We show that the context sensitive delay operator introduced by Hennessy is more expressive than the finite delay operator introduced by Milner. This result is closely related to recent results by Panangaden and Stark on the expressive power of fair merge in asynchronous dataflow (Kahn) networks. It indicates that the expressiveness results obtained there are not sensitive to the precise computational model since SCCS, unlike Kahn networks, is synchronous and permits expansion of recursively defined processes.

url: http://hdl.handle.net/1813/6915
date: 2007-04-23
creator: Crouch, Donald B.;Salton, Gerard
viewed: 26
title: User-System Interaction in Automatic Information Retrieval
abstract: Information retrieval activities are now routinely conducted on-line under the control of search intermediaries or end users. Examples are presented of advanced aids that permit the user to control the search process and obtain improved retrieval output.

url: http://hdl.handle.net/1813/6916
date: 2007-04-23
creator: Marzullo, Keith;Shah, Amitabh
viewed: 69
title: Harary Networks: Connectivity for Highly Available Real-Time Distributed Databases
abstract: A methodology, called network designing by the desirable partition, for designing Underlying communication networks for distributed databases is proposed. It exploits the fact that in most real-life databases, the data is not fully replicated, and the transactions access pattern is highly local. The methodology consists of identifying a desirable partition of the sites based on the notion of dependencies between sites; the latter is defined by the replication of data and the transaction data access patterns. A hierarchical communication network, called a Harary Network, is then constructed for the identified partition. The notion of desirability takes into account the cost of connection, and thus provides the most desirable construction for a given cost. The method is probabilistic in the sense that in presence of failures, the probability of the occurrence of the desirable partition is higher than that of all other partitions; this results in very high expected availability. It is shown that for most intuitive formulations of the problem, finding the most desirable partition is NP-Hard. However, good and often optimal approximation algorithms exist

for this problem. The methodology is particularly suited for designing communication support for real-time distributed databases.

url: http://hdl.handle.net/1813/6917
date: 2007-04-23
creator: Zippel, Richard
viewed: 25
title: The Weyl Computer Algebra Substrate
abstract: No abstract is available.

url: http://hdl.handle.net/1813/6918
date: 2007-04-23
creator: Zippel, Richard
viewed: 19
title: On Two Different Notions of Type
abstract: No abstract is available.

url: http://hdl.handle.net/1813/6919
date: 2007-04-23
creator: Yang, Xue Dong
viewed: 36
title: Schematic Modeling for Simulation of Physical Systems
abstract: This paper proposes a method for classifying and implementing schematic representation in multiple domains within a simulation system. Our initial work is restricted to the modeling of rigid components for kinematic and dynamic simulations. We hope to demonstrate that the use of abstract schematic representation will significantly reduce the effort needed to create models of physical systems, which will in turn greatly simplify the effective modeling and simulation of large, complicated physical systems.

url: http://hdl.handle.net/1813/6920
date: 2007-04-23
creator: Klarlund, Nils
viewed: 76
title: Verification Conditions for ω-Automata and Applications to Fairness
abstract: We present sound and complete verification conditions for proving that a program satisfies a specification definied by a deterministic Rabin automaton. Our verification conditions yield a simple method for proving that a program terminates under general fairness constraints. As opposed to previous approaches, our method is syntax-independent and does not require recursive applications of proof rules. Moreover using a result by Safra, we obtain the first direct method for proving that a program satisfies a Buchi automaton specification. Finally, we show that our method generalized two earlier methods.

url: http://hdl.handle.net/1813/6921
date: 2007-04-23
creator: Toueg, Sam;Neiger, Gilbert A.
viewed: 29
title: Automatically Increasing the Fault-Tolerance of Distributed Algorithms
abstract:

url: http://hdl.handle.net/1813/6922

date: 2007-04-23
creator: Howell, Thomas D.
viewed: 23
title: Partitioning Using PAQ
abstract: The so-called PAQ problem is concerned with the solution of sparse systems of linear equations $Ax=b$ using the transformation $PAQy=Pb, x=Qy$. An algorithm is given for choosing P and Q to partition the matrix A into its irreducible components. A theorem on which this algorithm is based has long been known, yet no simple, easily understood proof appears in the literature. Such a proof is given here. Remarks are made concerning some unsolved problems related to the PAQ problem.

url: http://hdl.handle.net/1813/6923
date: 2007-04-23
creator: Buckley, Chris;Salton, Gerard
viewed: 25
title: Approaches to Text Retreival for Structured Documents
abstract: Documents such as textbooks, dictionaries, and encyclopedias are inherently structured, in the sense that they are meant to be used selectively by skipping from section to section instead of reading sequentially from one end to the other. Experiments are described to provide selective reading lists for textbook materials in answer to questions submitted by the user population. A textbook in information science is used for experimental purposes.

url: http://hdl.handle.net/1813/6924
date: 2007-04-23
creator: Rogers, Anne M.;Pingali, Keshav
viewed: 16
title: Compiler Parallelization of SIMPLE for a Distributed Memory Machine
abstract: In machines like the Intel iPSC/2 and the BBN Butterfly, local memory operations are much faster than inter-processor communication. When writing programs for these machines, programmers must worry about exploiting spatial locality of reference. This is tedious and reduces the level of abstraction at the which the programmer works. We are implementing a parallelizing compiler that will shoulder much of that burden. Given a sequential, shared memory program and a specification of how data structures are to be mapped across the processors, our compiler will perform process decomposition to exploit locality of reference. In this paper, we discuss some experiments in parallelizing SIMPLE, a large scientific benchmark from Los Alamos, for the Intel iPSC/2.

url: http://hdl.handle.net/1813/6925
date: 2007-04-23
creator: Gries, David;Volpano, Dennis M.
viewed: 30
title: Type Definitions in Polya
abstract: The programming language Polya maintains a clear separation between a type and its implementation through a new construct called the transform. Polya allows user to define their own data types and transforms to implement them. The type definition facility of Polya has capabilities not found in existing languages; in short, it allows a more comprehensive description of the properties that determine whether a program is well-formed. Two such properties are the scope of variables and the bounded polymorphic nature of some operations. One can specify the scope of any local variables that an operation introduces and express that the well-formedness of an operation depends on whether some overloaded function name stands for a function of a certain type. Also novel, is the ability to define literal classes for types and to specify both an abstract

and concrete syntax for operations. With these capabilities, it becomes possible to define the syntax of a block-structured language within Polya itself.

url: http://hdl.handle.net/1813/6926
date: 2007-04-23
creator: Toueg, Sam;Neiger, Gilbert A.
viewed: 23
title: Simulating Synchronized Clocks and Common Knowledge in Distributed Systems
abstract:

url: http://hdl.handle.net/1813/6927
date: 2007-04-23
creator: Kozen, Dexter;Ierardi, Doug J.
viewed: 34
title: Parallel Resultant Computation
abstract: A resultant is a purely algebraic criterion for determining when a finite collection of polynomials have a common zero. It has been shown to be a useful tool in the design of efficient parallel and sequential algorithms in symbolic algebra, computational geometry, computational number theory, and robotics. We begin with a brief history of resultants and a discussion of some of their important applications. Next we review some of the mathematical background in commutative algebra that will be used in subsequent sections. The Nullstellensatz of Hilbert is presented in both its strong and weak forms. We also discuss briefly the necessary background on graded algebras, and define affine and projective spaces over arbitrary fields. We next present a detailed account of the resultant of a pair of univariate polynomials, and present efficient parallel algorithms for its computation. The theory of subresultants is developed in detail, and the computation of polynomial remainder sequences is derived. A resultant system for several univariate polynomials and algorithms for the gcd of several polynomials are given. Finally, we develop the theory of multivariate resultants as a natural extension of the univariate case. Here we treat both classical results on the projective (homogeneous) case, as well as more recent results on the affine (inhomogeneous) case. The u-resultant of a set of multivariate polynomials is defined and a parallel algorithm is presented. We discuss the computation of generalized characteristic polynomials and relate them to the decision problem for the theories of real closed and algebraically closed fields.

url: http://hdl.handle.net/1813/6928
date: 2007-04-23
creator: Kozen, Dexter
viewed: 14
title: Complexity of Finitely Presented Algebras
abstract: An algebra $\cal A$ is finitely presented if there is a finite set G of generator symbols, a finite set O of operator symbols, and a finite set Γ of defining relations $x \equiv y$ where x and y are well-formed terms over G and O, such that $\cal A$ is isomorphic to the free algebra on G and O modulo the congruence induced by Γ. The uniform word problem, the finiteness problem, the triviality problem (whether $\cal A$ is the one element algebra), and the subalgebra membership problem (whether a given element of $\cal A$ is contained in a finitely generated subalgebra of $\cal A$) for finitely presented algebras are shown to be $\leq^{m}_{\log}$-complete for P. The schema satisfiability problem and schema validity problem are shown to be $\leq^{m}_{\log}$-complete for NP and co-NP, respectively, Finally, the problem of isomorphism of finitely presented algebras is shown to be polynomial time many-one equivalent to the problem of graph isomorphism.

url: http://hdl.handle.net/1813/6929
date: 2007-04-23
creator: Naor, Joseph;Khuller, Samir
viewed: 27
title: Flow in Planar Graphs with Vertex Capacities
abstract: Max-flow in planar graphs has always been studies with the assumption that there are capacities only on the edges. Here we consider a more general version of the problem when the vertices as well as edges have capacity constraints. In the context of general graphs considering only edge capacities in not restrictive, since one can reduce the vertex capacity problem to the edge capacity problem. However, in the case of planar graphs this reduction does not maintain planarity and cannot be used. We study different versions of the planar flow problem (all of which have been extensively investigated in the context of edge capacities).

url: http://hdl.handle.net/1813/6930
date: 2007-04-23
creator: Herley, Kieran T.
viewed: 15
title: Deterministic Simulations of Shared Memory on Bounded Degree Networks
abstract: The Parallel Random Access Machine (PRAM) is an abstract parallel machine consisting of a synchronous collection of n processors connected to a shared memory of m cells. The essential feature of the PRAM is that the processors can access any n-tuple of distinct cells in a single machine cycle. While the PRAM is an attractive and widely used framework for the design and analysis of parallel algorithms, it does not reflect the constraints of realistic multiprocessors. This thesis explores the problem of efficient deterministic simulations of PRAM computations on bounded degree networks of processors, a model of parallel machines closer to what can be built in practice. It is shown that an arbitrary step of a PRAM with n processors and $m \geq n$ cells of shared memory can be simulated in O($log($(m/n)$ log n/log log n + log n log log n (log log (m/n) - log log log n)) time in the worst-case on an n-node bounded degree network with a particular expander-based structure. This simulation is more efficient than all deterministic simulations previously known both with respect to time and space. In the case where m/n is polylogarithmic in n, the worst-case time to simulate a single PRAM step is at most O(log n log log n) which is within a factor of $O(log log n the diameter of the network. The space requirements for our algorithm are at most O(m(log $(m/n))^{3})$ overall. The simulation may also be adapted to run on to an n-processor augmented mesh-of-trees architecture with a running time of O (log n log log n (log log (m/n) - log log log n) + log $(m/n))$ Overall, these results suggest that, in principle at least, it is feasible to provide the abstraction of a shared memory on distributed models of parallel computation with only modest degradation in performance in the worst case.

url: http://hdl.handle.net/1813/6931
date: 2007-04-23
creator: Field, John H.
viewed: 20
title: On Laziness and Optimality in Lambda Interpreters: Tools for Specification and Analysis
abstract: In this paper, we introduce a new formal system, ΛCCL, based on Curien's Categorical Combinators [Cur86a]. We show that ΛCCL has properties that make it especially suitable for analysis and implementation of a wide range of λ-reduction schemes using shared environments, closures, or λ-terms. In particular, the term structure of $\Lamda CCL$ is very closely related to the structure of existing abstract machines for λ-reduction. ΛCCL is powerful enough to mimic arbitrary (strong) reduction in the λ-calculus, yet in contrast to the systems in [Cur86a] it is also confluent (on ground terms).As an example of the practical utility of this formalism, we use it to

specify a simple lazy interpreter for the λ-calculus, whose correctness follows trivially from the properties of ΛCCL. We then describe a labeled variant of $\Lambda CCL, \Lambda CCL^{L}$, which can be used as a tool to determine the degree of "laziness" possessed by various λ-reduction schemes. In particular, ΛCCL^{L} is applied to the problem of optimal reduction in the λ-calculus. A reduction scheme for the λ-calculus is optimal if the number of redex contractions that must be performed in the course of reducing any λ-term to a normal form (if one exists) is guaranteed to be minimal. Results of Levy [Lev78, Lev80] showed that for a natural class of reduction strategies allowing shared redexes, optimal reductions were, at least in principle, possible. He conjectured that an optimal reduction strategy might be realized in practice using shared closures and environments as well as shared λ-terms. However, using ΛCCL^{L}, we show that the sharing allowed by environments and closures in ΛCCL as implemented using standard term graph-rewriting techniques [BvEG^{+}87] is insufficient to implement optimal reduction.

url: http://hdl.handle.net/1813/6932
date: 2007-04-23
creator: Hulbert, Laurie;Coleman, Thomas F.
viewed: 15
title: A Globally and Superlinearly Convergent Algorithm for Convex Quadratic Programs with Simple Bounds
abstract: We present a globally and superlinearly convergent algorithm for solving convex quadratic programs with simple bounds. We develop our algorithm using a new formulation of the problem: the minimization of an unconstrained piecewise quadratic function that has the same optimality conditions as the original problem. The major work at each iteration is the Cholesky factorization of a positive definite matrix with the size and structure of the Hessian of the quadratic. Hence our algorithm is suitable for solving large sparse problems and for implementation on parallel computers. We implemented our algorithm and tested it on a sequential computer on a variety of dense problems, and we present numerical results which show that our algorithm solves many problems quickly. Keywords: quadratic programming, interior point methods, simple bounds, box constraints, large sparse minimization.

url: http://hdl.handle.net/1813/6933
date: 2007-04-23
creator: Peckham, Stephen B.
viewed: 21
title: Incremental Attribute Evaluation and Multiple Subtree Replacements
abstract: The standard model for incremental attribute evaluation allows single subtree replacements followed by attribute reevaluation to restore consistency to a derivation tree. This thesis advocates an extended model that allows multiple subtree replacements. A static (tree-walking) algorithm for performing incremental updating after such changes is developed. The algorithm cannot be used with all attribute grammars, but is restricted to grammars contained in the new class of "globally partitionable attributer grammars" (GPAGs). A test for determining whether an attribute grammar is GPAG is described. The multiple subtree replacement algorithm (GPAG-evaluate) in this thesis improves on two shortcomings of existing algorithms. First, many evaluators have a running time that depends linearly on the size of the derivation tree of on the number of concurrent subtree replacements. GPAG-evaluate has a running time of O(log $n \cdot$ |AFFECTED|), where n is the number of nodes in the derivation tree and AFFECTED is the set of attributes needing reevaluation. Second, experience with incremental, attribute grammar-based environments demonstrates that dynamic evaluators are noticeably slower than static evaluators because they require time-consuming data structure manipulations. Most existing algorithms for multiple subtree replacements are dynamic, but GPAG-evaluate is static. A second problem treated in this thesis is asynchronous subtree replacements, that

is, allowing changes to be made while propagation continues after previous changes. A method for analyzing the efficiency of asynchronous subtree replacement algorithms is presented. An asynchronous evaluator (ASYNCH-evaluate) is described that, like GPAG-evaluate, guarantees that no attributes will be evaluated unnecessarily. Under some restrictions, ASYNCH-evaluate is as efficient as GPAG-evaluate. In particular, propagation in trees containing dynamically generated, nonlocal dependency edges can be supported. Both GPAG-evaluate and ASYNCH-evaluate must find lowest common ancestors of nodes in a tree where subtree replacements were made. A simple technique performs this operation in time $O(n)$. To make the evaluators more efficient, this thesis describes an algorithm that uses self-adjusting binary trees to perform the necessary operations in amortized O(log n) time. These operations are not restricted to attributed derivation trees, but can be used for any application using trees.

url: http://hdl.handle.net/1813/6934
date: 2007-04-23
creator: Toueg, Sam;Chandra, Tushar Deepak
viewed: 13
title: Time and Message Efficient Reliable Broadcasts
abstract: No abstract is available.

url: http://hdl.handle.net/1813/6935
date: 2007-04-23
creator: Xavier, Patrick G.;Donald, Bruce Randall
viewed: 35
title: Provably Good Approximation Algorithms for Optimal Kinodynamic Planning for Cartesian Robots and Open Chain Manipulators
abstract: We consider the following problem: given a robot system, find a minimal-time trajectory from a start state to a goal state, while avoiding obstacles by a speed-dependent safety-margin and respecting dynamics bounds. In [CDRX] we developed a theoretical, provably good approximation algorithm for the minimum-time trajectory problem for a robot system with decoupled dynamics bounds (e.g. a point robot in). This algorithm differs from previous work in three ways. It is possible (1) to bound the goodness of the approximation by an error term ϵ; (2) to polynomially bound the computational complexity of our algorithm; and (3) to express the complexity as a polynomial function of the error term. Hence, given the geometric obstacles, dynamics bounds, and the error term ϵ, the algorithm returns a solution that is ϵ-close to optimal and requires only a polynomial (in ($\frac{1}{\epsilon}$)) amount of time. We extend the results of [CDRX] in two ways. First, we reanalyze the [CDRX] algorithm for robots with decoupled dynamics bounds. We halve the exponent in the polynomial bounds and prove a better approximation accuracy. These new results indicate that an implementation of the theoretical algorithm could be reasonable. We report on a preliminary implementation of the extended algorithm and experiments. Second, we extend [CDRX] to d-link, revolute-joint 3D robots will full rigid body dynamics. Specifically, we first prove a generalized trajectory- tracking lemma for robots with coupled dynamics bounds. Then, using this result we describe polynomial-time approximation algorithms for Cartesian robots obeying L_{2} dynamics bounds and open kinematic chain manipulators with revolute and prismatic joints; the latter class includes most industrial manipulators. We obtain a general $O(n^{2}$(log$n$) ($\frac{1}{\epsilon})^{6d-1})$ algorithm, where n is the geometric complexity.

url: http://hdl.handle.net/1813/6936
date: 2007-04-23
creator: Novick, Mark B.
viewed: 92

title: Parallel Algorithms for Intersection Graphs
abstract: Intersection graphs have often been used to model special structure in graph problems for both practical and theoretical reasons. Often problems can be solved efficiently for a restricted class of graphs that are provably hard for graphs in general. In this thesis, we examine parallel (i.e. NC) algorithms for exploiting the special structure of different types of intersection graphs to solve common graph problems. First, we show how to recognize whether a graph belongs to one of the special families of intersection graphs. Only after this has been done can we take advantage of the properties of a class of intersection graphs. Let $\cal F$ be a family of nonempty sets. Then the intersection graph of $\cal F$ is obtained by representing each set in $\cal F$ by a vertex and connecting two vertices if and only if their corresponding sets have a nonempty intersection. In this dissertation, several types of intersection graphs will be examined, among them interval, comparability, chordal, path, and circle graphs. Interval and comparability graphs arise often when solving scheduling problems. Chordal graphs have applications in solving sparse systems of linear equations and in relational database theory. Each of these classes of intersection graphs is closed under a natural graph composition operation, namely one of modular composition, clique identification, and split composition. In this thesis, we show that the number of intersection representations for a graph in one of these classes depends on how the graph was composed from indecomposable graphs. Also, we show how to efficiently decompose any graph (i.e. perform that inverse of the above composition operations) in parallel. Often if we can solve a problem efficiently on the indecomposable pieces of a graph, then we can solve this same problem efficiently on the graph itself in parallel. Thus we can extend many of our results on special classes of intersection graphs to more general classes of graphs.

url: http://hdl.handle.net/1813/6937
date: 2007-04-23
creator: Sastry, S. Shankar;Raghavan, Madhusudan;Murray, Richard;Donald, Bruce Randall;Ballieul, John;Brockett, Roger
viewed: 42
title: Mathematical Questions in Robotics
abstract: No abstract is available.

url: http://hdl.handle.net/1813/6938
date: 2007-04-23
creator: Vavasis, Stephen A.
viewed: 15
title: Preconditioning for Boundary Integral Equations (Preliminary Version)
abstract: We propose new classes of preconditioners for the linear systems arising from a boundary integral equation method. The problem under consideration is Laplace's equation in three dimensions. The system arising in this context is dense and unsymmetric. Our preconditioners, which are based on solving small linear systems at each node, reduce the number of iterations in some cases by a factor of 20. Two iterative methods are considered: conjugate gradient on the normal equations and GMREES of Saad and Shultz. For a simple model problem, we demonstrate the exact relationship between the preconditioners and the resulting condition number of the preconditioned system is decreased by a factor asymptotically greater than any constant.

url: http://hdl.handle.net/1813/6939
date: 2007-04-23
creator: Vavasis, Stephen A.
viewed: 77
title: Quadratic Programming is in NP

abstract: Quadratic programming is an important example of optimization with applications to engineering design, coombinatorical optimization, game theory, and economics. Garey and Johnson [1979] state that quadratic programming is NP-hard. In this report we show that it lies in NP, thereby proving that it is NP-complete.

url: http://hdl.handle.net/1813/6940
date: 2007-04-23
creator: Klarlund, Nils
viewed: 16
title: Limit Operators and Convergence Measures for ω-Languages with Applications to Extreme Fairness
abstract: Methods of program verification for liveness and fairness rely on measuring "progress" of finite computations towards satisfying the specification. Previous methods are based on explaining progress in terms of well-founded sets. These approaches, however, often led to complicated transformations or inductive applications of proof rules. Our main contribution is a simpler measure of progress based on an ordering that is not well-founded. This ordering is a variation on the Kleene-Brouwer ordering on nodes of a finite-path tree. It has the unusual property that for any infinite ordered sequence of nodes, the liminf of the node depths (levels) is finite. This novel view of progress gives a precise mathematical characterization of what it means to satisfy very general program properties. In particular, we solve the problem of finding a progress measure for termination under extreme fairness.

url: http://hdl.handle.net/1813/6941
date: 2007-04-23
creator: Taylor, Kimberly E.;Critchlow, Carol M.
viewed: 17
title: The Inhibition Spectrum and the Achievement of Causal Consistency
abstract: We consider the problem of distinguishing causally-consistent global states in asynchronous distributed systems. Such states are fundamental to asynchronous systems, because they correspond to possible simultaneous global states; their detection arises in a variety of distributed applications, including global checkpointing, deadlock detection, termination detection, and broadcasting. We consider a spectrum of protocol capabilities based on the type of inhibition that occurs, i.e. the extent to which the protocol delays events of the underlying system. For the first time we distinguish local versus global inhibition and prove fundamental relationships between these concepts and determining causally-consistent states. In local inhibition, processors only delay events until they have performed some number of local actions; in global inhibition, they delay events while waiting for some communication from other processors. Based on a variety of system and protocol characteristics, including the ability to locally or globally inhibit particular types of events, we give several new impossibility results and examine some existing protocols. We are then able to present a thirty-six-case summary of protocols and impossibility results for the determination of causally-consistent states as a function of those characteristics. In particular, we demonstrate that local inhibition is necessary and sufficient to solve this problem for general FIFO systems, while global send inhibition is necessary for general non-FIFO systems.

url: http://hdl.handle.net/1813/6942
date: 2007-04-23
creator: Wadkins, Jeff;Gries, David
viewed: 28
title: An Introduction to Proofs of Program Correctness for Teachers of College-Level Introductory Programming Courses

abstract: No abstract is available.

url: http://hdl.handle.net/1813/6943
date: 2007-04-23
creator: Marzullo, Keith;Cooper, Robert;Birman, Kenneth P.
viewed: 31
title: ISIS and META Projects: Progress Report
abstract: No abstract is available.

url: http://hdl.handle.net/1813/6944
date: 2007-04-23
creator: Li, Yuying;Conn, Andrew R.
viewed: 15
title: An Efficient Algorithm for Nonlinear Minimax Problems
abstract: We present a new method for solving a nonlinear minimax problem. This new algorithm exploits the structure and characterisation of the solution whenever possible. The exploitation is based on the results that have been established in [13]. The algorithm is globally convergent with a superlinear convergence rate. Numerical results indicate the efficacy of the new method.

url: http://hdl.handle.net/1813/6945
date: 2007-04-23
creator: Bergmark, D.;Salton, Gerard
viewed: 25
title: A Computer Science View Obtained by Automatic Document Processing
abstract: Automatic document classification techniques have been widely advocated for the study of various fields of learning, the identification of individual research topics and of influential contributors in a given field, and for information storage and retrieval purposes. Several thousand research documents in computer science are automatically classified in the present study, leading to the generation of a taxonomy which reflects the state of computer science as of 1974. The popularity of various subject areas in the field is assessed, and the clustering characteristics of particular document classes and authors is given.

url: http://hdl.handle.net/1813/6946
date: 2007-04-23
creator: Klarlund, Nils
viewed: 16
title: Convergence Measures
abstract: General methods of verification for programs defining infinite computataions rely on measuring progress or convergence of finite computations towards satisfying the specification. Traditionally, progress is measured using well-founded orderings, but this often involves syntactic transformations. Our main result is that program verification can take place by direct measurement of convergence for programs that are analytic ($\sum^{1}_{1}$) sets and specifications that are coanalytic ($\prod^{1}_{1}$) sets. We use orderings that are not well-founded, but that ensure well-foundedness of limits of finite trees. Our results can also be seen as a new approach to parts of descriptive set theory. In fact, Souslin's Theorem-that every set in $\sum^{1}_{1} \cap \prod^{1}_{1}$ is Borel-is a simple corollary of our main result.

url: http://hdl.handle.net/1813/6947
date: 2007-04-23
creator: Salton, Gerard

viewed: 18
title: A Comparison of Term Value Measurements for Automatic Indexing
abstract: A number of automatic theories have been proposed over the last few years leading to the assignment of significance values to linguistic entities in accordance with their importance for purposes of content representation. Among these are methodologies based on decision theory, information theory, communication theory, vector space transformation and others. An attempt is made to compare these theories by exhibiting the formal frequency characteristics which underlie them. The effectiveness of the various approaches is also evaluated in experimental situations by using collections of documents in the areas of aerodynamics, medicine and world affairs.

url: http://hdl.handle.net/1813/6948
date: 2007-04-23
creator: Papadopoulos, Jim;Ruina, Andy;Goyal, Suresh
viewed: 28
title: Planar Sliding With Dry Friction 1: Limit Surface and Moment Function
abstract: We present two geometric descriptions of the net frictional force and moment between a rigid body and a planar surface on which it slides. The limit surface LS, from classical plasticity theory, is the surface in load space which bounds the set of all possible frictional forces and moments that can be sustained by the frictional interface. Zhukovskii's moment function is the net frictional moment about the body's instantaneous center of rotation (COR) as a function of its location. Both of these descriptions implicitly contain the full relation between slip motion and frictional load. While Zhukovskii's moment function applies only to ordinary isotropic Coulomb friction, the limit surface applies to a wider class of friction laws that includes, for example, contact mediated by massless rigid wheels. Both the limit surface and the moment function can be used to deduce results concerning the motion of sliding rigid bodies.

url: http://hdl.handle.net/1813/6949
date: 2007-04-23
creator: Papadopoulos, Jim;Ruina, Andy;Goyal, Suresh
viewed: 25
title: Planar Sliding With Dry Friction 2: Dynamics of Motion
abstract: Some problems in the dynamics of sliding of planar rigid bodies are treated by geometric methods based on the limit surface description of friction (Goyal, Ruina, Papadopoulos [1990]). The problems we consider, where the normal force is known a priori, have unique solutions although the friction force (and torque) may be a discontinuous function of the direction of motion. When a freely sliding object comes to rest it always does so with one of several definite ratios of translation to rotation. These special generalized velocity directions, termed eigen-directions, depend on the friction law used, the contact pressure distribution and the mass distribution. The eigen-directions correspond to local extrema of the generalized frictional load |P| on the limit surface, i.e. to direction in load space where P is parallel to the generalized motion direction q. For most objects, if the radius of gyration is sufficiently larger than the radius of the contact region final motion is always pure rotation about the center of mass; if the mass distribution is sufficiently central the final motion is a pure translation. A simple model of a car with locked rear wheels shows the effect of speed and orientation on skid stability at finite speeds. Sliders have a propensity to rotate about points of support.

url: http://hdl.handle.net/1813/6950
date: 2007-04-23
creator: Gay, David M.
viewed: 14

title: Brown's Method and Some Generalizations, With Applications to Minimization Problems
abstract: Newton's method attempts to find a zero of $f \in C^{1}(IR^{n})$ by taking a step which is intended to make all components of f vanish at once. In this respect Newton's method processes the components of f in parallel. Contrasting to this, Brown's method and the generalizations thereof considered in this thesis process the components of f serially, one after another. One major iteration of these methods may be described as follows: given the starting point (i.e. current major iterate) y_{0}, linearize the first component f_{1} of f at y_{0} and find a point y_{1} in the $n-1$ dimensional hyperplane H_{1} on which this linearization vanishes; in general, having found a point $y_{k} (1 \leq k less than n)$ in the $n-k$ dimensional hyperplane H_{k} on which the heretofore constructed linearizations vanish, restrict f_{k+1} to H_{k}, linearize this restriction at y_{k}, and find a point y_{k+1} in the $n-(k+1)$ dimensional hyperplane H_{k+1} on which this linearization vanishes; stop when Y_{n} has been found and let y_{n} be the next major iterate. When f is a general nonlinear function and finite differences are used to construct the linearizations, this approach must do work equivalent to approximating only about half the components of f' and thus requires only about half as many function evaluations per major iteration as the corresponding finite difference Newton's method, while still enjoying the same rate of local convergence.

url: http://hdl.handle.net/1813/6951
date: 2007-04-23
creator: Mitchell, Joseph S.B.;Khuller, Samir;Arkin, Esther
viewed: 19
title: Optimal Enclosure Problems
abstract: We consider the following "fence enclosure" problem: Given a set S of n points in the plane with values $v_{i} \geq 0$, we wish to enclose a subset of the points with a fence (a simple closed curve) so as to maximize the "value" of the enclosure. The value of the enclosure is defined to be the sum of the values of the enclosed points minus the cost of the fence. We consider various versions of the problem, such as allowing S to consist of points and/or simple polygons. Other versions of the problems are obtained by restricting the total amount of fence available and also allowing the enclosure to consist of up to K connected components. We show that the problem for a bounded length fence is NP-complete . Additionally we provide polynomial-time algorithms for many versions of the fence problem when an unrestricted amount of fence is available. When the set S consists of points and the fence is unrestricted in length we solve the problem via an $O(n^{3})$ time sweep-line algorithm; we give an alternative $O(n^{3})$ time algorithm based on finding shortest paths in directed graphs, and generalize it to handle various cases in which S is a set of polygons. When $K greater than 1$ components are permitted we obtain a polynomial-time algorithm (for consistent K).

url: http://hdl.handle.net/1813/6952
date: 2007-04-23
creator: Baraff, David
viewed: 22
title: Determining Frictional Inconsistency for Rigid Bodies is NP-Complete
abstract: The computational complexity of computing the forces between bodies in contact is presented. The bodies are restricted to be perfectly rigid bodies that contact at finitely many points. It has been known for some time that under the Coulomb model of friction, some configurations of bodies are inconsistent; that is, no contact forces satisfying the constraints of the Coulomb friction model exist for the configuration. The main result of this paper is a proof that determining if a configuration is inconsistent is an NP-complete problem. An immediate corollary of this proof is that computing the contact forces for a configuration of bodies is NP-hard. Computing contact forces remains NP-hard even if configurations are restricted to be consistent.

url: http://hdl.handle.net/1813/6953
date: 2007-04-23
creator: Buckley, Chris;Salton, Gerard
viewed: 27
title: Approaches to Global Text Analysis
abstract: The current approaches to the analysis of natural language text are not viable for documents of unrestricted scope. A global text analysis system is proposed designed to identify homogeneous text environments in which the meaning of text words and phrases remains unambiguous, and useful term relationships may be automatically determined. The proposed methods include document clustering methods, as well as comparisons of local document excerpts in specified global contexts, leading to structured text representations in which similar texts, or text excerpts, are appropriately linked.

url: http://hdl.handle.net/1813/6954
date: 2007-04-23
creator: Hendren, Laurie J.
viewed: 30
title: Parallelizing Programs with Recursive Data Structures
abstract: Interference estimation is a useful tool in developing parallel programs and is a key aspect of automatically parallelizing sequential programs. Interference analysis and disambiguation mechanisms for programs with simple data types and arrays have become a standard part of parallelizing and vectorizing compilers. However, efficient and implementable techniques for interference analysis in the presence of dynamic data structures have yet to be developed. This thesis addresses the problem of estimating interference and parallelizing programs in the setting of an imperative language that supports dynamic data structures. By focusing on analysis methods for recursively defined pointer data structures such as trees and DAGs, we have developed efficient and implementable interference analysis tools and parallelization techniques. The interference analysis methods are based on estimating the relationships between accessible nodes in a data structure. We define a data abstraction for estimating relationships that leads to an efficient interference analysis. Analysis functions are provided for SIL, a simple imperative language that includes conditionals, loops and recursive procedures. The analysis is proven sound with respect to the standard semantics for SIL. Based on the interference analysis tools, a collection of parallelization techniques are developed and the coarse-grain techniques are used to develop a simple system for parallelizing programs for a shared memory machine. The analysis techniques and parallelization system have been implemented, and examples illustrating the methods are provided.

url: http://hdl.handle.net/1813/6955
date: 2007-04-23
creator: Araya, Jose E.
viewed: 19
title: Interactive Query Formulation and Feedback Experiments in Information Retrieval
abstract: The effective use of information retrieval systems by end-users has been limited by their lack of knowledge on the particular organization of the databases searched and by their limited experience on how to formulate and modify search statements. This thesis explores and evaluate two mechanisms to improve retrieval performance by end-users. The first mechanism complements the formulation of a query by allowing users to interactively add term phrases. These phrases are generated either from the query text of from known relevant documents. This addition of term phrases to a query is suggested by the term discrimination model as a precision enhancement device. An interactive front-end for the SMART information retrieval system was developed to perform the interactive experiments needed to evaluate different phrase addition strategies.

The second aspect of retrieval improvement studied is the evaluation of two database organizations that can be used to obtain new relevant documents by looking in the neighborhood of known relevant documents, browsing. Browsing in cluster hierarchies and nearest-neighbor networks is compared to relevance feedback in non-restrictive experiments. The results obtained for the phrase addition methodology showed that simple non-interactive addition of phrases can perform as well as interactive addition. Even an optimal selection of the phrases based on the relevant documents not yet retrieved, did not significantly improve performance over simply adding all the phrases generated. Many useful phrases are not selected by users because they look like random association of terms. The usefulness of these phrases comes from the fact that either they are pieces of larger (semantically meaningful) phrases, or they are made up of local synonyms specific to the document collection used. The browsing experiments in cluster hierarchies and nearest-neighbor networks showed that the second organization consistently performs better than relevance feedback in different collections. Cluster browsing is more dependent on the characteristics of the collections; but when the circumstances are favorable, cluster browsing can produce larger improvements on retrieval that network browsing. Retrieval in both structures is much faster than relevance feedback since only a small portion of the database needs to be inspected.

url: http://hdl.handle.net/1813/6956
date: 2007-04-23
creator: Yang, C. S.
viewed: 49
title: Directory Design and Record Allocation for List and Cluster Files
abstract: Most file organizations for on-line econdary key retrieval consist of two subcomponents - a structural file and a data file. The structural file provides, a physical access path in the data base for each query, so that searches can be restricted to small portions of the data file. The data file contains the data records where information is stored. Hence, the file design problem consists of (1) an efficient design of the structural file, and (2) an allocation of data records in the data file so that a given set of data records can be jointly retrieved at mimimum cost. List structure organizations and clustered organizations are shown to be important structures for secondary key retrieval. This thesis studies the design aspects of the structural and data files for both of the above organizations. The most popular list structure files are the inverted list and the multilist organizations. It is shown that either organization is a special case of a new class of hybrid list organizations. File elements in this class are characterized by a list length parameter $\cal l_{th}$, and a list is stored as an inverted list or as a multilist depending on whether its length is larger than $\cal l_{th}$ or not. Analytical and simulation results indicate that neither a pure inverted list organization nor a pure multilist organization is normally the best choice for all elements in the class. A new method is also introduced for the structure of combined indices for list structure files. A combined index is created only if its component keys co-occur frequently in the queries. Experimental results show that such combined indices do improve the search performances for both inverted list and multilist organizations. Search methods and physical implementations of clustered organizations are discussed. The balancing of cluster trees is shown to be an important concept. A search model is established to obtain optimal branching ratios for cluster trees. The optimal branching ratio is seen to be dependent on certain statistical characteristics of the data base. The last part of the thesis concerns itself with the arrangement of records in the dataa file. The data records are assigned to blocks in the disk like devices. The goal is to minimize the average number of block accesses in processing the query set in the system. This problem turns out to be a polynomial complete problem. Heuristic algorithms are therefore used for the record block assignment. Experimental results show that a record organization produced by the heuristic algorithms is more efficient than a random assignment of records to the blocks.

url: http://hdl.handle.net/1813/6957

date: 2007-04-23
creator: Rohatgi, Pankaj;Ranjan, Desh;Chang, Richard;Hartmanis, Juris
viewed: 20
title: Structural Complexity Theory: Recent Surprises
abstract: This paper reviews the impact of some recent results on the research paradigms in structural complexity theory.

url: http://hdl.handle.net/1813/6958
date: 2007-04-23
creator: Kadin, Jim;Chang, Richard
viewed: 28
title: On Computing Boolean Connectives of Characteristic Functions
abstract: We study the existence of polynomial time Boolean connective functions for languages. A language L has an AND function if there is a polynomial time f such that $f(x,y) \in L \Longleftrightarrow x \in L$ and $y \in L$. L has an OR function if there is a polynomial time g such that $g(x,y) \in L \Longleftrightarrow x \in L$ or $y \in L$. While all NP-complete sets have these functions, we show that Graph Isomorphism, which is probably not complete, also has them. We characterize the complete sets for the classes D^{P} and $P^{NP[O(log n)]}$ in terms of AND and OR, and we relate these functions to the structure of the Boolean hierarchy and the query hierarchies. We show that the sets that are complete for levels above the second level of the Boolean hierarchy do not have AND and OR unless the polynomial hierarchy collapses. We show that most of the structural properties of the Boolean hierarchy and query hierarchies depend only on the existence of AND and OR functions for NP-complete sets.

url: http://hdl.handle.net/1813/6959
date: 2007-04-23
creator: Li, Yuying;Coleman, Thomas F.
viewed: 68
title: A Quadratically-Convergent Algorithm for the Linear Programming Problem with Lower and Upper Bounds
abstract: We present a new algorithm to solve linear programming problems with finite lower and upper bounds. This algorithm generates an infinite sequence of points guaranteed to converge to the solution; the ultimate convergence rate is quadratic. The algorithm requires the solution of a linear least squares problem at each iteration - it is similar in this respect to recent interior point and "Karmarkar-like" methods. However, the algorithm does not require feasibility of the iterates; instead, monotonic decrease of an augmented linear l_{1} function is maintained. A penalty parameter is not required. This method is particularly attractive for large-scale problems in that the number of iterations required to obtain high accuracy is relatively insensitive to problem size and is typically quite small. We provide results of numerical experiments.

url: http://hdl.handle.net/1813/6960
date: 2007-04-23
creator: Russell, James R.
viewed: 43
title: Full Abstraction and Fixed-Point Principles for Indeterminate Computation
abstract: Recently, there has been much interest in the problem of finding semantic models for various kinds of concurrent systems. A common property of concurrent systems is indeterminate behavior, either because of unpredictable interactions between processes, or because of abstractions removing the temporal details of the interaction. As a result, the study of the semantics of indeterminacy is necessary and important to the understanding of concurrency. The goal of any semantic model is that is capture our intuitions about the

operational behavior of the underlying system and aid in our reasoning about it. Two properties of semantic models that we find useful in achieving this goal are full abstraction and fixed-point principles. In this thesis we investigate the problem of finding semantic descriptions with these properties for indeterminate systems. We begin by looking at a simple imperative language containing unbounded indeterminacy, based on one studied by Apt and Plotkin. We use category-theoretic techniques to develop a fixed-point semantics that, while not fully abstract, reduces to a fully abstract semantics via a simple abstraction functor. We then concentrate on the more general setting of dataflow networks and the hierarchy of indeterminate merge primitives. We show that the straighforward generalization of Kahn's semantics based on the input-output relations fails to be compositional for any class of indeterminate dataflow networks, thereby providing a model considerably more general than Kahn's. This generalization has the drawback that it does not have a simple fixed-point principle. We proceed to study a class of networks that models purely internal indeterminacy, called oraclizable networks, and show that for this class a generalization of Kahn's semantics to sets of functions is both fully abstract and has a natural fixed-point principle. We also show that the oraclizable networks are in fact universal for this representation. Finally, we use this representation to compare the class of oraclizable networks to other classes, and discover new relations among the classes.

url: http://hdl.handle.net/1813/6961
date: 2007-04-23
creator: Li, Yuying;Coleman, Thomas F.
viewed: 17
title: A Global and Quadratically-Convergent Method for Linear L_{∞} Problems
abstract: We propose a new global and quadratically convergent algorithm for the linear l_{∞} problem. This method works on the piecewise l_{∞} problem directly by generating descent directions - via a sequence of weighted least squares problems - and using piecewise linear linesearches to ensure a decrease in the l_{∞} function at every step. We prove that ultimately full Newton-like steps are taken where the Newton step is based on the complementary slackness condition holding at the solution. Numerical results suggest a very promising method; the number of iterations required to achieve high accuracy is relatively insensitive to problem size.

url: http://hdl.handle.net/1813/6962
date: 2007-04-23
creator: Greenberg, Donald P.;Donald, Bruce Randall;Reichert, Mark;Lengyel, Jed
viewed: 22
title: Real-Time Robot Motion Planning Using Rasterizing Computer Graphics Hardware
abstract: We present a real-time robot motion planner that is fast and complete to a resolution. The technique is guaranteed to find a path if one exists at the resolution, and all paths returned are safe. The planner can handle any polyhedral geometry of robot and obstacles, including disjoint and highly concave unions of polyhedra. The planner uses standard graphics hardware to rasterize configuration space obstacles into a series of bitmap slices, and then uses dynamic programming to create a navigation function (a discrete vector-valued function) and to calculate paths in this rasterized space. The motion paths which the planner produces are minimal with respect to an L_{1} (Manhattan) distance metric that includes rotation as well as translation. Several examples are shown illustrating the competence of the planner at generating planar rotational and translational plans for complex two and three dimensional robots. Dynamic motion sequences including complicated and non-obvious backtracking solutions, can be executed in real time.

url: http://hdl.handle.net/1813/6963
date: 2007-04-23
creator: Kozen, Dexter

viewed: 14
title: A Completeness Theorem for Kleene Algebras and the Algebra of Regular Events
abstract: We give a finite axiomatization of the algebra of regular events involving only universal Horn formulas. Unlike Salomaa's axiomatizations, ours is sound for all interpretations over Kleene algebras.

url: http://hdl.handle.net/1813/6964
date: 2007-04-23
creator: Kadin, Jim;Chang, Richard
viewed: 29
title: On the Structure of Uniquely Satisfiable Formulas
abstract: This paper presents some new results on the computational complexity of the set of uniquely satisfiable Boolean formulas (USAT). Valiant and Vazirani showed that USAT is complete for the class D^{P} under randomized reductions. In spite of the fact that the probability bound of this reduction is low, we show that USAT captures many properties possessed by D^{P} many-one complete sets. We show that the structure of USAT can affect the structure of D^{P} and the entire Polynomial Hierarchy (PH) as well. That is, 1. if USAT $\equiv^{P}_{m} \overline{USAT}$, then D^{P} = co-D^{P} and PH collapses. 2. if USAT $\in$ co-D^{P}, then PH collapses. 3. if USAT is closed under disjunctive reductions, then PH collapses. The third result implies that the probability bound in the Valiant-Vazirani reduction cannot be amplified by repeated trials unless the Polynomial Hierarchy collapses. These results show that even sets complete under "weak" randomized reductions can capture properties of many-one complete sets.

url: http://hdl.handle.net/1813/6965
date: 2007-04-23
creator: Zhao, Zhongnan;Buckley, Chris;Salton, Gerard
viewed: 27
title: Text Linking and Retrieval Experiments for Textbook Components
abstract: Experiments are described designed to retrieve individual paragraphs of textbook material in answer to user-submitted queries. The retrieval strategies are based on the global comparison of paragraph texts, as well as on the local processing of text sentences. Furthermore, the retrieved items may be freely chosen, or may alternatively be restricted to certain areas in a clustered arrangement of book paragraphs. The retrieval results indicate that high retrieval values are obtainable for the more refined retrieval strategies, ranging between 0.70 and 0.80 in search precision.

url: http://hdl.handle.net/1813/6966
date: 2007-04-23
creator: Russell, Alex;Elkan, Charles P.;Segre, Alberto M.
viewed: 26
title: On Valid and Invalid Methodologies for Experimentala Evaluations of EBL
abstract: A number of experimental evaluations of explanation-based learning (EBL) have appeared in the literature on machine learning. Closer examination of experimental methodologies used in the past reveals certain methodological flaws that call into question the conclusions drawn from these experiments. This paper illustrates some of the more common methodological problems, proposes a novel experimental framework for future empirical studies of EBL, and presents an example of an experiment performed within this new framework.

url: http://hdl.handle.net/1813/6967
date: 2007-04-23
creator: Donald, Bruce Randall;O'Donnell, Michael

viewed: 31
title: On Large Scale Planar Manipulation
abstract: No abstract is available.

url: http://hdl.handle.net/1813/6968
date: 2007-04-23
creator: Smith, Maria
viewed: 19
title: Aspects of the P-Norm Model of Information Retrieval: Syntactic Query Generation, Efficiency, and Theoretical Properties
abstract: A practical information retrieval system must be easy to use by untrained users, and it must provide prompt responses to a user's search requests. In this thesis, these practical aspects of the p-norm model of information retrieval are explored. In addition, a study of theoretical properties of the p-norm model is presented. A syntactic method for generating p-norm queries from parse trees generated by the PLNLP syntactic analyzer is presented. The effectiveness of the syntactically generated queries is shown to be comparable to the effectiveness of manually constructed queries, and much better than that of statistically generated queries. The efficiency of a p-norm retrieval is significantly improved with a new p-norm retrieval algorithm which evaluates the entire document collection in one recursive traversal of the query tree. This algorithm is compared against the straightforward algorithm, which requires a traversal of the query tree for each document that is evaluated. The new algorithm is shown to be better both asymptotically and experimentally. The infinity-one model is introduced as a means of approximating the p-norm model without requiring exponentiation. Experimental results show that infinity-one retrieval is essentially as effective as p-norm retrieval, but much faster. List pruning methods for further efficiency improvements are also introduced and are shown to reduce retrieval time significantly without affecting the precision of top-ranked documents. The retrieval time of the infinity-one model with list pruning is shown to be comparable to that of pure Boolean retrieval. A theoretical study is also presented in which certain Boolean algebra properties, such as associativity, are shown to be unsatisfiable by any extended Boolean system with weak operators. The p-norm model is shown to satisfy all those properties that can be satisfied. In addition, the p-norm model is evaluated with respect to the Waller-Kraft wish list for extended Boolean systems.

url: http://hdl.handle.net/1813/6969
date: 2007-04-23
creator: Rohatgi, Pankaj;Ranjan, Desh;Chang, Richard;Hartmanis, Juris
viewed: 27
title: On IP=PSPACE and Theorems with Narrow Proofs
abstract: Very recently, it was shown that the class of languages with interactive proofs, IP, is exactly the class PSPACE. This surprising result elegantly places IP in the standard classification of feasible computations. Furthermore, the IP = PSPACE result reveals some very interesting and unsuspected properties of mathematical proofs. In this column, we define the width of a proof in a formal system $\cal F$ and show that it is an intuitively satisfying and robust definition. Then, using the IP = PSPACE result, it is seen that the width of a proof (as opposed to the length) determines how quickly one can give overwhelming evidence that a theorem is provable without showing the full proof.

url: http://hdl.handle.net/1813/6970
date: 2007-04-23
creator: Teitelbaum, Tim;Field, John H.
viewed: 13
title: Incremental Reduction in the Lambda Calculus

abstract: An incremental algorithm is one that takes advantage of the fact that the function it computes is to be evaluated repeatedly on inputs that differ only slightly from one another, avoiding duplication of common computations. We define here a new notion of incrementality for reduction in the untyped λ-calculus and describe an incremental reduction algorithm, Λ^{inc}. We show that Λ^{inc} has the desirable property of performing non-overlapping reductions on related terms, yet is simple enough to allow a practical implementation. The algorithm is based on a novel λ-reduction strategy that may prove useful in a non-incremental setting as well. Incremental λ-reduction can be used to advantage in any setting where an algorithm is specified in a functional or applicative manner.

url: http://hdl.handle.net/1813/6971
date: 2007-04-23
creator: Kozen, Dexter
viewed: 19
title: On Kleene Algebras and Closed Semirings
abstract: Kleene algebras are an important class of algebraic structures that arise in diverse areas of computer science: program logic and semantics, relational algebra, automata theory, and the design and analysis of algorithms. The literature contains at several inequivalent definitions of Kleene algebras and related algebraic structures [2, 13, 14, 5, 6, 1, 9, 7]. In this paper we establish some new relationships among these structures. Our main results are: (1) There is a Kleene algebra in the sense of [6] that is not *-continuous. (2) The categories of *-continuous Kleene algebras [5, 6], closed semirings [1, 9] and S-algebras [2] are strongly related by adjunctions. (3) The axioms of Kleene algebra in the sense of [6] are not complete for the universal Horn theory of the regular events. This refutes a conjecture of Conway [2, p. 103]. (4) Right-handed Kleene algebras are not necessarily left-handed Kleene algebras. This verifies a weaker version of a conjecture of Pratt [14].

url: http://hdl.handle.net/1813/6972
date: 2007-04-23
creator: Vavasis, Stephen A.
viewed: 18
title: Black-box complexity of local minimization
abstract: We study the complexity of local minimization in the black-box model, that is, the model in which the objective function and possibly its gradient are available as external subroutines. This is the model used, for example, in all the optimization algorithms in the 1983 book by Dennis and Schnabel. Our first main result is that the complexity grows polynomially with the number of variables n, in contrast to other related black-box problems (global minimization, Brouwer fixed points) for which the worst case complexity is exponential in n. Our second contribution is the construction of a family of functions that are bad cases for all possible black-box local optimization algorithms.

url: http://hdl.handle.net/1813/6973
date: 2007-04-23
creator: Donahue, James E.;Constable, Robert L.
viewed: 16
title: An Elementary Formal Semantics for the Programming Language PL/CS
abstract: The PL/CS language is an instructional variant of PL/C designed to provide a simple, easy-to-understand tool to teach a disciplined style of programming (see [Conway 1976]). This report gives a complete formal semantic specification of the language, following the style of [Scott and Strachey 1972]. In keeping with the goal of simplicity in the design of PL/CS, the formal definition is presented in an hierarchical fashion and uses only elementary mathematical concepts, such as set, relation, and recursive definition. Key Words:

programming language semantics, denotational semantics, recursive functions, Pl/I, PL/C, PL/CS.

url: http://hdl.handle.net/1813/6974
date: 2007-04-23
creator: Buckley, Chris;Salton, Gerard
viewed: 27
title: An Evaluation of Text Matching Systems for Text Excerpts of Varying Scope
abstract: When large text collections must be processed, it is not possible to limit the scope of the subject matter of interest. In such a situation the standard content analysis methods that are based on the use of knowledge bases to represent the relevant subject areas are not applicable. Necessarily, the text themselves must then serve as the main basis for the content analysis operations. Experiments are described in this note designed to evaluate text matching operations for text excerpts of varying scope, including in particular text paragraphs and text sentences extracted from book size materials. The evaluation shows that when the global text similarity between distinct text paragraphs is high, while at the same time local similarities also exist for particular text sentences included in these paragraphs, the presumption is that the paragraphs cover related subject matter. One concludes that text matching systems may prove useful for text linking and information retrieval.

url: http://hdl.handle.net/1813/6975
date: 2007-04-23
creator: Simon, Janos
viewed: 13
title: On Some Central Problems in Computational Complexity
abstract: In this thesis we examine some of the central problems in the theory of computational complexity, like the trade-offs between time and memory, the power of nondeterminism and parallelism, and the speed gained by adding new operations to random access machines. Our main result is the cahracterization of the power of multiplication in random access acceptors: we show, in Chapter 3, that for such models nondeterministic and deterministic computations are polynomially related and that there is a polynomial relationship between the amount of time required for acceptance by random access machines with multiplication, and the amount of tape required by Turing machines. Thus, the additional power gained by using multiplication is the same as that of memory over time (if any). We derive similar results for some other interesting instruction sets. We also have some results for probabilistic and nondeterministic computations: we define threshold machines and show how probabilistic Turing machines may simulate them, and exhibit a set of complete problems for threshold machines. For nondeterministic computations, we present a hierarchy of the elementary recursive languages obtained by polynomially bounded quantification over objects of higher and higher type, which represent nondeterministic time bounded computations with larger and larger bounds. Finally, we discuss some deterministic computations, and conclude with a look at some open problems.

url: http://hdl.handle.net/1813/6976
date: 2007-04-23
creator: Wood, Mark D.;Marzullo, Keith;Cooper, Robert;Birman, Kenneth P.
viewed: 22
title: Tools for Distributed Application Management
abstract: Distributed application management consists of monitoring and controlling an application as it executes in a distributed environment. It encompasses such activities as configuration, initialization, performance monitoring, resource scheduling, and failure response. In this paper we describe the Meta system: a collection of tools for constructing distributed application management software. Meta provides the mechanism, while the programmer specifies the policy for application management. The policy is manifested

as a control program which is a soft real-time reactive program. The underlying application is instrumented with a variety of built-in and user- defined sensors and actuators. These define the interface between the control program and the application. The control program also has access to a database describing the structure of the application and the characteristics of is environment. Some of the more difficult problems for application management occur when pre-existing, nondistributed programs are integrated into a distributed application for which they may not have been intended. Meta allows management functions to be retrofitted to such programs with a minimum effort. Keywords: Distributed application management, configuration management, distributed operating systems, dynamic reconfiguration, monitoring distributed systems, rule-based systems, Isis.

url: http://hdl.handle.net/1813/6977
date: 2007-04-23
creator: Buckley, Chris;Zhao, Zhongnan;Salton, Gerard
viewed: 25
title: A Simple Syntactic Approach for the Generation of Indexing Phrases
abstract: A syntactic approach is described for generating indexing phrases usable for the content identification of natural-language texts. The phrase generation method is based on a simple language analysis system that determines the syntactic function of individual text words with a high degree of accuracy, and chooses of indexing phrases based on weights assigned to the phrase components. The proportion of phrases that appear to be acceptable for content identification ranges from 96 to 98 percent.

url: http://hdl.handle.net/1813/6978
date: 2007-04-23
creator: Cooper, Robert;Birman, Kenneth P.
viewed: 31
title: The ISIS Project-Real Experience with a Fault-Tolerant Programming System
abstract: The ISIS project has developed a distributed programming toolkit [2,3] and a collection of higher level applications based on these tools. ISIS is now in use at more than 300 locations world-wide. Here, we discuss the lessons (and surprises) gained from this experience with the real world.

url: http://hdl.handle.net/1813/6979
date: 2007-04-23
creator: Taylor, Kimberly E.
viewed: 29
title: Knowledge and Inhibition in Asynchronous Distributed Systems
abstract: In an asynchronous distributed system, processes communicate only via message passing along channels with unbounded transmission time. Relative process speeds are arbitrary and processes do not have access to a common clock. For such systems, a useful means of providing temporal structure is the causality relation. Causality imposes a partial order on the events of an execution based on the necessity of certain events preceding other events. Causality can be used to give a sensible definition of a distributed global state in an asynchronous system, known as a consistent cut. We present a new knowledge-theoretic logic, with formal semantic definitions, for reasoning about causality and consistent cuts. The logic includes concurrent common knowledge, a new form of distributed agreement, which has an analogous role to that of common knowledge in synchronous systems. It is shown to be a necessary and sufficient condition for performing concurrent actions in asynchronous systems, and has a role in many distributed applications such as checkpointing, deadlock detection, and broadcasting. Concurrent common knowledge is also shown to be attainable by class of protocols termed distinguishable-consistent-cut-protocols or DCCPs. We examine four simple and efficient DCCPs and trade-offs between them. These trade-offs involve message

complexities, necessity of FIFO channels, and the degrees to which events of the underlying system are suspended during execution of the protocols. We call such suspensions inhibition and formally define multiple forms of inhibition that are used in distributed protocols. We classify the DCCPs in this work according to their inhibitory characteristics, and prove new results which demonstrate close relationships between inhibition and the existence of DCCPs.

url: http://hdl.handle.net/1813/6980
date: 2007-04-23
creator: Shollenberger, Steve;Blondell, Robert
viewed: 19
title: Design of a Microprocessor Driven Generic Controller for a Mobile Robot Base
abstract: The primary project goal is to design and fabricate a controller to be used in an autonomous mobile robot which is consistent with the generic controller concept set forth by the Mobile Robotics Group. A generic controller must be capable of controlling interfacing units such as sonar and motor drive systems without any hardware modifications. Thus, any sensor or actuator applicable for use in mobile robotics can be utilized by providing the appropriate interface to, and programming for, the generic controller. Communication between generic controllers is needed to pass data from sensors to actuators. The most important design considerations are interface flexibility, size, power consumption, and robustness. The generic controller provides the following capabilities as specified by the Mobile Robotics Group. These include interboard communication capability, on-board memory, debug and download capability through the use of a dedicated communication channel, a pulse width generator for motor control, an interrupt arbitration scheme, and a multi-port I/O device with separate ports for an array of light emitting diodes, preset dual inline switches and external pendent control capability.

url: http://hdl.handle.net/1813/6981
date: 2007-04-23
creator: Marzullo, Keith;Freier, Alan O.
viewed: 24
title: MTP: An Atomic Multicast Transport Protocol
abstract: This paper describes MTP: a reliable transport protocol that utilizes the multicast strategy of applicable lower layer network architectures. In addition to transporting data reliably and efficiently, MTP provides the client synchronization necessary for agreement on the receipt of data and the joining of the group of communicants. Keywords: reliable transport, multicast, broadcast, atomic broadcast, agreement.

url: http://hdl.handle.net/1813/6982
date: 2007-04-23
creator: Khuller, Samir
viewed: 18
title: Efficient Parallel Algorithms for Disjoint Paths and Connectivity
abstract: This thesis is concerned with the problem of designing efficient parallel algorithms for various graph-theoretic problems. Our larger goal is to identify "tools" that would be useful in designing parallel algorithms for various graph-theoretic problems. We show that the concept of bridges plays a crucial role in the design of algorithms for the kinds of problems we consider. The specific problems we consider are the following. We give an NC algorithm for finding vertex-disjoint s_{1}, t_{1} and s_{2}, t_{2} paths in an undirected graph. An important step in solving the general problem is solving the planar case. A new structural property yields the parallelization, as well as a simpler linear time sequential algorithm for this case. We extend the algorithm to the non-planar case by giving an NC algorithm for finding a Kuratowski homeomorph, and, in particular, a homeomorph of $K_{3,3,}$ in a non-planar graph. We also present an

efficient parallel algorithm for testing whether a graph is k vertex-connected. To develop our algorithm we design an efficient parallel algorithm for the following disjoint $s-t$ paths problem: Given a graph and two specified vertices s and t, find k vertex-disjoint paths between s and t, if they exist. If no such paths exist, find a set of at most k - 1 vertices whose removal disconnects s and t. We show how to modify the algorithm to find k edge-disjoint paths, if they exist. This yields an efficient parallel algorithm for testing whether a graph is k edge-connected. Finally, we describe more applications of the disjoint $s-t$ paths algorithm. This algorithm is also used as a subroutine in the algorithm for the two paths problem mentioned earlier.

url: http://hdl.handle.net/1813/6983
date: 2007-04-23
creator: Vazirani, Vijay V.;Mitchell, Stephen G.;Khuller, Samir
viewed: 16
title: On-line Algorithms for Weighted Matching and Stable Marriages
abstract: We give an on-line deterministic algorithm for the bipartite weighted matching problem that achieves a competitive ratio of $O(n)$. In fact, this algorithm is almost optimal - the lower bound on the performance ratio of any deterministic online algorithm is $\Omega (n/ \sqrt{log n})$. We also study the stable marriage problem, where we are interested in the number of unstable pairs produced. We show that the simple "first come, first served" deterministic algorithm yields on the average $O(n$ log n) unstable pairs, but in the worst case no deterministic or randomized on-line algorithm can do better that $\Omega(n^{2})$ unstable pairs.

url: http://hdl.handle.net/1813/6984
date: 2007-04-23
creator: Reppy, John H.
viewed: 14
title: Asynchronous Signals is Standard ML
abstract: We describe the design, implementation and use of a mechanism for handling asynchronous signals, such as user interrupts, in the New Jersey implementation of standard ML. Providing this kind of mechanism is a necessary requirement for the development of real-world application programs. Our mechanism uses first-class continuations to represent the execution state at the time at which a signal occurs. It has been used to support pre-emptive scheduling in concurrency packages and for forcing break-points in debuggers, as well as for handling user interrupts in the SML/NJ interactive environment.

url: http://hdl.handle.net/1813/6985
date: 2007-04-23
creator: Elkan, Charles P.
viewed: 18
title: Flexible Concurrency Control by Reasoning About Database Queries and Updates
abstract: A number of database management problems involve reasoning about queries and updates. Concurrency control is the most important example: two transactions should not be executed simultaneously if it is possible that an update command issued by one transaction might change information used in answering a query issued by the other. Existing concurrency control schemes are based on the idea of protecting discrete items of data. This thesis describes a concurrency control scheme called adaptive locking that is based instead on logical reasoning. The central notion is that of independence. Informally, a query is independent of an update if executing the update cannot change the result of evaluating the query. First the general properties of the concept of independence are investigated, using a formal model-theoretic definition in the context of deductive databases. Then proof-theoretic sufficient conditions are obtained for

the independence of queries and updates. These results apply to arbitrary queries and updates, and they take into account integrity constraints and recursive rules. For the special case where a query and an update are both specified by conjunctive relational algebra expressions, a decision procedure for independence is given. The procedure is of practical use because typically it requires linear time, and it produces answers that are precise enough to be relied upon. The procedure takes into account functional dependencies, so it constitutes a solution to an open problem identified by Blakeley, Coburn, and Larson. It is of theoretical interest for two reasons. First, its quadratic worst-case time complexity cannot be improved unless the reachability problem for directed graphs can be solved in sublinear time. Second, it applies to the widest possible natural class of queries, since deciding independence is NP-hard for nonconjunctive queries and updates.

url: http://hdl.handle.net/1813/6986
date: 2007-04-23
creator: Shanbhogue, Vasant
viewed: 14
title: The Relationship Between Multiway and Two-Way Fair Merges
abstract: In the context of communicating systems of autonomous processes, we study two kinds of processes - a two-way fair merge, that interleaves two possibly infinite sequences into one, and a multiway fair merge, that interleaves more than two possibly infinite sequences into one. We describe two constructions. The first one shows how the effect of any arbitrary number of two-way fair merges in a finite network can be exactly obtained by a single multiway fair merge and some determinate processes. The second one shows how the effect of a single multiway fair merge with any number of input channels can be exactly obtained by a finite network of two-way fair merges.

url: http://hdl.handle.net/1813/6987
date: 2007-04-23
creator: Shanbhogue, Vasant
viewed: 31
title: The Expressiveness of Indeterminate Dataflow Primitives
abstract: This thesis establishes that there are different kinds of indeterminacy in an asynchronous distributed computation setting by studying expressiveness and inexpressiveness situations. We use a particular model of asynchronous distributed computation, called the dataflow model. This model very naturally portrays the situation of autonomous computing agents communicating asynchronously to each other along fixed one-way paths called channels. The nature of computation is studied both in an operational setting, and in a more abstract setting, and equivalences are proved between them so that one may freely move between them. We use the operational semantics of Lynch and Stark to describe the operational behavior of processes in the dataflow model. We show how one can abstract out the low-level operational behavior and obtain "traces" that are well-suited for reasoning about network behavior, once the properties of tract sets have been fully described using the operational semantics from which they arise. We consider several forms of indeterminacy in this context, modeling them as different fairness guarantees on merge primitives, that try to merge two sequences of values into one, and choice primitives, that split one sequence of values into two. The main contribution here has been to show that there is a surprising hierarchy of different notions of indeterminacy. This cannot simply be described using degree of branching - bounded versus unbounded. We use the trace of sets of these primitives for these proofs. The description of this hierarchy clarifies the expressibility situation for indeterminacy in an asynchronous distributed setting. It is our hope that by concentrating on specific properties of agents that are really relevant to their behavior in any particular system, one would obtain simpler and more convenient semantics to describe this behavior. In most of this thesis, we consider static dataflow - a fixed set of processes communicating along a fixed set of channels. In one of the final chapters, we consider recursively defined dataflow networks whose behavior involves the

creation of processes and channels. We prove the equivalence of an operational and an abstract semantics there for determinate networks.

url: http://hdl.handle.net/1813/6988
date: 2007-04-23
creator: Berman, L.;Hartmanis, Juris
viewed: 18
title: A Note on Tape Bounds for SLA Language Processing
abstract: In this note we show that the tape bounded complexity classes of languages over single letter alphabets are closed under complementation. We then use this result to show that there exists an infinite hierarchy of tape bounded complexity classes of sla languages between log n and log log n tape bounds. We also show that every infinite sla language recognizable on less than log n tape has infinitely many different regular subsets, and, therefore, the set of primes in unary notation, P, requires exactly log n tape for its recognition and every infinite subset of P requires at least log n tape.

url: http://hdl.handle.net/1813/6989
date: 2007-04-23
creator: Zaring, Alan
viewed: 45
title: Parallel Evaluation in Attribute Grammar-Based Systems
abstract: Attributed context-free grammars provide a rigorous basis for the semantic analysis and translation of tree-structured objects and have been used to build a variety of systems. A number of programming language compiler, compiler generators, and language-based editor generators employing attribute grammars have been described in the literature. Many of these systems make use of l-ordered attribute grammars, attribute grammars for which particularly efficient methods for attributing derivation trees have been described. Derivation trees representing constructs of only moderate size may contain thousands of nodes and tens of thousands of attribute instances, and attribution of such trees on uniprocessor systems may require a significant amount of time. One possibility for reducing this time is to find techniques that exploit opportunities for parallelism in the attribution process and allow attribution to be performed on multiprocessor systems. Such techniques would permit attribute grammars to serve as a rigorous foundation for the development of parallel compilation systems and other parallel applications. We present several methods for the parallel attribution of trees derived from l-ordered attribute grammars. These methods take advantage of parallelism implicit in the attribution process and, thus, do not require any special considerations to be taken when constructing grammars. Methods appropriate for use on tightly - and loosely-coupled multiprocessor architectures and for use when complete and incremental tree attribution are required are presented. We present preliminary performance results obtained from implementations of some of the methods on a simple shared-memory multiprocessor simulator embedded within an attribute grammar-based editor generator system. The results suggest that the methods may provide useful reductions in attribution time in some cases.

url: http://hdl.handle.net/1813/6990
date: 2007-04-23
creator: Meyer, Albert;Istrail, Sorin;Bloom, Bard
viewed: 33
title: Bisimulation Can't Be Traced
abstract: In the concurrent languages CCS, two programs are considered the same if they are bisimilar. Several years and many researchers have demonstrated that the theory of bisimulation is mathematically appealing and useful in practice. However, bisimulation makes too many distinctions between programs.

There are two programs P and Q which are not bisimilar, but nontheless are interchangeable: one may be substituted for the other anywhere in a CCS program and no difference can be seen. Bisimulation is thus not fully abstract. We consider the problem of adding operations to CCS to make bisimulation fully abstract. It is trivial to add an operation achieving full abstraction, but this operation is rather peculiar. We show that bisimilation is not fully abstract with respect to any extension of CCS by CCS-like operations. We give a formal description of "CCS-like," as GSOS and argue by proofs and counterexamples that this is indeed the right class. In the proof of non-full-abstraction a coarser version of bisimulation arises, a notion called ready simulation. We investigate the theory of ready simulation, showing that it possesses the basic properties which make bisimulation attractive. Like bisimulation, it possesses equivalent relational and logical characterizations; it has two additional equivalent characterizations as congruence with respect to all GSOS languages, and with respect to CCS extended by process copying and controlled communication operations. In particular, it is fully abstract for a sensible extension of CCS. As a corollary, we show that bisimulation cannot be fully abstract with respect to any CCS-like languages, observing traces.

url: http://hdl.handle.net/1813/6991
date: 2007-04-23
creator: Murthy, Chetan R.
viewed: 33
title: Extracting Constructive Content from Classical Proofs
abstract: This thesis is concerned with the relationship between classical and constructive mathematics. It is well-known that in many constructive logics, we can interpret mathematical sentences as program specifications, and we can interpret a constructive proof of such a sentence as a program which meets this specification. It is also well-known that many classical logics do not have the property, as shown by Brouwer's counterexamples to some theorems of analysis. Kreisel and Friedman showed that for certain classes of sentences (Π_{2}^{0}), the classical theories conservatively extend their constructive counterparts, and furthermore give effective translations from classical proofs to constructive proofs. This thesis consists of two parts. In the first, we describe our implementation of Friedman's translation results, and their use in translating Higman's Lemma, a nontrivial theorem of combinatorics. To do this, we delineate a subtheory of a constructive type theory (Nuprl) for which Friedman's translation is guaranteed to succeed. We also extend the Nuprl type theory with impredicative Π-quantification, and use this to provide a classical proof of Higman's Lemma, which we go on to mechanically translate to a constructive proof. In the second part, we discuss connections that we have discovered between Friedman's translation and a standard compilation technique, continuation-passing-style (CPS) translation. We demonstrate that a classical proof of a (Π_{2}^{0}) sentence Φ is a program which meets the specification Φ. We demonstrate that we can consistently give algorithmic content to the only constructively problematic rule of classical logic, the rule of double-negation elimination. This algorithmic content is the nonlocal control operator C (a relative of call-with-current-continuation). Moreover, we show that Friedman's translation is exactly a CPS-translation on the classical "program" (with C), converting it into a pure functional program (without C). Our work provides a semantic account of Friedman's translation, in terms of its effect on programs, making the connections (and the differences) between classical and constructive systems clearer and more precise. Moreover, we provide the first steps towards integrating nonlocal control operators into a type-theoretic explanation of computation.

url: http://hdl.handle.net/1813/6992
date: 2007-04-23
creator: Stodghill, Paul;Moudgill, Mayan;Johnson, Richard C.;Beck, Micah;Pingali, Keshav
viewed: 24
title: Dependence Flow Graphs: An Algebraic Approach to Program Dependencies

abstract: The topic of intermediate languages for optimizing and parallelizing compilers has received much attention lately. In this paper, we argue that any good representation must have two crucial properties: first, the representation of a program must be a data structure that can be rapidly traversed to determine dependence information; second, the representation must be a program in its own right, with a parallel, local, model of execution. In this paper, we illustrate the importance of these points by examining algorithms for standard optimization-global constant propagation. We discuss the problems in working with current representations. Then, we propose a novel representation called the dependence flow graph which has each of the properties mentioned above. In this representation, dependencies are part of the computational mode, in that there is an algebra of operators over dependencies. We show that this representation leads to a simple algorithm, based on abstract interpretation, for solving the constant propagation problem. Our algorithm is simpler than, and as fast as, the best known algorithms for the problem. An interesting feature of our representation is that it naturally incorporates the best aspects of many other representations, including continuation-passing style, data and program dependence graphs, static single assignment form and dataflow program graphs.

url: http://hdl.handle.net/1813/6993
date: 2007-04-23
creator: Klarlund, Nils
viewed: 19
title: Progress Measures and Finite Arguments for Infinite Computation
abstract: We establish principles for proving properties about infinite computations by reasoning about finite ones. We apply these principles to show that for a wide variety of verification problems - involving nondeterminism, fairness, and liveness - there are assertional verification methods that directly relate program and specification. Most previous research relies on transformations of programs in order to reduce a verification problem to problems that can be solved using classical techniques such a refinement mappings and well-founded orderings. Progress measures, the key innovation of this thesis, provide direct, syntax-independent verification techniques for a wide range of specifications. We exhibit progress measures for the language containment problem for nondeterministic automata; for verification with general fairness constraints; and for verification of very general specifications, including infinitary temporal logics. We obtain and optimal solution (in a recursion-theoretic sense) to the problem of verifying infinite computations by reasoning about finite ones. This result establishes a link between descriptive set theory and the theory of verification.

url: http://hdl.handle.net/1813/6994
date: 2007-04-23
creator: Rohatgi, Pankaj;Chang, Richard
viewed: 86
title: Random Reductions in the Boolean Hierarchy are Not Robust.
abstract: We investigate random reductions from complete sets in the Boolean Hierarchy to their complements. We show that under the assumption that the Polynomial Hierarchy is infinite, the error probability of such reductions cannot be significantly lower than a constant. This constant depends on the classes in question. Thus, random reductions in the Boolean Hierarchy are not robust. We also show that the trivial random reductions between classes at the second level of the Boolean Hierarchy are optimal.

url: http://hdl.handle.net/1813/6995
date: 2007-04-23
creator: Wood, Mark D.;Marzullo, Keith
viewed: 76
title: Making Real-time Reactive Systems Reliable

abstract: No Abstract is Available.

url: http://hdl.handle.net/1813/6996
date: 2007-04-23
creator: Paul, Wolfgang J.
viewed: 17
title: Realizing Boolean Functions on Disjoint Sets of Variables
abstract: For switching functions f let $C(f)$ be the combinatorial complexity of f. We prove that for every $\varepsilon greater than 0$ there are arbitrarily complex functions $f:\{0,1\}^{n} \rightarrow \{0,1\}^{n}$ such that $C(fxf) \leq (1+ \varepsilon) C(f)$ and arbitrarily complex functions $g:\{0,1\}$ such that $C(v c(fxf)) \ leq (1 + \varepsilon)C(f)$. These results and the techniques developed to obtain them are used to show, that Ashenhurst decomposition of switching functions does not always yield optimal circuits and to prove a new result concerning the trade-off between circuit size and monotone circuit size.

url: http://hdl.handle.net/1813/6997
date: 2007-04-23
creator: Vavasis, Stephen A.
viewed: 28
title: A Note on Wavelet Bases for Two-Dimensional Surfaces
abstract: Recent work by Beylkin, Coifman and Rokhlin has demonstrated that integral equations for functions on IR can be solved rapidly by expressing the integrands in a wavelet basis. Boundary element methods for solving partial differential equations in three dimension rely on integral equations for functions defined on surfaces embedded in IR^{3}. Accordingly, it is of interest to extend the wavelet work to functions defined on surfaces. In this report, we define a basis of piecewise constant functions on surfaces in IR^{3} with properties akin to a wavelet basis. The basis we define is not useful for numerical computation because piecewise constant functions have poor approximation properties, but this work suggests an approach to define smoother wavelet bases for surfaces.

url: http://hdl.handle.net/1813/6998
date: 2007-04-23
creator: Buckley, Chris;Salton, Gerard
viewed: 24
title: Flexible Text Matching for Information Retrieval
abstract: Very large text databases now exist in machine-readable form, covering arbitrary subject matter in unrestricted discourse areas. The conventional text retrieval approaches are not easily used in such circumstances, because the knowledge needed to understand unrestricted subject matter is not readily available for practical use. A new approach is outlined for text structuring and retrieval, based on flexible text matching methods using different context granularities. When global as well as local similarities exist between distinct texts, the presumption is that the texts cover semantically similar subject areas. This leads to the automatic introduction of links between related texts, and to the retrieval of text excerpts in response to available user queries. Evaluation results are given to demonstrate the effectiveness of the text matching approach.

url: http://hdl.handle.net/1813/6999
date: 2007-04-23
creator: Hendrickson, Bruce A.
viewed: 17
title: The Molecule Problem: Determining Conformation from Pairwise Distances

abstract: The molecule problem is that of determining the coordinates of a set of points in space from a (usually sparse) set of pairwise distance measurements. As its name implies, it has applications in the determination of molecular conformation. Unfortunately, the molecule problem is NP-hard. We present an approach to the molecule problem that uses a very specialized divide-and-conquer technique. Instead of solving a single large problem we try to solve a sequence of smaller, presumably easier ones. These small problems consist of subsets of points whose relative locations can be determined uniquely. Once such a subset is positioned, its points can collectively be treated as a rigid body. This can greatly reduce the number of degrees of freedom in the problem. Identifying subsets of points whose relative locations can be uniquely determined requires exploiting some very special structure inherent in the molecule problem. We reduce this identification to a purely combinatoric characterization that ignores the actual distances. We develop necessary graph theoretic conditions for a set of points to have a unique solution, along with efficient algorithms to find subgraphs with these properties. These characterizations and algorithms combine ideas from matching theory, differential topology and matrix computations. These ideas have been implemented in ABBIE, a program to solve three-dimensional instances of the molecule problem. ABBIE combines the recursive decomposition described above with a nonlinear global optimizer to perform the coordinate determinations. Detail of this implementation are described, and numerical results of simulated chemical data are presented.

url: http://hdl.handle.net/1813/7000
date: 2007-04-23
creator: Wood, Mark D.;Marzullo, Keith
viewed: 16
title: Tools for Constructing Distributed Reactive Systems
abstract: Many distributed applications can be cast as reactive systems, where a reactive system consists of an instrumented program that is monitored and controlled by an input-driven control program. Examples of non-real-time reactive systems include monitoring and debugging systems, tool integration services, and network and distributed application managers. There is currently little support for building reactive systems. This paper describes the Meta toolkit that provides such support. Using Meta, a distributed system can be instrumented with a sensor and actuator abstraction that exposes the state of the system for purposes of control. Then, a control program can be written that interacts with the instrumented system using guarded commands. Of particular concern is the efficiency of control, so Meta allows the control program to be distributed in order to take advantage of locality as much as possible.

url: http://hdl.handle.net/1813/7001
date: 2007-04-23
creator: Wu, Yizhong;Chen, Dingju
viewed: 25
title: Solving Nonlinear Matrix Equations on a Hypercube
abstract: Nonlinear matrix equations arise frequently in applied probability, especially in the numerical solution of many stochastic models in queueing, inventory, communications, and dam theories. Due to the huge amount of computations involved in these nonlinear matrix equations, the existing algorithms for the solutions have not been satisfactory. With the advent of parallel computers, the door is open for efficient parallel algorithms to tackle the problem. This paper is an effort in this direction. A parallel algorithm on distributed computer systems is devised, and numerical experiment is done on the hypercube.

url: http://hdl.handle.net/1813/7002
date: 2007-04-23
creator: Lipton, James
viewed: 20

title: Some Kripke Models for "one universe" Martin-Lof Type Theory
abstract: We define several Kripke models sound for inhabited formulas of the ground-level intensional and extensional Martin-Lof Type theories with one universe. They are Kripke model versions of the realizability style semantics developed by various authors, amongst them Allen, Beeson, and Aczel.

url: http://hdl.handle.net/1813/7003
date: 2007-04-23
creator: Lipton, James
viewed: 28
title: Realizability and Kripke Forcing
abstract: Realizability, developed by Stephen Kleene, is a type-free device for extracting computations from logical specifications. Realizability analyzes the computational content of reasoning: it models the universe of recursive mathematics. Kripke and associated Categorical interpretations give a broader, topological/ algebraic semantics for constructive reasoning which is complete for intuitionistic logic. They are, therefore, a powerful and indispensable tool for modelling computationally meaningful formal systems. How are the two semantical paradigms related ? In this paper, we construct several Kripke and Categorical Models which are elementarily equivalent to Syntactic Realizability. By merging the two approaches we provide a new class of models and a framework for reasoning about computational evidence and the process of term extraction itself.

url: http://hdl.handle.net/1813/7004
date: 2007-04-23
creator: Andrews, Gregory R.
viewed: 19
title: Concepts and Conditions for Confinement
abstract: THe confinement problem is concerned with preventing a computaitonal service from divulging information entrusted to it. A model of computer protection is presented and used to formally define the problem and its relation to protection mechanisms. Two types of confinement, one concerned with preventing the direct sending of messages and the other with also preventing the use of covert channels, are explored. For both types, conditions sufficient to insure confinement in terms of the capabilities of computations are presented. The conditions make it possible to identify exactly those objects, if any, which can serve as potential channels. Means for plugging the potential channels are also discussed.

url: http://hdl.handle.net/1813/7005
date: 2007-04-23
creator: Birman, Kenneth P.;Makpangou, Messac
viewed: 20
title: Designing Application Software in Wide Area Network Settings
abstract: Progress in methodologies for developing robust local area network software has not been matched by similar results for wide-area settings. In this paper, we consider the design of application software spanning multiple local area environments. For important classes of applications, simple design techniques are presented that yield fault-tolerant wide area programs. An implementation of these techniques as a set of tools for use within the ISIS system is described.

url: http://hdl.handle.net/1813/7006
date: 2007-04-23
creator: Buckley, Chris;Salton, Gerard
viewed: 22

title: A Note on Term Weighting and Text Matching
abstract: In information retrieval, it is not uncommon to be faced with large collections of unrestricted natural-language text. In such circumstances, the text analysis and retrieval operations must be based mainly on a study of the text collections actually under construction. Two main operations are of interest: a text analysis operation designed to assign content identifiers to the stored texts, and a text comparison system designed to identify texts covering particular subject areas. In the present note, some details are given concerning the usefulness of term weighting systems for the content analysis of natural-language texts, and of text matching strategies designed to identify relevant text items in answer to available search requests. A sample collection of electronic mail messages is used for experimental purposes.

url: http://hdl.handle.net/1813/7007
date: 2007-04-23
creator: Schneider, Fred B.;Klarlund, Nils
viewed: 13
title: Progress Measures for Verification Involving Nondeterminism
abstract: Using the notion of progress measures, we give a complete verification method for proving that a program satisfies a property specified by an automaton having bounded nondeterminism. Such automata can express any safety property. Previous methods, which can be derived from the method presented here, either rely on transforming the program or are not complete.

url: http://hdl.handle.net/1813/7008
date: 2007-04-23
creator: Bilardi, Gianfranco;Kapur, Shyam
viewed: 85
title: Language Learning without Overgeneralization
abstract: Language learnability is investigated in the Gold paradigm of inductive inference from positive data. Angluin gave a characterization of learnable families in this framework. Here, learnability of families of recursive languages is studied when the learner obeys certain natural constraints. Exactly learnable families are characterized for prudent learners with the following types of constraints: (0) conservative, (1) conservative and consistent, (2) conservative and responsive, and (3) conservative, consistent, and responsive. The class of learnable families is shown to strictly increase going from (3) to (2) and from (2) to (1), while it stays the same going from (1) to (0). It is also shown that, when exactness is not required, prudence, consistency and responsiveness, even together, do not restrict the power of conservative learners.

url: http://hdl.handle.net/1813/7009
date: 2007-04-23
creator: Vavasis, Stephen A.;Miller, Gary L.
viewed: 27
title: Density Graphs and Separators
abstract: We propose a class of graphs that would occur naturally in finite-element problems, and we prove a bound on separators for this class of graphs. For three-dimensional graphs, our separator bound is $O(N^{2/3})$. We also propose a simple randomized algorithm to find this separator in $O(N)$ time. Such an algorithm would be used as a preprocessing step for the domain decomposition method of efficiently solving a finite-element problem on a parallel computer. This paper generalizes "local graphs" of Vavasis [1990] to the case of graphs with varying densities of nodes. It also generalizes aspects of Miller and Thurston's [1990] "stable graphs."

url: http://hdl.handle.net/1813/7010

date: 2007-04-23
creator: Wayner, Peter C.
viewed: 14
title: Efficiently Using Invariant Theory and Grouping Information for Model-Based Matching
abstract: This paper presents a method for efficiently maintaining and searching a database of three-dimensional models so they can be reliable recognized from arbitrary two-dimensional projections in the presence of noise and occlusion. The core of the process is the topologically-defined network of invariants which breaks three-dimensional models down into small, local groups of features and indexes these groups using translation, rotation, scaling, and orthographic projection invariant functions. The network encodes the geometrical relationships between these groups so that grouping information can be used to increase the speed of matching.

url: http://hdl.handle.net/1813/7011
date: 2007-04-23
creator: Rohatgi, Pankaj;Chari, Suresh;Ranjan, Desh
viewed: 26
title: Improving Known Solutions is Hard
abstract: In this paper, we study the complexity of computing better solutions to optimization problems given other solutions. This is done in the context of the counterexample computation model introduced in [KPS90]. Assuming $PH \neq \sum^{P}_{3}$, we prove that PTIME transducers cannot compute optimal solutions for many problems, even given $O(n^{1-\epsilon})$ non-trivial solutions. These results are used to establish sharp lower bounds for several problems in the counterexample model. We extend the model by defining probabilistic counterexample computations and show that our results hold even in the presence of randomness.

url: http://hdl.handle.net/1813/7012
date: 2007-04-23
creator: Vavasis, Stephen A.
viewed: 19
title: Approximation Algorithms for Concave Quadratic Programming
abstract: We consider ϵ-approximation schemes for concave quadratic programming. Because the existing definition of ϵ-approximation for combinatorial optimization problems is inappropriate for nonlinear optimization, we propose a new definition for ϵ-approximation. We argue that such an approximation can be found in polynomial time for fixed ϵ and k, where k denotes the number of negative eigenvalues. Our algorithm is polynomial in 1/ϵ for fixed k, and superexponential in k for fixed ϵ.

url: http://hdl.handle.net/1813/7013
date: 2007-04-23
creator: Vavasis, Stephen A.;Stern, Julio M.
viewed: 30
title: Nested Dissection for Sparse Nullspace Bases
abstract: We propose a nested dissection approach to finding a fundamental cycle basis in a planar graph. the cycle basis corresponds to a fundamental nullspace basis of the adjacency matrix. This problem is meant to model sparse null basis computations occurring in a variety of settings. We achieve an O(n**3/2) bound on the nullspace basis size and an O(nlogn) bound on the size in the special case of grid graphs.

url: http://hdl.handle.net/1813/7014

date: 2007-04-23
creator: Shanbhogue, Vasant;Jagadeesan, Radhakrishnan
viewed: 36
title: Closure Operator Semantics for Concurrent Constraint Logic Programming
abstract: This paper develops a denotation and abstract model based on closure operators for concurrent constraint logic programming. The denotational semantics is built domain theoretically and not from the computation sequences. The denotational semantics is related to an operational semantics. The operational semantics distinguishes successful and unsuccessful computations and observes intermediate results of divergent computations. The paper extends to the indeterminate setting, previous work on functional languages with logic variables [9].

url: http://hdl.handle.net/1813/7015
date: 2007-04-23
creator: Sturman, Daniel;Shah, Amitabh
viewed: 12
title: A Simulator for Exploring Replication and Locality of Access in a Distributed Database
abstract: In fault-tolerant distributed databases, one method of increasing data availability is through increased data replication. However, with increased data replication comes an increase in the time to perform transactions. What is needed is a way in which this and other problems involved with configuring distributed databases can be explored. This paper describes a simulator which provides an accurate model of many different distributed environments when given a set of parameters describing failures, data replication, and site organization. Such a simulator is a useful tool for exploring the behavior of possible distributed database configurations as well as for verifying theoretical results.

url: http://hdl.handle.net/1813/7016
date: 2007-04-23
creator: Hartmanis, Juris
viewed: 16
title: Relations Between Diagonalization, Proof Systems, and Complexity Gaps
abstract: In this paper we study diagonal processes over time-bounded computations of one-tape Turing machines by diagonalizing only over those machines for which there exist formal proofs that they operate in the given time bound. This replaces the traditional "clock" in resource bounded diagonalization by formal proofs about running times and establishes close relations between properties of proof systems and existence of sharp time bounds for one-tape Turing machine complexity classes. Furthermore, these diagonalization methods show that the Gap Theorem for resource bounded computations does not hold for complexity classes consisting only of languages accepted by Turing machines for which it can be formally proven that they run in the required time bound.

url: http://hdl.handle.net/1813/7017
date: 2007-04-23
creator: Kozen, Dexter
viewed: 20
title: First Order Predicate Logic Without Negation is NP-Complete
abstract: Techniques developed in the study of the complexity of finitely presented algebras are used to show that the problem of deciding validity of positive sentences in the language of first order predicate logic with equality is $\leq_{\log}$-complete for NP.

url: http://hdl.handle.net/1813/7018

date: 2007-04-23
creator: Lui, Lishing
viewed: 72
title: General Flow Problems and Graph Grammars
abstract: NO ABSTRACT SUPPLIED

url: http://hdl.handle.net/1813/7019
date: 2007-04-23
creator: Underwood, Judith
viewed: 28
title: A Constructive Completeness Proof for Intuitionistic Propositional Calculus
abstract: This paper presents a constructive proof of completeness of Kripke models for the intuitionistic propositional calculus. The computational content of the proof is a form of the tableau decision procedure. If a formula is valid, the algorithm produces a proof of the formula in the form of an inhabitant of the corresponding type; if not, it produces a Kripke model and a state in the model such that the formula is not forced at that state in that model.

url: http://hdl.handle.net/1813/7020
date: 2007-04-23
creator: Chang, David Renpan;Donald, Bruce Randall
viewed: 13
title: On the Probabilistic Analysis of Normal Form Computation of a Sparse Matrix
abstract: An (s, t)-sparse matrix has s non-zero entries per column and t per row. (s, t)-sparse integer matrices arise in the computation of integral homology. In this paper, a probabilistic analysis is given for diagonalizing an integer (s, t)-sparse matrix into normal formal. By normal form of a matrix, we mean the diagonalization of the matrix over the ring of integers. We prove that under high probability the expected running time can be achieved with probability very close (s, t)-sparse matrix, i.e. this expected running time can be achieved with probability very close to 1 when $(s, t)\ll n$.

url: http://hdl.handle.net/1813/7021
date: 2007-04-23
creator: Ralph, Daniel
viewed: 37
title: Global Convergence of Damped Newton's Method for Nonsmooth Equations, via the Path Search
abstract: A natural damping of Newton's method for nonsmooth equations is presented. This damping, via the path search instead of the traditional line search, enlarges the domain of convergence of Newton's method and therefore is said to be globally convergent. Convergence behavior is like that of line search damped Newton's method for smooth equations, including Q-quadratic convergence rates under appropriate conditions. Applications of the path search include damping Robinson-Newton's method for nonsmooth normal equations corresponding to nonlinear complementarity problems and variational inequalities, hence damping both Wilson's method (sequential quadratic programming) for nonlinear programming and Josephy-Newton's method for generalized equations. Computational examples from nonlinear programming are given.

url: http://hdl.handle.net/1813/7022
date: 2007-04-23
creator: Zippel, Richard;Vavasis, Stephen A.
viewed: 23

title: Proving Polynomial-Time for Sphere-Constrained Quadratic Programming
abstract: Recently Ye and Karmarkar have proposed similar algorithms for minimizing a nonconvex quadratic function on a sphere. These algorithms are based on trust-region work going back to Levenberg and Marquardt. Although both authors state that their algorithm is polynomial time, neither makes estimates necessary to prove that conclusion in a formal sense. In this report we derive estimates for the convergence of the algorithm. Our estimates are based on bounds for separation of roots of polynomials. These bounds prove that the underlying decision problem is polynomial time in the Turing machine sense.

url: http://hdl.handle.net/1813/7023
date: 2007-04-23
creator: Chang, David Renpan;Donald, Bruce Randall
viewed: 31
title: On Computing the Homology Type of a Triangulation
abstract: We analyze an algorithm for computing the homology type of a triangulation. By triangulation, we mean a finite simplicial complex; its homology type is given by its homology groups (with integer coefficients). The algorithm could be used in computer-aided design to tell whether two finite-element meshes or Bezier-spline surfaces are of the same "topological type," and whether they can be embedded in $\Re^{3}$. Homology computation is a purely combinatorial problem of considerable intrinsic interest. While the worst-case bounds we obtain for this algorithm are poor, we argue that many triangulations (in general) and virtually all triangulations in design are very "sparse," in a sense we make precise. We formalize this sparseness measure, and perform a probabilistic analysis of the sparse case to show that the expected running time of the algorithm is roughly quadratic in the geometric complexity (number of simplices) and linear in the dimension.

url: http://hdl.handle.net/1813/7024
date: 2007-04-23
creator: Ogiwara, Mitsunori;Chang, Richard;Beigel, Richard
viewed: 23
title: A Relationship between Difference Hierarchies and Relativized Polynomial Hierarchies.
abstract: Chang and Kadin have shown that if the difference hierarchy over NP collapses to level k, then the polynomial hierarchy (PH) is equal to the kth level of the difference hierarchy over Σ_{2}^{p}. We simplify their proof and obtain a slightly stronger conclusion: If the difference hierarchy over NP collapses to level k, then PH = $\left(P_{(k-1)-tt}^{NP}\right)^{NP}$. We also extend the result to classes other than NP: For any class C that has $\leq_{m}^{p}$-complete sets and is closed under $\leq_{conj}^{p}$- and $\leq_{m}^{NP}$-reductions, if the difference hierarchy over C collapses to level k, then $PH^{C} = $\left(P_{(k-1)-tt}^{NP}\right)^{C}$. Then we show that the exact counting class $C_{=}P$ is closed under $\leq_{disj}^{p}$- and $\leq_{m}^{co-NP}$-reductions. Consequently, if the difference hierarchy over $C_{=}P$ collapses to level k then PH^{PP} is equal to $\left(P_{(k-1)-tt}^{NP}\right)^{PP}$. In contrast, the difference hierarchy over the closely related class PP is known to collapse. Finally, we consider two ways of relativizing the bounded query class P_{k-tt}^{NP}: the restricted relativization $P_{k-tt}^{NP^{C}}$, and the full relativization $\left(P_{k-tt}^{NP}\right)^{C}$. If C is NP-hard, then we show that the two relativizations are different unless PH^{C} collapses.

url: http://hdl.handle.net/1813/7025
date: 2007-04-23
creator: Gleeson, Barry;Cooper, Robert;Birman, Kenneth P.
viewed: 31
title: Programming with Process Groups: Group and Multicast Semantics

abstract: Process groups are a natural tool for distributed programming, and are increasingly important in distributed computing environments. However, there is little agreement on the most appropriate semantics for process group membership and group communication. These issues are of special importance in the Isis system, a toolkit for distributed programming. Isis supports several styles of process group, and a collection of group communication protocols spanning a range of atomicity and ordering properties. This flexibility makes Isis adaptable to a variety of applications, but is also a source of complexity that limits performance. This paper reports on a new architecture that arose from an effort to simplify Isis process group semantics. Our findings include a refined notion of how the clients of a group should be treated, what the properties of a multicast primitive should be when systems contain large numbers of overlapping groups, and a new construct called the causality domain. A system based on this architecture is now being implemented in collaboration with the Chorus and Mach projects.

url: http://hdl.handle.net/1813/7026
date: 2007-04-23
creator: Donald, Bruce Randall
viewed: 14
title: The EIGHT Manual: A System for Geometric Modelling and Three-Dimensional Graphics on the Lisp Machine.
abstract: We describe a simple geometric modelling system called Eight which supports interactive creation, editing, and display of three-dimensional polyhedral solids. Perspective views of a polyhedral environment may be generated, and hidden surfaces removed. Eight proved useful for creating world models, and as an underlying system for modelling object interactions in robotics research and applications. It is documented here in order to make the facility available to others.

url: http://hdl.handle.net/1813/7027
date: 2007-04-23
creator: Wood, Mark D.;Marzullo, Keith
viewed: 18
title: Tools for Monitoring and Controlling Distributed Applications.
abstract: The Meta system is a UNIX--based toolkit that assists in the construction of reliable reactive systems, such as distributed monitoring and debugging systems, tool integration systems and reliable distributed applications. Meta provides mechanisms for instrumenting a distributed application and the environment in which it executes, and Meta supplies a service that can be used to monitor and control such an instrumented application. The Meta toolkit is built on top of the ISIS toolkit; they can be used together in order to build fault-tolerant and adaptive distributed applications.

url: http://hdl.handle.net/1813/7028
date: 2007-04-23
creator: Worona, Steven L.;Moore, Charles G., III;Conway, Richard W.
viewed: 28
title: An Interactive Version of the PL/C Compiler
abstract: The paper discusses a conceptual model of a terminal as an “internal procedure” in an interactive system for a block-structured language. A specific implementation is described, following this model, for the Cornell PL/I compiler.

url: http://hdl.handle.net/1813/7029
date: 2007-04-23
creator: Mikolajczak, Boleslaw

viewed: 17
title: On the Semigroup of Strongly Connected Automata
abstract: In 1964 Weeg [6] has posed a question asking which semi-groups admit strongly connected automata. The presumed answer was given in 1971 by Oehmke [5] through the following statement: A semigroup admits strongly connected automaton if it has a homomorphic image either a nontrivial finite group or semigroup of the transformations of some right zero semigroup. This theorem can be reformulated as follows: A semigroup is a characteristic semigroup of strongly connected automaton if it has a homomorphic image either a nontrivial finite group or a semigroup of transformations of some right zero semigroup. In this paper the "only if" part of this theorem has been overthrown. Some related problems concerning strongly connectedness of finite automata are also investigated. Key Words and Phrases: semigroup, characteristic semigroup of an automaton, strongly connected automaton.

url: http://hdl.handle.net/1813/7030
date: 2007-04-23
creator: Kozen, Dexter
viewed: 18
title: Finitely Presented Algebras and the Polynomial Time Hiercharchy
abstract: Let $S_{n}(V_{n})=\{less than \Gamma, Q_{1}v_{1}\cdots Q_{k}v_{k} s \equiv j greater than | \Gamma$ is a finite presentation of $\cal A, Q_{1} \cdots Q_{k}$ is a string of quantifiers with n alterations, the outermost an $\exists (\forall), \cal A \Gamma Q_{1} v_{1} \cdots Q_{k} v_{k} s \equiv t\}$. It is shown that $S_{n} (V_{n})$ is complete for $\Sigma^{P}_{n} (\Pi^{P}_{n})$, and $\stackrel{\stackrel{\infty}{\bigcup}}{n=0} S_{n} \cup V_{n}$ is complete for PSPACE, answering a question of [1] and generalizing a result of Stockmeyer and Meyer [2].

url: http://hdl.handle.net/1813/7031
date: 2007-04-23
creator: Mikolajczak, Bolestaw
viewed: 17
title: On Linear and Extended Linear Realization of Generalized Automata Extensions
abstract: The relation between ordinary automata, their fixed analogs of extensions, fixed analogs of generalized state-input extension with fixed mappings on input alphabet and characteristic semigroups are considered. The necessary and sufficient conditions for a fixed analog of an extension and generalized state-input extension with fixed mappings on input alphabets of the ordinary automaton to be linearly realizable over the field GF(p) are given. The equations describing fixed analogs of an extension and generalized state-input extension with fixed mappings on input alphabets are also stated.

url: http://hdl.handle.net/1813/7032
date: 2007-04-23
creator: Gries, David
viewed: 15
title: Assignment to Subscripted Variables
abstract: The assignment b(r):=e is investigated using two axiomatic definitions in order to gain an understanding of the problems involved with using arrays. It is seen that assignment to array elements leads to many of the difficulties encountered with pointers or references. The axiomatic definition is extended to cover the multiple assignment statement to both simple and subscripted variables, and a proof of correctness for a nontrivial program is outlined using the new definition.

url: http://hdl.handle.net/1813/7033

date: 2007-04-23
creator: Wood, Mark D.;Marzullo, Keith
viewed: 17
title: Tools for Constructing Distributive Reactive Systems
abstract: Many distributed applications can be cast as a reactive system, where a reactive system consists of an instrumented program that is monitored and/or controlled by an input-driven control program. Examples of non-real-time reactive systems include monitoring and debugging systems, tool integration services, and network and distributed application managers. There is currently little support for building reactive systems. This paper describes the Meta toolkit that provides such support. Using Meta, a distributed system can be instrumented with a sensor and actuator abstraction that exposes the state of the system for purposes of control. Then, a control program can be written that interacts with the instrumented system using guarded commands. Of particular concern is the efficiency of control, so Meta allows the control program to be distributed in order to take advantage of locality as much as possible.

url: http://hdl.handle.net/1813/7034
date: 2007-04-23
creator: Stephenson, Patrick
viewed: 63
title: Fast Ordered Multicasts
abstract: In this thesis, we present new protocols that provide reliable ordered multicasts to multiple overlapping process groups in the presence of failures. Our protocols provide two kinds of message delivery ordering - causal ordering and total ordering. Message delivery is also ordered with respect to the observation of group membership changes, a property known as virtual synchrony. Initially we examine solutions for the case of a single process group, and subsequently extend our solutions to encompass multiple overlapping process groups. In comparison with previous protocols for these problems, our protocols are cheaper and scale up better. An initial implementation of our protocols as part of the ISIS toolkit has produced encouraging performance results.

url: http://hdl.handle.net/1813/7035
date: 2007-04-23
creator: Van Loan, Charles;Moler, C. B.
viewed: 27
title: Nineteen Ways to Compute the Exponential of a Matrix
abstract: In principle, the exponential of a matrix could be computed in many ways. Methods involving approximation theory, differential equations, the matrix eigenvalues, and the matrix characteristic polynomial have been proposed. In practice, consideration of computational stability and efficiency indicates that some of the methods are preferable to others, but that none are completely satisfactory.

url: http://hdl.handle.net/1813/7036
date: 2007-04-23
creator: Buckley, Chris;Salton, Gerard
viewed: 33
title: Automatic Text Structuring and Retrieval- Experiments in Automatic Encyclopedia Searching
abstract: Many conventional approaches to text analysis and information retrieval prove ineffective when large text collections must be processed in heterogeneous subject areas. An alternative text manipulation system is outlined useful for the retrieval of large heterogeneous texts, and for the recognition of content similarities between text excerpts, based on flexible text matching procedures carried out in several contexts of different scope. The methods are illustrated by search experiments performed with the 29-volume Funk

and Wagnalls encyclopedia.

url: http://hdl.handle.net/1813/7037
date: 2007-04-23
creator: Piatko, Christine;Mitchell, Joseph S. B.;Freimer, Robert
viewed: 26
title: On the Complexity of Shattering Using Arrangements
abstract: A subdivision $\cal S$ of $\Re^{d}$ is said to shatter a set of objects if each object is contained within the closure of its own cell of $\cal S$. In this paper, we examine the problem of shattering a set of bounded polyhedral objects in $\Re^{d}$ by a subdivision formed by an arrangement of hyperplanes. We show for $\Re^{d}, d \geq$ 2 that finding a minimum-- cardinality set of hyperplanes whose arrangement shatters a set of points is NP-Complete. We then give algorithms to find a linear-size set of shattering hyperplanes for a set of n bounded polyhedral objects in $\Re^{d}$, if one exists. For $d=2$, we provide two algorithms with worst-case time complexities $O(E+N$log$N+n^{2}$log$n$) and $O(E+N$log$N+C$log$n+nC^{.695})$, where E is the size of the visibility graph of the objects, N is the total number of vertices, and C is the number of candidate lines considered (at worst min\{E,n^2\}). Our final algorithm has worst-case time complexity $O(N^{d+1})$ for $d \geq 3$.

url: http://hdl.handle.net/1813/7038
date: 2007-04-23
creator: Rohatgi, Pankaj
viewed: 24
title: A Note on Time-Space Bounded Interactive Protocols.
abstract: In this paper, we examine the power of time-space bounded interactive protocols with private coins. The class of languages having logspace, polynomial-time bounded private coin protocols is exactly PSPACE. We generalize this result to other time-space bounded protocols. As a consequence we obtasin that EXPSPACE is exactly the class of languages having polynomial-space, exponential-time bounded private coin interactive protocols. This coupled with earlier work by Condon, Fortnow and Lund gives us the following characterization of standard complexity classes in terms of time-space bounded interactive protocols.

url: http://hdl.handle.net/1813/7039
date: 2007-04-23
creator: Freimer, Robert
viewed: 20
title: Shattering Configurations of Points With Hyperplanes.
abstract: An arrangement of hyperplanes $\cal A$ in $\Re^d$ is said to shatter a point set $\cal O$ if each point of $\cal O$ is contained within the interior of its own cell of $\cal A$. In this paper, we investigate the number of hyperplanes required by an arrangement that shatters a set of n points in general position. We show that such sets can require between $\Omega(\sqrt[d]{n})$ and $\Omega(n)$ shattering hyperplanes. We also provide an algorithm that finds a linear-size shattering for such sets. The number of hyperplanes produced exceeds the requirements of the worst known example in $\Re^d$ by at most constant, which depends only on d. We also give some results for when the points are in general convex position.

url: http://hdl.handle.net/1813/7040
date: 2007-04-23
creator: Marzullo, Keith;Cooper, Robert
viewed: 15
title: Consistent Detection of Global Predicates

abstract: A fundamental problem in debugging and monitoring is detecting whether the state of system satisfies some predicate. If the system is distributed, then the resulting uncertainty in the state of the system makes such dectection, in general, ill-defined. This paper presents three algorithms for detecting global predicates in a well-defined way. These algorithms do so by interpreting predicates with respect to the communication that has occured in the system.

url: http://hdl.handle.net/1813/7041
date: 2007-04-23
creator: Kozen, Dexter;Klarlund, Nils
viewed: 75
title: Rabin Measures and Their Applications to Fairness and Automata Theory
abstract: Rabin conditions are general class of properties of infinite sequences that emcompass most known automata-theoretic acceptance conditions and notions of fairness. In this paper we show how to determine whether a program satisfies a Rabin condition by reasoning about single transitions instead of infinite computations. We introduce a concept, called a Rabin measure, which in a precise sense expresses progress for each transition toward satisfaction of the Rabin condition. When applied to termination problems under fairness constraints, Rabin measures constitute a simpler verification method than previous approaches, which often are syntax-dependent and require recursive applications of proof rules to syntactically transformed programs. Rabin measures also generalize earlier automata-theoretic verification methods. Combined with a result by Safra, our result gives a method for proving that a program satisfies a nondeterministic Buchi automaton specification.

url: http://hdl.handle.net/1813/7042
date: 2007-04-23
creator: Greenberg, Donald P.;Tampieri, Filippo;Lischinski, Daniel
viewed: 34
title: Improving Sampling and Reconstruction Techniques for Radiosity
abstract: The view-independent global illumination problem is rephrased as one determining a radiance function across each surface in the environment. A new methodology for diffuse environments, based on the sampling and reconstruction of these functions is introduced. Within this context, the following problems are investigated: (i) where the radiance functions should be samples; (ii) how to evaluate a radiance function at each sample; and (iii) how to reconstruct a radiance function for the set of samples. The new methodology relaxes some of the assumptions built into current radiosity algorithms. Results are presented which show that the new methodology yields significantly higher accuracy than existing radiosity methods.

url: http://hdl.handle.net/1813/7043
date: 2007-04-23
creator: Lutz, Earlin D.
viewed: 40
title: Numerical Methods for Hypersingular and Near-Singular Boundary Integrals in Fracture Mechanics
abstract: The boundary integral equation is one of several equivalent forms of governing equations that can be used to compute approximate solutions to boundary value problems in elasticity and potential flow analysis. Since it determines the entire solution in terms of values only on the boundary, there are possible order-of-magnitude advantages in solution time and geometric complexity over better known `domain-based' methods such as finite elements and finite differences. In practice, it has been hard to capitalize on these advantages. Many of the difficulties center around inablility to perform certain numerical integrations. This thesis presents (a) a systematic `modal' method of converting singular integrals to easier integrals over `far' surfaces (b) an otimal quadrature method for the `nearly singular' integration problem. An existence

proof is given to show that all surface integrals arising from the 3D boundary integral can be converted to easier contour integrals if basis functions are constructed in a cartesian sense, rather than the common parametric formulations. Strokes vectors needed to make this result useful are demonstrated for the Laplace equation and for some cases elasticity. Comparison to analytic benchmark cases shows that the method produces accurate stress intensity factors for 3-dimensional fracture analysis.

url: http://hdl.handle.net/1813/7044
date: 2007-04-23
creator: Schneider, Fred B.;Klarlund, Nils
viewed: 19
title: Proving Nondeterministically Specified Safety Properties Using Progress Measures
abstract: Using the notion of progress measures, we discuss verification methods for proving that a program satisfies a property specified by an automaton having finite nondeterminism. Such automata can express any safety property. Previous methods, which can be derived from the method presented here, either rely on transforming the program or are not to complete. In contrast, our ND progress measures describe a homomorphism from the unaltered program to a canonical specification automaton and constitute a complete verification method. The canonical specification automaton is obtained from the classical subset construction and a new subset construction, called historization.

url: http://hdl.handle.net/1813/7045
date: 2007-04-23
creator: Schnabel, Robert B.
viewed: 21
title: Minimum Norm Symmetric Quasi-Newton Updates Restricted to Subspaces
abstract: The Davidson-Fletcher-Powell and Broyden-Fletcher-Goldfarb-Shanno updates have been the two most successful quasi-Newton updates for a variety of applications. One reason offered in explanation is that they constitute, in an appropriate norm and metric, the minimum norm change to the matrix, or its inverse, being approximated which preserves symmetry and obeys the quasi-Newton equation. Recent methods have reason to consider updates restricted to certain subspaces. In this paper we derive the general minimum norm symmetric quasi-Newton updates restricted to such subspaces. In the same appropriate norm and metric, the minimum norm change update to the matrix or its inverse is shown to be, respectively, the rank-two update which is a particular projection of the DFP or BFGS onto this subspace.

url: http://hdl.handle.net/1813/7046
date: 2007-04-23
creator: Salton, Gerard
viewed: 20
title: The State of Retrieval System Evaluation
abstract: Substantial misgivings have been voiced over the years about the methodologies used to evaluate information retrieval procedures, and about the credibility of many of the available test results. In this note, an attempt is made to review the state of retrieval evaluation and to separate certain misgivings about the design of retrieval test from conclusions that can legitimately be drawn from the evaluation results.

url: http://hdl.handle.net/1813/7047
date: 2007-04-23
creator: Cremer, James F.;Stewart, A. James
viewed: 31
title: Beyond Keyframing: An Algorithmic Approach to Animation

abstract: The recent explosion of interest in physical system simulation may soon lead to realistic animation of passive objects, such as sliding blocks or bouncing balls. However, complex active objects (like human figures and insects) need control mechanism to direct their movements. We present a paradigm that combines the advantages of physical simulation and algorithmic specification of movement. The animator writes an algorithm to control the object and run this algorithm on physical simulator to produce the animation. Algorithms can be reused or combined to produce complex sequences of movement , eliminating the need for tedious keyframing. We have applied this paradigm to control a walking biped. The walking algorithm is presented along with the results from testing with Newton simulation system.

url: http://hdl.handle.net/1813/7048
date: 2007-04-23
creator: Stewart, A. James
viewed: 13
title: Robust Point Location in Approximate Polygons
abstract: This paper presents a framework for reasoning about robust geometric algorithms. Robustness is formally defined and a data structure called an approximate polygon is introduced and used to reason about polygons constructed of edges whose positions are uncertain. A robust algorithm for point location in an approximate polygon is presented. The algorithm uses only the signature of the point (not its location) to determine whether the point is inside or outside the polygon. An approximate polygon could, by shifting its edges back and forth within their error bounds, induce a large number of different line arrangements. The cell C_{a} with signature α in one such arrangement will be different than the cell ${C'}_{a}$ with signature α in another arrangement. This paper proves that, regardless of their position and shapes, the cells C_{a} and ${C'}_{a}$ are always to the same side of the polygons which induce their respective arrangements.

url: http://hdl.handle.net/1813/7049
date: 2007-04-23
creator: Zippel, Richard
viewed: 33
title: Rational Function Decomposition
abstract: This paper presents a polynomial time algorithm for determining whether a given univariate rational function over an arbitrary field is the composition of two rational functions over that field, and finds them if so.

url: http://hdl.handle.net/1813/7050
date: 2007-04-23
creator: Smith, Geoffrey S.;Volpano, Dennis M.
viewed: 23
title: On the Complexity of ML Typability with Overloading
abstract: We examine the complexity of type checking in an ML-style type system that permits functions to be overloaded with different types. In particular, we consider the extension of the ML Type system proposed by Wadler and Blott in the appendix of [WB89], with global overloading only, that is, where the only overloading is that which exists in an initial type assumption set; no local overloading via over and inst expressions is allowed. It is shown that under a correct notion of well-typed terms, the problem of determining whether a term is well typed with respect to an assumption set in this system is undecidable. We then investigate limiting recursion in assumption sets, the source of the undecidability. Barring mutual recursion is considered, but this proves too weak, for the problem remains undecidable. Then we consider a limited form of recursion called parametric recursion. We show that although the problem becomes

decidable under parametric recursion, it appears harder than conventional ML typability, which is complete for DEXPTIME [Mai90].

url: http://hdl.handle.net/1813/7051
date: 2007-04-23
creator: Salton, Gerard;Yu, C.T.
viewed: 31
title: The Effectiveness of the Thesaurus Method in Automatic Information Retrieval
abstract: Term grouping and thesaurus methods have frequently been incorporated into automatic content analysis programs as devices for the recognition of synonymous expressions and of linguistic entities that may be semantically similar but syntactically distinct. While it has frequently been asserted that the recognition of synonyms is essential in language analysis, actual proofs of the usefulness of a thesaurus in automatic information retrieval are outstanding. In the present study, formal proofs are given of the effectiveness under well-defined conditions of the thesaurus method in information retrieval. It is shown, in particular, that when certain semantically related terms are added to the information queries originally submitted by the user population, a superior retrieval system is obtained in the sense that for every level of the recall the retrieval precision is at least as good for the altered queries as for the original ones.

url: http://hdl.handle.net/1813/7052
date: 2007-04-23
creator: Li, Yuying
viewed: 17
title: A Globally Convergent Method for Lp Problems
abstract: The l_p norm discrete estimation problem $min_{x \epsilon \Re}{n}$ $\|b-A^{T}x\|_{p}$ is troblesome when p is close to unity because the objective function approaches a discontinuous form. In this paper, we present an efficient approach for solving l_p norm problems for all $1\leq p less than 2$. When $p=1$, it is essentially the method presented in [4], which is globally and quadratically convergent algorithm under some nondegeneracy assumptions. The existing iteratively reweighted least squares (IRLS) can be obtained from the new approach by updating some "dual multipliers" in a special fashion. The new method is globally convergent. It is superlinearly convergent when there is no zero residual at the solution. The main computational cost of our new methos is the same as the IRLS method: a reweighted least squares solve. Numerical experiments indicate this method is significantly faster than popular iteratively reweighted least squares method when p is close or equal to one.

url: http://hdl.handle.net/1813/7053
date: 2007-04-23
creator: Murthy, Chetan R.
viewed: 27
title: An Evaluation Semantics for Classical Proofs
abstract: We show how to interpret classical proofs as programs in a way that agrees with the well-known treatment of constructive proofs as programs and moreover extends it to give a computational meaning to proofs claiming the existence of a value satisfying a recursive predicate. Our method turns out to be equivalent to H. Friedman's proof by "A-translation" of the conservative extention of classical over constructive arithmetic for Π^{0}_{2} sentences. We show that Friedman's result is a proof-theoretic version of a semantics-preserving CPS-translation from a nonfunctional programming language (with the "control" (C, a relative of call/cc) operator) back to a functional programming language. We present a sound evaluation semantics for proofs in classical number theory (PA) of such sentences, as a modification the standard semantics for proofs in constructive number theory (HA). Our results soundly extend the proofs-as-programs paradigm

to classical logics and to programs with C.

url: http://hdl.handle.net/1813/7054
date: 2007-04-23
creator: Zippel, Richard
viewed: 31
title: Symoblic/Numeric Techniques in Modeling and Simulation
abstract: Modeling and simulating collections of physical objects which are subject to a wide variety of physical forces and interactions is exceedingly difficult. The construction of a single simulator capable of dealing with all possible physical processes is completely impractical and, it seems to us, wrong-headed. Instead, we propose to build custom simulators for single, particular collections of physical objects and where pre-specified physical phenomena are involved. For such an approach to be practical, an environment needs to be provided that facilitates the quick construction of these simulators. In this paper we describe the essential features of such an environment and describe in some detail how a general implementation of the weight residual method, one of the more general classes of numerical integration techniques, can be used.

url: http://hdl.handle.net/1813/7055
date: 2007-04-23
creator: Murthy, Chetan R.
viewed: 21
title: Classical Proofs as Programs: How, What and Why
abstract: We recapitulate Friedman's conservative extension result of(suitable) classical over constructive systems for Π_{2}^{0}sentences, viewing it in two lights: as a translation of programs from an almost-functional language (with $\cal C$) back to its functional core, and as a translation of a constructive logic for a functional language to a classical logic for an almost-functional language. We investigate the computational properties of the translation and of classical proofs and characterize the classical proofs which give constructions in concrete, computational terms, rather than logical terms. We characterize different versions of Friedman's translation as translating slightly different almost-functional languages to a functional language, thus giving a general method for arriving at a sound reduction semantics for an almost-functional language with a mixture of eager and lazy constructors and destructors, as well as integers, pairs, unions, etc. Finally, we describe how to use classical reasoning in a disciplined manner in giving classical (yet constructivizable) proofs of sentences of greater complexity than Π_{2}^{0}. This direction offers the possibility of applying classical reasoning to more general programming problems.

url: http://hdl.handle.net/1813/7056
date: 2007-04-23
creator: Kozen, Dexter
viewed: 15
title: On Parallelism in Turing Machines
abstract: A model of parallel computation based on a generalization of nondeterminism in Turing machines is introduced. Complexity classes //T(n)-TIME, //L(n)-SPACE, //LOGSPACE, //PTIME, etc. are defined for these machines in a way analogous to T(n)-TIME, L(n)-SPACE, LOGSPACE, PTIME, etc. for deterministic machines. It is shown that, given appropriate honesty conditions, 217z L(n)-SPACE $\subseteq$ //L$(n)^{2}$-TIME T(n)-TIME $\subseteq$ //log T(n)-SPACE //L(n)-SPACE $\subseteq$ exp L(n)-TIME //T(n)-TIME $\subseteq$ T$(n)^{2}$-SPACE thus //EXPTIME = EXPSPACE //PSPACE = EXPTIME //PTIME = PSPACE //LOGSPACE = PTIME ? = LOGSPACE That is, the deterministic hierarchy LOGSPACE $\subseteq$ PTIME $\subseteq$ PSPACE $\subseteq$ EXPTIME $\subseteq \ldots$ shifts by exactly one level when parallelism is introduced. We give a natural characterization of the polynomial time hierarchy of Stockmeyer and Meyer

in terms of parallel machines. Analogous space hierarchies are defined and explored, and a generalization of Savitch's result NONDET-L(n)-SPACE $\subseteq$ L$(n)^{2}$-SPACE is given. Parallel finite automata are defined, and it is shown that, although they accept only regular sets, in general, $2^{2^{k}}$ states are necessary and sufficient to simulate a k-state parallel finite automaton deterministically.

url: http://hdl.handle.net/1813/7057
date: 2007-04-23
creator: Budhiraja, Navin;Schneider, Fred B.;Marzullo, Keith
viewed: 28
title: Derivation of Sequential, Real-Time, Process-Control Programs
abstract: The use of weakest-precondition predicate tranformers in the derivation of sequential, process-control software is discussed. Only one extension to Dijkstra's calculus for deriving ordinary sequential programs was found to be necessary: function-valued auxiliary variables. These auxiliary variables are needed for reasoning about states of a physical process that exist during program transitions.

url: http://hdl.handle.net/1813/7058
date: 2007-04-23
creator: Bloom, Bard
viewed: 30
title: When Is Partial Trace Equivalence Adequate?
abstract: Two processes are partial trace equivalent if they can perform the same sequences of actions in isolation. Partial trace equivalence is perhaps the simplest possible notion of process equivalence. In general, it is too simple: it is not usually an adequate semantics. We investigate the circumstances under which it is adequate, which are surprisingly rich. We give two substantial classes of language for which partial traces are adequate. In one class, partial trace equivalence suffices for total correctness, and operations such as true sequencing are possible: but all processes are determinate and silent moves are not possible. The other class admits indeterminacy and silent moves, but partial traces only suffice for partial correctness and true sequencing is not definable.

url: http://hdl.handle.net/1813/7059
date: 2007-04-23
creator: Shapiro, Vadim
viewed: 15
title: Theory of R-functions and Applications: A Primer
abstract: An R-function is real-valued function characterized by some property that is completely determined by the corresponding property of its arguments, e.g., the sign of some real functions is completely determined by the sign of their arguments. More generally, such a property could be determined by some partition of the real axis. If the axis is partitioned into k subsets, each R-function corresponds to a companion function of k-valued logic. This relationship allows one to represent a logical predicate of n variable by a real-valued function of n arguments. The latter can be evaluated, differentiated, and possesses many other interesting properties. V.L. Rvachev first suggested R-functions in l963. Since then, he and his colleagues have significantly developed the theory and found many applications. Their work is described in numerous books and articles, unfortunately mostly in Russian. A complete list of references through l987 can be found in [Shi88]. An important application of R-functions is in the description of geometric objects. Any object defined by a predicate on "primitive" geometric regions (e.g. regions defined by a system of inequalities) can now be represented by a single inequality, or equation. Furthermore, these real-valued functions can be constructed so that they have certain useful logic and differential properties. Application of theory of R-functions could have a profound effect on many problems where geometric information can

be accounted for analytically. For example, according to [Rva82], R-functions have found applications in many unexpected areas, such as study of stability of motion, medical diagnostics, and chemical engineering, in addition to those described in this report. This primer summarizes some basic results from the theory of R-functions and decribes (rather superficially) some of the applications studied in the Soviet Union. As far as I know, this is the first such introduction to R-functions in English. Its main purpose is to stimulate interest in R-functions in the research community; it is not intended to serve as a comprehensive reference. While this document contains no original results, absorbing, translating, interpreting, and condensing the contents of the references did require a substantial judgement on my part. The original sources offer a wealth of additional material that was omitted for the sake of simplicity and coherence of this document. Thus, I also accept the responsibility for all mistakes, misinterpretations, and omissions in this report. While the main applications of R-functions have been in the description of geometric objects, the developed theory does not seem to rely on many known results in combinatorial, algebraic, and computational geometry and topology. In an effort to preserve the spirit of the original work, I resisted making "improvements" in the presentation.

url: http://hdl.handle.net/1813/7060
date: 2007-04-23
creator: Pingali, Keshav;Jagadeesan, Radhakrishnan
viewed: 77
title: Abstract Semantics for a Higher order Functional Language with Logic Variables
abstract: The addition of logic variables to functional languages gives the programmer novel and powerful tools such as incremental definition of data structures through constraint intersection. A number of such "hybrid" languages, like FGL + LV [11], Id [17] and Qute [24], have been implemented and are in active use. Pure functional and logic programming languages can be given elegant abstract semantics as functions and relations over values. The definition of such an abstract semantics for a functional language with logic variables has remained an open problem. In an earlier paper, we gave such a semantics for the special case of a first-order functional languages with logic variables by reducing the problem to that of solving simultaneous fixpoint equations involving closure operators over a Scott domain [9]. In fact, we obtained the rather strong result that the denotational semantics was fully abstract with respect to the operational semantics. However, the problem for higher-order languages remain open, in part because higher-order functions can interact with logic variables in complicated ways to give rise to behavior reminiscent of own variables in Algol-60. This problem is solved completely in this paper. We show that in the presence of logic variables, higher-order functions may be modeled extensionally as closure operators on graphs ordered a way reminiscent of the ordering on extensible records in studies of inheritance [1]. We then extend the equation solving semantics of the first-order subset to the full language, and prove the usual soundness and adequacy theorems for this semantics. These results show that a higher-order functional language with logic variables can be viewed as a language of incremental definition of functions.

url: http://hdl.handle.net/1813/7061
date: 2007-04-23
creator: Wong, A.;Salton, Gerard;Bergmark, D.
viewed: 31
title: Generation and Search of Clustered Files
abstract: A classified, or clustered file is one where related, or similar records are grouped into classes, or clusters of items in such a way that all items within a cluster are jointly retrievable. Clustered files exhibit substantial advantages in many retrieval environments over the more conventional inverted list or multilist technologies. An inexpensive file clustering method applicable to large files is given together with appropriate file search methods. An abstract model is used to predict the retrieval effectiveness of various search methods

in a clustered file environment, and experimental evidence is introduced to confirm the usefulness of the model. As an example, a collection of research papers in computer science is clustered automatically, and the resulting research clusters are compared with exissting, manually constructed taxonomies for the computer field.

url: http://hdl.handle.net/1813/7062
date: 2007-04-23
creator: Vossler, Donald L.;Shapiro, Vadim
viewed: 28
title: Boundry-Based Separation for B-rep $\rightarrow$ CSG Conversion
abstract: We have shown earlier that one of the most difficult steps in performing b-rep $\rightarrow$ CSG conversion for a curved solid object consists of determining a set of halfspaces that is sufficient for a CSG representation of the solid. This usually requires the construction of additional halfspaces whose boundaries do not contribute to the boundary of the solid. Such halfspaces are called separating halfspaces because their purpose is to separate certain subsets of E^{3} inside the solid from those outside of the solid. Construction of separating halfspaces is specific to a particular geometric domain, but several generic approaches are possible. A boundary-based separation is a construction of separating halfspaces that relies on the information present in the boundary of the solid being converted While boundary-based separation for solids with non-planar edges is not well understood, we study the contraints on the degree of separating halfspaces, and show that a set of linear separating halfspaces exists for any solid whose boundary contains only planar edges. We apply the boundary-based separation to solids bounded by general quadric surfaces. Specifically, we prove that a sufficient set of linear separating halfspaces exists for any such solid, and consider the required constructions in several common situations. Implications for more general solids are also discussed.

url: http://hdl.handle.net/1813/7063
date: 2007-04-23
creator: Kwiatkowska, Marta;Bloom, Bard
viewed: 22
title: Trade-offs in True Concurrency: Pomsets and Mazurkiewicz Traces
abstract: We compare finite pomsets and Mazurkiewicz traces, two models of true concurrency which generalize strings. We show that Mazurkiewicz traces are equivalent to a restricted class of pomsets. The restrictions lead to extra structure, with results analogous to the differences between simply typed and untyped languages. For example, traces are consistently complete in the prefix order, while pomsets are not; also, traces can be distinguished by observing sequences of actions, in contrast to the elaborate scheme required for distinguishing pomsets. Finally, we discuss the operations of sequential and parallel composition in the two models. This is part of an ongoing effort to relate models of concurrency.

url: http://hdl.handle.net/1813/7064
date: 2007-04-23
creator: Vazirani, Vijay V.;Pearson, David
viewed: 14
title: Efficient Sequential and Parallel Algorithms for Maximal Bipartite Sets
abstract: A maximal bipartite set (MBS) in an undirected graph $G = (V, E)$ is a maximal collection of vertices $B \subseteq$ V$ whose induced subgraph is bipartite. In this paper we present efficient sequential (linear time) and parallel (NC) algorithms for constructing an MBS.

url: http://hdl.handle.net/1813/7065

date: 2007-04-23
creator: Toueg, Sam;Chandra, Tuschak Deepak
viewed: 37
title: Unreliable Failure Detectors for Asynchronous Systems
abstract:

url: http://hdl.handle.net/1813/7066
date: 2007-04-23
creator: Guo, Baining.
viewed: 22
title: Modeling Arbitrary Smooth Objects with Algebraic Surfaces
abstract: Representing, manipulating, and reasoning about physical objects is a central area of research in a wide range of applications, including solid modeling, computeraided design, computer graphics, and robotics. In these applications, complex physical objects are modeled using free-form surfaces, surfaces that are smooth but otherwise arbitrary. Traditionally, free-form surfaces are constructed from parametric patches, which are very successful as far as design and rendering are concerned. However, manipulating and reasoning about physical objects with parametric patches poses fundamental difficulties. For example, the difficulty of evaluating and respresenting the intersection of parametric patches has hindered the development of solid modeling systems based on parametric patches alone. This thesis addresses the problem of constructing free-form surfaces using low degree implicit patches, which facilitate manipulating and reasoning about physical objects. We establish the fact that quadric patches and cubic patches are flexible enough for free-form surface constructions: (i) given an arbitrary polyhedron, we show how to fit a smooth piecewise quadric surface through the vertices of the polyhedron without splitting its facets; (ii) given an arbitrary polyhedron with arbitrarily prescribed tangent planes at its vertices, we present an algorithm that fits a smooth piecewise cubic surface through the vertices of the polyhedron so that the surface is tangent to the prescribed tangent plane at each vertex. In constructing free-form surfaces, we also study three related issues. First, we examine the power and limitations of blending techniques. We show that on the one hand, blending techniques can be used to improve the efficiency of free-form surface constructions; on the other, blending techniques have their fundamental limitations. Second, we provide a complete understanding of the weight functions for quadric surfaces meeting with geometric continuity. Finally, we tackle some shape control issues of implicit patches. In particular, we demonstrate how to achieve the convexity of a quadric or cubic patch by manipulating its control points.

url: http://hdl.handle.net/1813/7067
date: 2007-04-23
creator: Salton, Gerard
viewed: 25
title: The Information Revolution - Myth or Reality
abstract: The early work in the design of automatic information systems, exemplified by the contributions of H. P. Luhn and others, now goes back nearly twenty years. It may be useful to ask whether a great deal has changed in these twenty years, and if so, what contributions have been most influential and indicative of future trends. Two contradictory opinions are often heard: the optimists speak of the information revolution and think of mechanized international information networks; the pessimists, on the other hand, assert that little has changed and point to the continued use for well over twenty years of substantially unchanged file organizations, indexing systems, and search techniques. An attempt is made to separate fact from fiction by describing where we have stood still, and where progress has occurred. In particular, the technological environment which has evolved in many directions is distinguished from most of the intellectual components of information retrieval which have remained unchanged. Suggestions are also made relating to the design

and operations of future automatic information systems.

url: http://hdl.handle.net/1813/7068
date: 2007-04-23
creator: Yu, C. T.;Wong, A.;Salton, Gerard
viewed: 32
title: Automatic Indexing Using Term Discrimination and Term Precision Measurements
abstract: A variety of abstract automatic indexing models have been developed in recent times in an effort to produce indexing methods that are both effective and usable in practice. Among these are thee term discrimination model and the term precision system. These two indexing systems are briefly described and experimental evidence is cited showing that a combination of both theories produces better retrival performance than either one alone. Appropriate conclusions are reached concerning viable automatic indexing procedures usable in practice.

url: http://hdl.handle.net/1813/7069
date: 2007-04-23
creator: Stewart, A. James
viewed: 18
title: The Theory and Pratice of Robust Geometric Computation, or, How toBuild Robust Solid Modelers
abstract: The field of solid modeling makes extensive use of a variety of geometric algorithms. When implemented on a computer, these algorithms often fail because the computer only provides floating point arithmetic, while the agorithms are expecting infinite precision arthmetic on real numbers. These algorithms are not robust. This dissertation presents a theory of robustness. With this theory, a robust point location algorithm is developed. This algorithm determines whether a point lies inside a polygon, where both the point and the polygon are represented approximately. The elegant theoretical approach to robustness is not viable in practice: algorithms like those used in solid modeling are generally too complex for this approach. This dissertation presents a practical alternative to the formal theory of robustness; this alternative is called local robustness. Local robustness is applied to the design of a polyhedral intersection algorithm, which is an important component in many solid modelers. The intersection algorithm has been implemented, and, in extensive tests, has never failed to produce a valid polyhedron of intersection. A concise characterization of the locally robust intersection algorithm is presented; this characterization can be used to develop variants of the intersection algorithm, and to develop robust versions of other solid modeling algorithms.

url: http://hdl.handle.net/1813/7070
date: 2007-04-23
creator: Smith, Geoffrey S.
viewed: 17
title: Polymorphic Type Inference for Languages with Overloading and Subtyping
abstract: Many computer programs have the property that they work correctly on a variety of types of input; such programs are called polymorphic. Polymorphic type systems support polymorphism by allowing programs to be given multiple types. In this way, programs are permitted greater flexibility of use, while still receiving the benefits of strong typing. One especially successful polymorphic type system is the system of Hindley, Milner, and Damas, which is used in the programming language ML. This type system allows programs to be given universally quantified types as a means of expressing polymorphism. It has two especially nice properties. First, every well-typed program has a "best" type, called the principal type, that captures all the possible types of the program. Second, principal types can be inferred, allowing programs to be written without type declarations. However, two useful kinds of polymorphism cannot be expressed in this type system: overloading and subtyping. Overloading is the kind of polymorphism exhibited by

a function like addition, whose types cannot be captured by a single universally quantified type formula. Subtyping is the property that one type is contained in another, as, for example, $int \subseteq real$. This dissertation extends the Hindley/Milner/Damas type system to incorporate overloading and subtyping. The key device needed is constrained universal quantification, in which quantified variables are allowed only those instantiations, that satisfy a set of constraints. We present an inference algorithm and prove that it is sound and complete; hence it infers principal types. An issue that arises with constrained quantification is the satisfiability of constraint sets. We prove that it is undecidable whether a given constraint set is satisfiable; this difficulty leads us to impose restrictions on overloading. An interesting feature of type inference with subtyping is the necessity of simplifying the inferred types-the unsimplified types are unintelligible. The simplification process involves shape unification, graph algorithms such as strongly connected components and transitive reduction, and simplifications based on the monotonicities of type formulas.

url: http://hdl.handle.net/1813/7071
date: 2007-04-23
creator: Jagadeesan, Radhakrishnan
viewed: 35
title: Investigations Into Abstraction and Concurrency
abstract: Abstract semantics serves as an interface between a language and the user: the interface serving to hide a significant degree of operational detail and present a simpler view of program execution to the user. What are the properties that an abstract semantics should satisfy? It was an insight of Strachey [4l] that the abstract semantics must be compositional; thus, one must be able to "build up" the abstract meaning of a program from the abstract meanings of its components. Note that it is not immediately obvious how one thinks of recursive programs in this manner. This is the role of fixpoint theory developed by Scott [62]. Informally, fixpoint theory formalisms the intuitive inductive arguments that one uses in reasoning about recursive programs. The theory developed by Scott works for determinate programs: programs that yield one output for every input. Thus, the theory is inadequate to handle indeterminate programs: programs that can yield more than one output for a given input. Powerdomains, that can be viewed as the computable analogue of the powerset, were developed to enlarge the scope of the theory of Scott to handle indeterminate computations [52,64]. Domain theory, enriched with powerdomain constructions to handle indeterminacy has been successful in serving as a mathematical formalism powerful enough to specify abstract semantics for tranformational programs: programs that take a input, compute in isolation and return an output. Thus, programs are usually denoted by functions in the determinate case and as Input-Output relations in the indeterminate case. The semantics is termed abstract because it hides significant degree of internal operational detail and presents an extensional view of programs. The situation is not as clear for interactive programming systems: systems built out of processes which engage in communication with the environment and/or other processes while computing. The key difference from transformational systems is that the output produced by a process can influence its input. Static, determinate dataflow [32] is the prime example of the few models interactive systems that are amenable to extensional treatment.

url: http://hdl.handle.net/1813/7072
date: 2007-04-23
creator: Reppy, John H.
viewed: 15
title: An Operational Semantics of First-class Synchronous Operations
abstract: First-class synchronous operations are a new approach to synchronization and communication in concurrent languages. They have been informally described in [Rep88], and [Rep91a]; this paper presents an operational semantics for an untyped language with first-class synchronous operations. This language in- cludes a large fraction of the concurrency primitives of Concurrent ML CML), a concurrent extension

of SML, and is the first step toward formalizing the definition of CML.

url: http://hdl.handle.net/1813/7073
date: 2007-04-23
creator: Ricciardi, Aleta M.
viewed: 17
title: Practical Utility of Knowledge-Based Analyses: Optimizations and Optimality for an Implementation of Asynchronous, Fail-Stop Processes (Extended Abstract).
abstract: The Group Membership Problem is concered with propagating changes in the membership of a group of processes to the members of that group. A restricted version of this problem allows one to implement a fail-stop failure model of processes in an asynchronous environment assuming a crash failure model. While the ISIS Toolkit relies on this for its Failure Detector, the current specification of GMP sheds no light on how to implement it. We present a knowledge-based formulation, cast as a commit-style problem, that is not only easier to understand, but also makes clear where optimizations to the ISIS implementation are and are not possible. In addition, the epistemic formulation allows us to use the elegant results of knowledge-acquisition theory to discover a lower bound on the required number of messages, construct a minimal protocol, and discuss the tradeoffs between the message-minimal protocol and the optimized ISIS implementation.

url: http://hdl.handle.net/1813/7074
date: 2007-04-23
creator: Kapur, Shyam
viewed: 24
title: Computional Learning of Languages
abstract: This thesis focuses on the Gold model of inductive inference from positive data. There are several aspects in which the model appears unsatisfactory for language learning: the class of families of learnable languages is highly restricted; even if a family is learnable, there exists no uniform method to obtain a learner for it, and the learner itself is complex. In this thesis, some such criticisms are being addressed. It is shown that no automatic synthesis of a learner from the description of a learnable family is possible. Nevertheless, in some special cases, this synthesis can be achieved and a general result is developed. In order to make the learner simpler, it is stipulated that the learner can change its guess only when the guess is inconsistent with the input evidence. Such a conservative learner never overgeneralizes. Exactly learnable families are characterized for prudent learners with the following types of constraints: (0) conservative, (1) conservative and consistent, (2) conservative and responsive, and (3) conservative, consistent and responsive. It is also shown that, when exactness is not required, prudence, consistency and responsiveness, even together, do not restrict the power of conservative learners. Conservative learners are simple in only one respect; even though it is easy to determine when to make a new guess, it is still hard to know what this guess should be. Finally, a learner that exploits pattern evident in the input is developed. Absence of a particular string over a suitable interval of the input can be viewed as a kind of "indirect negative evidence". Now, the learning criterion needs to be weakened to allow limited failure. It is shown that any family of languages can be learned with probability 1 from stochastic input, provided something is known about the probability distribution according to which the input is presented. Given the family, the learner is uniformly constructible. Further, the behavior of the learner is simpler in many aspects. It is expected that a variety of other natural constraints can be imposed on this learner without additional cost.

url: http://hdl.handle.net/1813/7075
date: 2007-04-23
creator: Constable, Robert L.;Basin, David A.
viewed: 18

title: Metalogical Frameworks
abstract: In computer science we speak of implementing a logic; this done in a programming language, such as Lisp, called here the implementation language. We also reason about the logic, as in understanding how to search for proofs or in knowing it is consistent; in the terminology of mathematical logic, these arguments are conducted in the metalanguage of the object language being implemented. We also reason about the implementation itself, say to know it is correct. This is done in a programming logic. How do all these logics relate? This paper considers that question and more. We show that by taking the view that the metalogic is primary, these other parts are related in standard ways. The metalogic must be suitably rich so that the object logic can be presented as an abstract data type, and it must be suitably computational (or constructive) so that an instance of that type is an implementation. The data type abstractly encodes all that is relevant for metareasoning, i.e. not only the term constructing functions but also the principles for reasoning about arbitrary terms and computing with them. Our work can also be seen as an approach to the task of finding a generic way to present logics and their implementations, which is for example the goal of the Edinburgh Logical Frameworks (ELF) effort. This approach extends well beyond proof-construction and includes computational metatheory as well.

url: http://hdl.handle.net/1813/7076
date: 2007-04-23
creator: Coleman, Thomas F.
viewed: 30
title: Large-Scale Numerical Optimization: Introduction and Overview
abstract: We give an introductory overview of the field of large-scale numerical optimization; some of the basic research issues and recent developments are described. Our emphasisis on methods, techniques, and practical concerns. We hope this article will be of interest to both users and students of numerical optimization.

url: http://hdl.handle.net/1813/7077
date: 2007-04-23
creator: Bilardi, Gianfranco;Bay, Paul Edwin
viewed: 17
title: Deterministic On-Line Routing on Area-Universal Networks
abstract: Two deterministic routing networks are presented: the pruned butterfly and the sorting fattree. Both networks are area-universal, i.e., they can simulate any other routing network fitting in similar area with polylogarithmic slowdown. Previous area-universal networks were either for the off-line problem, where the message set to be routed is known in advance and substantial precomputation is permitted, or involved randomization, yielding results that hold only with high probability. The two networks introduced here are the first that are simultaneously deterministic and on-line, and they use two substantially different routing techniques. The performance of their routing algorithms depends on the difficulty of the problem instance, which is measured by a quantity λ known as the load factor. The pruned butterfly algorithm runs in time O(λ log^{2} N), where N is the number of possible sources and detinations for messages and λ is assumed to be poylnomial in N. The sorting fat-tree algorithm runs in O ($\ lambda$ log N + log^{2} N) time for a restricted class of message sets including partial permutations. Other results of this work include a new type of sorting circuit and an area-time lower bound for routers.

url: http://hdl.handle.net/1813/7078
date: 2007-04-23
creator: Marzullo, Keith;Bloom, Bard;Schneider, Fred B.
viewed: 77

title: Putting Time into Proof Outlines
abstract:

url: http://hdl.handle.net/1813/7079
date: 2007-04-23
creator: Galil, Zvi
viewed: 28
title: The Complexity of Resolution Procedures for Theorem Proving in the Propositional Calculus
abstract: A comparative study on the complexity of various procedures for proving that a set of clauses is contradictory is described. All the procedures either use the resolution rule in some form or are closely related to procedures which do. Among the procedures considered are 1. resolution 2. regular resolution 3. Davis Putnam procedure 4. resolution with extension 5. bounded (and iterated bounded) resolution 6. enumeration procedures 7. semantic trees. The results include: a. exponential lower bounds for the run-time of most of the procedures, b. realtions between the various procedures, c. implications to the comlexity of integer programming routines.

url: http://hdl.handle.net/1813/7080
date: 2007-04-23
creator: Birman, Kenneth P.
viewed: 77
title: Maintaining Consistency in Distributed Systems
abstract: How should distributed systems preserve consistency in the presence of concurrency and failures? For systems designed as assemblies of independently developed components, concurrent access to data or data structures would normally arise within individual programs, and be controlled using mutual exclusion constructs, such as semaphores and monitors. Where data is persistent and/or sets of operations are related to one another, transactions or linearizability may be more appropriate. Systems that incorporate cooperative styles of distributed execution often replicate or distribute data within groups of components. In these cases, group-oriented consistency properties must be maintained, and tools based on the virtual synchrony execution model greatly simplify the task confronting an application developer. All three styles of distributed computing are likely to be seen in future systems - often, within the same application. This leads us to propose an integrated approach that permits applications that use virtual synchrony to with concurrent objects that respect a linearizability constraint, and vice versa. Transactional subsystems are treated as a special case of linearizability. Keywords and phrases: Transaction, atomicity, monitors, serializability, linearizability, virtual synchrony, object-oriented programming, distributed computing, federated databases, fault-tolerance.

url: http://hdl.handle.net/1813/7081
date: 2007-04-23
creator: Allan, James;Buckley, Chris;Salton, Gerard
viewed: 33
title: Automatic Structuring of Text Files
abstract: In many practical information retrieval situations, it is necessary to process heterogeneous text databases that vary greatly in scope and coverage, and deal with many different subjects. In such an environment it is important to provide flexible access to individual text pieces, and to structure the collection so that related text elements are identified and appropriately linked. Methods are described in this study for the automatic structuring of heterogeneous text collections, and the construction of browsing tools and access procedures that facilitate collection use. The proposed methods are illustrated by performing searches with a large automated encyclopedia.

url: http://hdl.handle.net/1813/7082
date: 2007-04-23
creator: Freimer, Robert;Connelly, Robert
viewed: 16
title: Covering a Triangle with Disks Centered on its Boundary
abstract: Let $\cal P$ be a triangle and $\cal D_{1}, \cal D_{2}$ be disks centered on the boundary of $\cal P$ with radii r_{1}, $r}_{2}$. The disks are chosen so that $\cal D_{1}$ $\cup$ $\cal D$$_{2}$ covers $\cal P$ and r_{1} + r_{2} is minimized. We show that an optimal covering must exist with r_{2} = 0. In such a single disk covering, $\cal D_{1}$ is always located on the longest side of $\cal P$. The exact location and and size depend on the angles of $\cal P$; we provide a complete characterization and then generalize it to convex polygons. We show that the minimum covering disk can be determined in $\cal O (n)$ time for a convex polygon with n sides. However, it is open for $n \geq$ 4 whether there is always a single disk covering that is optimal.

url: http://hdl.handle.net/1813/7083
date: 2007-04-23
creator: Field, John H.
viewed: 15
title: Incremental Reduction in the Lambda Calculus and Related Reduction Systems
abstract: An incremental algorithm is one that computes a function repeatedly on a series of inputs that differ only slightly from one another, yet avoids unnecessary duplication of computations from one input to the next. This thesis is a study of incremental computation in a general class of reduction systems, focusing particularly on the untyped lambda calculus and term rewriting systems. We also study implementation techniques used for such reduction systems and the question of the existence of optimal reduction strategies. Most of our results are based on a new class of reduction systems we define called regular replacement systems. These systems combine an abstract reduction relation with a notion of structure defined by a Brouwerian algebra. The reduction relation defines a computation system, while the algebra is used to define what constitutes an incremental change to some object. Numerous reduction systems, including many term and graph rewriting systems and a variant of the lambda calculus, constitute regular replacement systems. Among our results is a generalization of the lattice-theoretic reduction theory of Levy to regular replacement systems. This theory makes it possible to give a precise and intuitively appealing definition of what it means for both incremental and non-incremental computations to be optimal. We then investigate a family of term rewriting systems centered around a system we call $\bf \Lambda${\bf CCL}. Each of these systems is capable of simulating a normalizing reduction strategy in the lambda calculus. However, unlike the lambda calculus, the notion of substitution is an explicit part of $\bf \Lambda${\bf CCL}'s semantics, rather than being relegated to the status of meta-theory. Our study culminates with the definition of a $\bf \Lambda${\bf CCL}-based incremental reduction algorithm. This algorithm is optimal, yet it is simple enough to allow a practical implementation. We believe that appropriate generalizations of the ideas embodied in the algorithm can be used in a variety of practical settings, particularly those in which an algorithm is expressed in a functional or applicative manner.

url: http://hdl.handle.net/1813/7084
date: 2007-04-23
creator: Chang, Richard
viewed: 17
title: On The Structure Of NP Computations Under Boolean Operators
abstract: This thesis is mainly concerned with the structural complexity of the Boolean Hierarchy. The Boolean Hierarchy is composed of complexity classes constructed using Boolean operators on NP computations. The

thesis begins with a description of the role of the Boolean Hierarchy in the classification of the complexity of NP optimization problems. From there, the thesis goes on to motivate the basic definitions and properties of the Boolean Hierarchy. Then, these properties are shown to depend only on the closure of NP under the Boolean operators, AND$_{2}$ and OR$_{2}$. A central theme of this thesis is the development of the hard/easy argument which shows intricate connections between the Boolean Hierarchy and the Polynomial Hierarchy. The hard/easy argument shows that the Boolean Hierarchy cannot collapse unless the Polynomial Hierarchy also collapses. The results shown in this regard are improvements over those previously shown by Kadin. Furthermore, it is shown that the hard/easy argument can be adapted for Boolean hierarchies over incomplete NP languages. That is, under the assumption that certain incomplete languages exist, the Boolean hierarchies over those languages must be proper (infinite) hierarchies. Finally, this thesis gives an application of the hard/easy argument to resolve the complexity of a natural problem - the unique satisfiability problem. This last refinement of the hard/easy argument also points out some long-ignored issues in the definition of randomized reductions.

url: http://hdl.handle.net/1813/7085
date: 2007-04-23
creator: Shapiro, Vadim
viewed: 37
title: Real Functions for Representation of Rigid Solids
abstract: A range of values of a real function f : $E^{d} $\rightarrow \Re$ can be used to implicitly define a subset of Euclidean space E^{d}. Such `implicit functions' have many uses in geometric and solid modeling. This paper focuses on the properties and construction of real functions for the representation of rigid solids (compact, semi-analytic, and regular subsets of E^{d}). We review some known facts about real functions defining compact semi-analytic sets, and their applications. The theory of R-functionsdeveloped in [Rva82] provides means for constructing real function representations of solids described by the standard (non-regularized) set operations. But solids are not closed under the standard set operations and such representations are rarely available in modern modeling systems. More generally, assuring that a real function f represents a regular set may be difficult. Until now, the regularity has either been assumed, or treated in an ad hoc fashion. We show that topological and extremal properties of real functions can be used to test for regularity, and discuss procedures for constructing real functions with desired properties for arbitrary solids.

url: http://hdl.handle.net/1813/7086
date: 2007-04-23
creator: Cremer, James F.;Palmer, Richard S.
viewed: 38
title: SimLab: Automatically Creating Physical Systems Simulators
abstract: SimLab, a software environment for creating simulators directly from computer-readable physics models, is based on the following concept: creating physical systems simulators should be as simple as describing the underlying physics to a colleague. Rather than programming in a conventional programming language, a SimLab user expresses physics models (and thus simulators) directly in terms of the concepts, quantities, and equations familiar to a scientist or engineer. The benefits of the SimLab approach include: 1) reducing the time and effort required to create simulators, 2) providing more understandable and reliable simulators, and 3) support for more sophisticated simulators, e.g., for multiple domain problems, which have proved intractible in the past.

url: http://hdl.handle.net/1813/7087
date: 2007-04-23

creator: Ressler, Gene K.;Donald, Bruce Randall;Canny, John
viewed: 32
title: A Rational Rotation Method for Robust Geometric Algorithms (Extended Abstract)
abstract: Algorithms in computational geometry often use the real-RAM model of computation. In particular, this model assumes that exact real numbers can be stored in and retrieved from memory in constant O (1) time, and that field operations (+, -, *, /) and certain other operations (like square root, sine and cosine) are also "exact," and can be applied in constant time.

url: http://hdl.handle.net/1813/7088
date: 2007-04-23
creator: Jennings, James;Donald, Bruce Randall
viewed: 22
title: Sensor Interpretation and Task-Directed Planning Using Perceptual Equivalence Classes
abstract: We consider how a robot may interpret its sensors and direct its actions so as to gain more information about the world, and to accomplish manipulation tasks. The key difficulty is uncertainty, in the form of noise in sensors, error in control, and unmodelled or unknown aspects of the environment. Our research focuses on general techniques for coping with uncertainty, specifically, to sense ther state of the task, adapt to changes, and reason to select actions to gain information and achieve the goal. Sensors yield partial information about the world. When we interrogate the environment through our sensors, we in effect view a projection of the world onto the space of possible sensor values. We investigate the structure of this sensor space and its relationship to the world. We observe that sensors partition the world into perceptual equivalence classes, that can serve as natural "landmarks." By analyzing the properties of these equivalence classes we develop a "lattice" and a "bundle" structure for the information available to the robot through sensing and action. This yields a framework in which we develop and characterize algorithms for sensor-based planning and reasoning.

url: http://hdl.handle.net/1813/7089
date: 2007-04-23
creator: Babaoglu, Ozalp
viewed: 29
title: Tools and Techniques for Adding Fault Tolerance to Distributed and Parallel Programs
abstract: The scale of parallel computing systems is rapidly approaching dimensions where fault tolerance can no longer be ignored. No matter how reliable the individual components may be, the complexity of these systems results in a significant probability of failure during lengthy computations. In the case of distributed memory multiprocessors, fault tolerance techniques developed for distributed operating systems and applications can be applied also to parallel computations. In this paper we survey some of the principal paradigms for fault-tolerant distributed computing and discuss their relevance to parallel processing. One particular technique - passive replication - is explored in detail as it forms the basis for fault tolerance in the Paralex parallel programming environment. Keywords: Parallel processing, reliability, transactions, checkpointing, recovery, replication, reliable broadcast, causal ordering, Paralex.

url: http://hdl.handle.net/1813/7090
date: 2007-04-23
creator: Giachini, Luigi Alberto;Davoli, Renzo;Amoroso, Alessandro;Alvisi, Lorenzo;Babaoglu, Ozalp
viewed: 78
title: Paralex: An Environment for Parellel Programming in Distributed Systems
abstract: Modern distributed systems consisting of powerful workstations and high-speed interconnection networks are an economical alternative to special-purpose super computers. The technical issues that need

to be addressed in exploiting the parallelism inherent in a distributed system include heterogeneity, high-latency communication, fault tolerance and dynamic load balancing. Current software systems for parallel programming provide little or no automatic support towards these issues and require users to be experts in fault-tolerant distributed computing. The Paralex system is aimed at exploring the extent to which the parallel application programmer can be liberated from the complexities of distributed systems. Paralex is a complete programming environment and makes extensive use of graphics to define, edit, execute and debug parallel scientific applications. All of the necessary code for distributing the computation across a network and replicating it to achieve fault tolerance and dynamic load balancing is automatically generated by the system. In this paper we give an overview of Paralex and present our experiences with a prototype implementation

url: http://hdl.handle.net/1813/7091
date: 2007-04-23
creator: Giachini, Luigi Alberto;Davoli, Renzo;Amoroso, Alessandro;Alvisi, Lorenzo;Babaoglu, Ozalp
viewed: 43
title: Run-time Support for Dynamic Load Balancing and Debugging in Paralex
abstract: Paralex is a programming environment for developing and executing parallel applications in distributed systems. The user is spared complexities of distributed programming including remote execution, data representation, communication, synchronization and fault tolerance as they are handled automatically by the system. Once an application starts execution in a distributed system, it may be interacted with at two levels: by Paralex itself to achieve automatic fault tolerance and dynamic load balancing; or by the user in association with performance tuning and debugging. In this paper, we describe the set of monitors and control mechanisms that constitute the Paralex run-time system and their use for implementing dynamic load balancing and debugging.

url: http://hdl.handle.net/1813/7092
date: 2007-04-23
creator: Wood, Mark D.
viewed: 36
title: Fault-Tolerant Management of Distributed Applications Using the Reactive System Architecture
abstract: Distributed applications are becoming increasingly pervasive, and difficult to manage. Examples of distributed applications include operating system servers and clients on a network, programs performing distributed computations, and systems constructed by integrating stand-alone programs. This thesis argues that distributed applications can be managed efficiently by using a reactive system architecture. A reactive system consists of a control component continuously responding to changes in an environment component. This structure is applied to distributed application management by casting the programs making up the application as the environment and super-imposing a layer of control. By acting upon conditions sensed in the environment, the control layer can respond to changes in the distributed application, ensuring that it functions in a well-behaved manner. This thesis also presents the Meta toolkit, which provides primitives for controlling distributed applications using the reactive system architecture. The application components are instrumented with sensors and actuators - routines that respectively read and modify the application state. Control of the application is carried out via guarded commands, which are distributed for execution by either stubs coresident with programs in the application or by special servers. Distributing the control program results in greater responsiveness and efficiency but requires certain consistency problems to be addressed. Furthermore, the Meta toolkit supports fault-tolerant execution of guarded commands through the use of replicated servers. This toolkit has been implemented and is completely functional, and this thesis contains extensive performance figures for the toolkit.

url: http://hdl.handle.net/1813/7093
date: 2007-04-23
creator: rown, Russell;Jennings, James;Donald, Bruce Randall
viewed: 23
title: Constructive Recognizability for Task-Directed Robot Programming
abstract: The primary goal of our research is task-level planning. We approach this goal by utilizing a blend of theory, implementation, and experimentation. We investigate task-level planning for autonomous agents, such as mobile robots, that function in an uncertain environment. These robots typically have very approximate, inaccurate, or minimal models of the environment. For example, although the geometry of its environment is crucial to determining its performance, [footnote:I.e., what the geometry is will have a key role in determining the robot's actions or behavior.] a mobile robot might only have a partial, or local "map" of the world. Similarly, the expected effects of a robot's actuators critically influence its selection of actions to accomplish a goal, but a robot may have only a very approximate, or local predictive ability with regard to forward-simulation of a control strategy. While mobile robots are typically equipped with sensors in order to gain information about the world, and to compensate for errors in actuation and prediction, these sensors are noisy, and in turn provide inaccurate information. We investigate an approach whereby the robot attempts to acquire the necessary information about the world by planning a series of experiments [footnote: The robot (not the researchers!) performs the experiments, to gain information about the world.] using the robot's sensors and actuators, and building data-structures based on the robot's observations of these experiments. A key feature of this approach is that the experiments the robot performs should be driven by the information demands of the task. That is, in performing some task, the robot may enter a state in which making progress towards a goal requires more information about the world (or its own state). In this case, the robot should plan experiments which can disambiguate the situation. When this process is driven by the information demands of the task, we believe it is an important algorithmic technique to effect task-directed sensing. This introductory survey article discusses: 1. A theory of sensor interpretation and task-directed planning using perceptual equivalence classes, intended to be applicable in highly uncertain or unmodelled environments, such as for a mobile robot. 2. Algorithmic techniques for modelling geometric constraints on recognizability, and the building of internal representations (such as maps) using these constraints. 3. Explicit encoding of the information requirements of a task using a lattice (information hierarchy) of recognizable sets, which allows the robot to perform experiments to recognize a situation or a landmark. 4. The synthesis of robust mobot programs using the geometric constraints, constructive recognizability experiments, and uncertainty models imposed by the task. We discuss how to extend our theory and the geometric theory of planning to overcome challenges of the autonomous mobile robot domain. One of our most important goals is to show how our theory can be made constructive and algorithmic. We propose a framework for mobot programming based on constructive recognizability, and discuss why it should be robust in uncertain environments. Our objective is to demonstrate the following: When recognizability is thusly constructive, we naturally obtain task-directed sensing strategies, driven by the information demands encoded in the structure of the recognizable sets. A principled theory of sensing and action is crucial in developing task-level programming for autonomous mobile robots. We propose a framework for such a theory, providing both a precise vocabulary and also appropriate computational machinery for working with issues of information flow in and through a robot system equipped with various types of sensors and operating in a dynamic, unstructured environment. We are implementing the theory and testing it on mobile robots in our laboratory.

url: http://hdl.handle.net/1813/7094
date: 2007-04-23
creator: rown, Russell;Jennings, James;Donald, Bruce Randall
viewed: 87

title: Task-Level Planning and Task-Directed Sensing for Robots in Uncertain Environments
abstract: The primary goal of our research is task-level planning. We approach this goal by utilizing a blend of theory, implementation, and experimentation. We propose to investigate task-level planning for autonomous agents, such as mobile robots, that function in an uncertain environment. These robots typically have very approximate, inaccurate, or minimal models of the environment. For example, although the geometry of its environment is crucial to determining its performance, a mobile robot might only have a partial, or local "map" of the world. Similarly, the expected effects of a robot's actuators critically influence its selection of actions to accomplish a goal, but a robot may have only a very approximate, or local predictive ability with regard to forward-simulation of a control strategy. While mobile robots are typically equipped with sensors in order to gain information about the world, and to compensate for errors in actuation and prediction, these sensors are noisy, and in turn provide inaccurate information. We propose to investigate an approach whereby the robot attempts to acquire the necessary information about the world by planning a series of experiments using the robot's sensors and actuators, and building data-structures based on the robot's observations of these experiments. A key feature of this approach is that the experiments the robot performs should be driven by the information demands of the task. That is, in performing some task, the robot may enter a state in which making progress towards a goal requires more information about the world (or its own state). In this case, the robot should plan experiments which can disambiguate the situation. When this process is driven by the information demands of the task, we believe it is an important algorithmic technique to effect task-directed sensing. Plan projects focus on: 1. A theory of sensor interpretation and task-directed planning using perceptual equivalence classes, intended to be applicable in highly uncertain or unmodelled environments, such as for a mobile robot. 2. Algorithmic techniques for modelling geometric constraints on recognizability, and the building of internal representations (such as maps) using these constraints. 3. Explicit encoding of the information requirements of a task using a lattice (information hierarchy) of recognizable sets, which allows the robot to perform experiments to recognize a situation or a landmark. 4. The synthesis of robust mobot programs using the geometric constraints, constructive recognizability experiments, and uncertainty models imposed by the task. We propose to (a) continue our research and develop the theory fully, (b) use tools and concepts from the geometric theory of planning where appropriate, and (c) extend our theory and the geometric theory of planning where necessary to overcome challenges of the autonomous mobile robot domain. One of our most important goals is to show how our theory can be made constructive and algorithmic. We propose a framework for mobot programming based on constructive recognizability, and discuss why it should be robust in uncertain environments. Our objective is to demonstrate the following: When recognizability is thusly constructive, we naturally obtain task-directed sensing strategies, driven by the information demands encoded in the structure of the recognizable sets. A principled theory of sensing and action is crucial in developing task-level programming for autonomous mobile robots. We propose a framework for such a theory, providing both a precise vocabulary and also appropriate computational machinery for working with issues of information flow in and through a robot system equipped with various types of sensors and operating in a dynamic, unstructured environment. We will implement the theory and test it on mobile robots in our laboratory.

url: http://hdl.handle.net/1813/7095
date: 2007-04-23
creator: Van Loan, Charles
viewed: 27
title: Computing Integrals Involving the Matrix Exponential
abstract: A new algorithm for computing integrals involving the matrix exponential is given. The method employs diagonal Pade approximation with scaling and squaring. Rigorous truncation error bounds are given and incorporated in a FORTRAN subroutine. The computational aspects of this program are discussed and compared with existing techniques.

url: http://hdl.handle.net/1813/7096
date: 2007-04-23
creator: Zippel, Richard
viewed: 68
title: The Data Structure Accelerator Architecture
abstract: We present a fine grained, massively parallel SIMD architecture called the data structure accelerator and demonstrate its use in a number of problems in computational geometry. This architecture is extremely dense and highly scalable. Systems of 10^6 processing elements can be feasibly embedded in work stations. We advocate that this architecture be used in tandem with conventional single sequence machines and with small scale, shared memory multiprocessors. We present a language for programming such heterogeneous systems that smoothly encorporates the SIMD instructions of the data structure accelerator with conventional single sequence code. [footnote: This is an expanded version of a paper that was presented at the Jerusalem Conference on Information Technology, October 1990.]

url: http://hdl.handle.net/1813/7097
date: 2007-04-23
creator: Gleeson, Barry;Cooper, Robert;Birman, Kenneth P.
viewed: 20
title: Design Alternatives for Process Group Membership and Multicast
abstract: Process groups are a natural tool for distributed programming, and are increasingly important in distributed computing environments. However, there is little agreement on the most appropriate semantics for process group membership and group communication. These issues are of special importance in the Isis system, a toolkit for distributed programming [Bir91]. Isis supports several styles of process group, and a collection of group communication protocols spanning a range of atomicity and ordering properties. This flexibility makes Isis adaptable to a variety of applications, but is also a source of complexity that limits performance. This paper reports on a new architecture that arose from an effort to simplify Isis process group semantics. Our findings include a refined notion of how the clients of a group should be treated, what the properties of a multicast primitive should be when systems contain large numbers of overlapping groups, and a new construct called the causality domain. As an illustration, we apply the architecture to the problem of converting processes into fault-tolerant process groups in a manner that is "transparent" to other processes in the system. A system based on this architecture is now being implemented in collaboration with the Chorus and Mach projects. Keywords: distributed computing, fault-tolerance, Isis, process groups, virtual synchrony, causal multicast, atomic broadcast.

url: http://hdl.handle.net/1813/7098
date: 2007-04-23
creator: Rus, Daniela
viewed: 36
title: On Dexterous Rotations of Polygons
abstract: Dexterous manipulation, which is the reorientation of objects inside robot hands, is an active area of robotics research, whose progress has been slow. In this paper, we present an algorithm for dexterous rotations of polygons by finger tracking. The algorithm involves simple finger motions, it can achieve arbitrarily large rotations, and it is robust in the presence of computational uncertainties.

url: http://hdl.handle.net/1813/7099
date: 2007-04-23
creator: Rohatgi, Pankaj

viewed: 73
title: Saving Queries With Randomness
abstract: In this paper, we provide tight bounds on the success probabilities of randomized reductions between various classes in the Boolean and Bounded Query Hierarchies. The P$^{SAT\Vert[k]}$ $\leq^{P}_{m}$ - complete language randomly reduces to a language in P$^{SAT\Vert[k-1]}$ with a one-sided error probability of 1/$\lceil$k/2$\rceil$. If two-sided error is allowed, then we show that a much lower error probability of 1/(k + 1) can be achieved. We prove that both these reductions are almost optimal by showing that the error probabilities cannot be reduced by even 1/poly, unless the PH collapses. These tight bounds precisely characterize the power and limitations of randomness in saving a query to SAT. These results can be used to identify optimal probability thresholds which determine when languages complete under randomized reductions inherit the hardness properties associated with $\leq^{P}_{m}$ - complete languages. Using these thresholds we prove hardness properties for some languages in these classes which are not $\leq^{P}_{m}$ - complete in certain relativized worlds. We also explore the relationship between randomization and functions computable using bounded queries to SAT. For any function $h (n) = O(log n), we show that there is a function f computable using $h(n)$ nonadaptive queries to SAT, which cannot be computed correctly with probability 1/2+1/poly by any randomized machine which makes less than $h(n)$ adaptive queries to any oracle, unless PH collapses.

url: http://hdl.handle.net/1813/7100
date: 2007-04-23
creator: Webber, Adam Brooks
viewed: 14
title: A Formal Definition of Unnecessary Computation In Functional Programs
abstract: Our goal is to develop a new and highly flexible approach to program optimization. Instead of applying rote, high-level transformations, we seek to derive optimizations automatically from broad and intuitive principles. Toward that end this paper presents a new formalism for first-order, purely functional programs, then uses the formalism to give a rigorous statement of a principle of optimization. The formalism occupies three levels. At the lowest level is the trace graph, a finite, graph-like structure that describes a single terminating path of execution through a functional program. At the middle level is the trace graph set, which describes a set of paths of execution; a certain kind of trace graph set, the executable set, describes the full set of paths for a single deterministic program. At the highest level is the trace grammar, a graph grammar that generates a trace graph set. While trace graph sets may be infinite, trace grammars are finite objects with a natural, subroutine-like recursive structure. We use the formalism to give a rigorous statement of a well-known principle of optimization, namely, that programs should not make any unnecessary computations. This principle is so obvious that it is often overlooked, but it underlies many common compiler optimizations and other, more exotic program transformations. Our formal statement of the principle unifies and illuminates many optimizing transformations. Our work in progress is the construction of an optimizer that derives optimizations directly from our formal principle. This paper concludes with an overview of this optimizer and some preliminary experimental results.

url: http://hdl.handle.net/1813/7101
date: 2007-04-23
creator: Berman, L.;Hartmanis, Juris
viewed: 17
title: On Isomorphisms and Density of NP and Other Complete Sets
abstract: If all NP complete sets are isomorphic under deterministic polynomial time mappings (p-isomorphic) then P $\neq$ NP and if all PTAPE complete sets are p-isomorphic then P $\neq$ PTAPE. We show that all NP complete sets known (in the literature) are indeed p-isomorphic and so are the known PTAPE complete

sets. Thus showing that, in spite of the radically different origins and attempted simplification of these sets, all the known NP complete sets are identical but for polynomially time bounded permutations. Furthermore, if all NP complete sets are p-isomorphic then they must have similar densities and, for example, no language over a single letter alphabet can be NP complete, nor can any sparse language over an arbitrary alphabet be NP complete. We show that complete sets in EXPTIME and EXPTAPE cannot be sparse and therefore they cannot be over a single letter alphabet. Similarly, we show that the hardest context-sensitive languages cannot be sparse. We also relate the existence of sparse complete sets to the existence of simple combinatorial circuits for the corresponding truncated recognition problem of these languages.

url: http://hdl.handle.net/1813/7102
date: 2007-04-23
creator: Henzinger, Thomas A.;Alur, Rajeev
viewed: 25
title: Logics and Models of Real Time: A Survey
abstract: We survey logic-based and automata-based languages and techniques for the specification and verification of real-time systems. In particular, we discuss three syntactic extensions of temporal logic: time-bounded operators, freeze quantification, and time variables. We also discuss the extension of finite-state machines with clocks and the extension of transition systems with time bounds on the transitions. All of the resulting notations can be interpreted over a variety of different models of time and computation, including linear and branching time, interleaving and true concurrency, discrete and continuous time. For each choice of syntax and semantics, we summarize the results that are known about expressive power, algorithmic finite-state verification, and deductive verification.

url: http://hdl.handle.net/1813/7103
date: 2007-04-23
creator: Pnueli, Amir;Manna, Zohar;Henzinger, Thomas A.
viewed: 13
title: Timed Transition Systems
abstract: We incorporate time into an interleaving model of concurrency. In timed transition systems, the qualitative fairness requirements of traditional transition system are replaced (and superseded) by quantitative lower-bound and upper-bound timing constraints on transitions. The purpose of this paper is to explore the scope of applicability for the abstract model of timed transition systems. We demonstrate that the model can represent a wide variety of phenomena that routinely occur in conjunction with the timed execution of concurrent processes. Our treatment covers both processes that are executed in parallel on separate processors and communicate either through shared variables or by message passing, and processes that time-share a limited number of processors under a given scheduling policy. Often it is this scheduling policy that determines if a system meets its real-time requirements. Thus we explicitly address such questions as time-outs, interrupts, static and dynamic priorities.

url: http://hdl.handle.net/1813/7104
date: 2007-04-23
creator: Dennis, John E., Jr.
viewed: 17
title: A Brief Survey of Convergence Results for Quasi-Newton Methods
abstract: This paper highlights the important theoretical developments in the study of quasi-Newton or update methods and suggests avenues for future research. An attempt is made to present this material in a way reasonably compatible with history but organized for the novice.

url: http://hdl.handle.net/1813/7105
date: 2007-04-23
creator: Toueg, Sam;Schneider, Fred B.;Marzullo, Keith;Budhiraja, Navin
viewed: 15
title: Primary-Backup Protocols: Lower Bounds and Optimal Implementations
abstract: We present a formal specification of primary-backup. We then prove lower bounds on the degree of replication, failover time and worst-case response time to client requests assuming different failure models. Finally, we outline primary-backup protocols and indicate which of our lower bounds are tight. Keywords: Fault-tolerance, reliability, availability, primary-backup, lower bounds, optimal protocols.

url: http://hdl.handle.net/1813/7106
date: 2007-04-23
creator: Siegel, Alexander
viewed: 16
title: Performance in Flexible Distributed File Systems
abstract: There are many existing distributed file systems. Each file system provides a different degree of performance and safety. In this context, performance is the time required to satisfy individual requests, and safety is the set of guarantees that the file system provides to users. In this thesis, we characterize many of the trade-offs between performance and safety. We include numerical relationships whenever possible. As a corollary, it is shown that a flexible file system - one that provides a wide range of possible safety properties - can also have very good performance. This thesis uses two main approaches, practical and theoretical. The practical approach centers around the Deceit File System. Deceit supports file replication, file migration and a sophisticated update control protocol. Deceit can behave like a plain Sun Network File System (NFS) server and can be used by any NFS client without modifying any client software. Deceit servers are interchangeable and collectively provide the illusion of a single large server machine to its clients. The theoretical approach presents several results that are applicable to all distributed file systems. A careful analysis of many systems yielded insights into the behavior of successful file systems. We formalize the relationships between safety conditions exposed by this analysis. We also determine the cost of reading and writing a file given different sets of safety conditions. In conclusion, we find that Deceit does not totally meet the goal of being efficient under all possible sets of requirements. Deceit is highly efficient for cases that require a high degree of replication and safety, but it is inefficient in cases where very specific optimizations are possible. However, the flexibility that Deceit provides is still very useful. For example, we show that writing to a file with three replicas costs a factor of 5 more messages more than writing to a file with one replica. Allowing asynchronous disk writes instead of synchronous writes can decrease latency by a factor of more than 30. Since Deceit allows the user to choose among these possibilities, dramatic performance gains can be achieved in many cases.

url: http://hdl.handle.net/1813/7107
date: 2007-04-23
creator: Vavasis, Stephen A.;Mitchell, Scott A.
viewed: 68
title: Quality Mesh Generation in Three Dimensions
abstract: We show how to triangulate a three dimensional polyhedral region with holes. Our triangulation is optimal in the following two senses: First, our triangulation achieves the best possible aspect ratio up to a constant. Second, for any other triangulation of the same region into m triangles with bounded aspect ratio, our triangulation has size n = O(m). Such a triangulation is desired as an initial mesh for a finite element mesh refinement algorithm. Previous three dimensional triangulation schemes either worked only on a restricted class of input, or did not guarantee well-shaped tetrahedra, or were not able to bound the output size. We build on some of the ideas presented in previous work by Bern, Eppstein and Gilbert,

who have shown how to triangulate a two dimensional polyhedral region with holes, with similar quality and optimality bounds.

url: http://hdl.handle.net/1813/7108
date: 2007-04-23
creator: Liao, Ai-Ping;Coleman, Thomas F.
viewed: 13
title: On The Local Convergence of The Byrd-Schnabel Algorithm For Constrained Optimization
abstract: Most reduced Hessian methods for equality constrained problems use a basis for the null space of the matrix of constraint gradients and posess superlinearly convergent rates under the assumption of continuity of the basis. However, computing a continuously varying null space basis is not straightforward. Byrd and Schnabel [2] propose an alternative implementation that is independent of the choice of null space basis, thus obviating the need for a continuously varying null space basis. In this note we prove that the primary sequence of iterates generated by one version of their algorithm exhibits a local 2-step Q-superlinear convergence rate. We also establish that a sequence of "midpoints", in a closely related algorithm, is (1-step) Q-superlinearly convergent. Key words: constrained optimization, null space, superlinear convergence, reduced Hessian.

url: http://hdl.handle.net/1813/7109
date: 2007-04-23
creator: Gong, Li;Birman, Kenneth P.;Reiter, Michael K.
viewed: 18
title: Integrating Security in a Group Oriented Distributed System
abstract: A distributed security architecture is proposed for incorporation into group oriented distributed systems, and in particular, into the Isis distributed programming toolkit. The primary goal of the architecture is to make common group oriented abstractions robust in hostile settings, in order to facilitate the construction of high performance distributed applications that can tolerate both component failures and malicious attacks. These abstractions include process groups and causal group multicast. Moreover, a delegation and access control scheme is proposed for use in group oriented systems. The focus of the paper is the security architecture; particular cryptosystems and key exchange protocols are not emphasized.

url: http://hdl.handle.net/1813/7110
date: 2007-04-23
creator: Kanade, Takeo;Tomasi, Carlo
viewed: 31
title: Shape and Motion from Image Streams: a Factorization Method: Full Report on the Orthographic Case
abstract: Inferring scene geometry and camera motion from a stream of images is possible in principle, but is an ill-conditioned problem when the objects are distant with respect to their size. We have developed a factorization method that can overcome this difficulty by recovering shape and motion without computing depth as an intermediate step. An image stream can be represented by the 2F x P measurement matrix of the image coordinates of P points tracked through F frames. We show that under orthographic projection this matrix is of rank 3. Using this observation, the factorization method uses the singular value decomposition technique to factor the measurement matrix into two matrices which represent object shape and camera motion, respectively. The method can also handle and obtain a full solution from a partially filled-in measurement matrix, which occurs when features appear and disappear in the image sequence due to occlusions or tracking failures. The method gives accurate results, and does not introduce smoothing in either shape or motion. We demonstrate this with a series of experiments on laboratory and outdoor image

streams, with and without occlusions.

url: http://hdl.handle.net/1813/7111
date: 2007-04-23
creator: Hartmanis, Juris;Berman, L.
viewed: 14
title: On Polynomial Time Isomorphism of Complete Sets
abstract: IN this note we show that the recently discovered NP complete sets arising in number theory, the PTAPE complete sets arising in game theory and EXPTAPE complete sets arising from algebraic word problems are polynomial time isomorphic to the previously known complete sets in the corresponding categories.

url: http://hdl.handle.net/1813/7112
date: 2007-04-23
creator: Gopal, Ajei Sarat
viewed: 29
title: Fault-Tolerant Broadcasts and Multicasts: The Problem of Inconsistency and Contamination
abstract: An increasingly important paradigm for designing fault-tolerant applications for distributed systems is based on processes that communicate exclusively via fault-tolerant broadcasts and multicasts. Most broadcasts that are described in the literature, such as reliable broadcast, causal broadcast, atomic broadcast and the corresponding multicasts, specify the behavior of correct processes, but do not impose requirements on the behavior of faulty processes. Such specifications allow a process that fails during a broadcast to reach an "inconsistent" state (e.g., by omitting the delivery of a message), and to continue execution from that state. This faulty process may later broadcast messages that "contaminate" the correct processes. In this thesis, we argue that such inconsistency and contamination can complicate the design of applications, and we present fault-tolerant broadcast and multicast protocols that prevent inconsistency and contamination. We begin by formally defining a hierarchy of different types of process inconsistency; these definitions are general, and hence are valid for any broadcast specification. Intuitively, contamination is the "spread" of inconsistency from faulty processes to correct processes. We formalize this concept and show that only two forms of contamination arise from our hierarchy of types of inconsistency. Atomic broadcast and atomic multicast are powerful communication abstractions that are central to many systems (e.g., Isis, and IBM's HAS), and to Lamport's state machine approach to fault-tolerance. Using our general definitions of inconsistency and contamination, we derive necessary and sufficient conditions to prevent inconsistency and/or contamination when processes communicate using atomic broadcast. We also derive similar conditions for atomic multicast. Based on these conditions, we develop atomic broadcast protocols that prevent inconsistency and/or contamination. In general, the prevention of inconsistency is a stronger requirement (and more difficult and more expensive to enforce) than the prevention of contamination. We characterize a class of problems for which the prevention of contamination is as good as the prevention of inconsistency. We show that an application that solves a problem in this class under the simplifying assumption that both inconsistency and contamination are prevented remains correct even if it uses a (less expensive) broadcast protocol that only prevents contamination.

url: http://hdl.handle.net/1813/7113
date: 2007-04-23
creator: Trefethen, Lloyd N.;Wegert, Elias
viewed: 32
title: From the Buffon Needle Problem to the Kreiss Matrix Theorem
abstract: In this paper we present a theorem concerning the arc length on the Riemann sphere of the image

of the unit circle under a rational function. But our larger purpose is to tell a story. We thought at first that the story began in 1962 with the Kreiss matrix theorem, the application that originally motivated us. However, our arc length question turns out to be more interesting than that. The story goes back to the famous "Buffon needle problem" of 1777.

url: http://hdl.handle.net/1813/7114
date: 2007-04-23
creator: Conway, Richard W.;Worona, Steven L.;Moore, Charles G. III
viewed: 24
title: PL/CT - A Terminal Version of PL/C - Release 2
abstract: PL/CT is a special version of PL/C designed to permit programs to be run interactively from a typewriter terminal. It is completely compatible with normal PL/C - that is, the source languages accepted by PL/C and PL/CT are identical and the results of execution are exactly the same. Hence, a program can be developed and tested under PL/CT and subsequently run under normal PL/C (or vice versa). PL/CT permits the user to interact with the program during its execution. Output will be printed on the terminal and input data may be requested from the terminal. The course and rate of execution can be controlled from the terminal. It is also possible to interrupt execution and display and alter the values of variables. However, the source program itself cannot be changed under PL/CT. PL/CT receives a complete program, compiles it, and then executes it in interactive mode. But to make any change in the program it is necessary to leave PL/CT, make the change under the CMS editor, and then present the modified program to PL/CT for complete recompilation. This Guide provides only minimal information about CMS, perhaps sufficient for very straightforward programming tasks.

url: http://hdl.handle.net/1813/7115
date: 2007-04-23
creator: Baraff, David
viewed: 31
title: Dynamic Simulation of Non-Penetrating Rigid Bodies
abstract: This thesis examines the problems and difficulties in the forward dynamic simulation of rigid bodies subject to non-penetration constraints. By adopting a simple but well-defined model of rigid body dynamics, we are able to focus on and gain insight into some of the inherent difficulties of rigid body simulation. Additionally, computationally practical solutions to some of the problems encountered in this thesis are presented. Enforcing non-penetration constraints is essentially a two step process. The first step of the simulation involves the detection of potential contacts between bodies. This thesis presents collision detection algorithms for the dynamic simulation of bodies that are composed of both polyhedra and convex closed curved surfaces. The collision detection algorithms exploit temporal coherence to achieve fast running times and are a practical solution to the problem of collision detection during simulation. The second step of the simulation involves the computation of the contact forces between bodies that maintain the non-penetration constraint. This thesis considers first the problem of computing contact forces between a pair of bodies that contact at a point without friction. A mathematical formulation for the contact force between the bodies is presented, and then modified to yield a formulation that is computationally practical for use in a simulator. After considering the dynamics of single point contacts, systems with multiple contacts are considered both in terms of computational complexity measures and practical solution methods. The methods used in this thesis to compute constraint forces are also theoretically and practically compared with a popular method for preventing inter-penetration called the "penalty method". After considering frictionless systems, this thesis considers systems of bodies that behave according to the classical Coulomb model of friction (which includes both sliding and dry friction). This leads us to consider systems in which there are no solutions to the classical constraint force equations, as well as systems which admit multiple solutions for the constraint

force equations and whose subsequent behavior is thus indeterminate. Both computational and practical complexity results for simulating such systems are discussed.

url: http://hdl.handle.net/1813/7116
date: 2007-04-23
creator: Chen, Wilfred Z.
viewed: 71
title: Tactic-Based Theorem Proving and Knowledge-Based Forward Chaining: An Experiment with Nuprl and Ontic.
abstract: Abstract not available.

url: http://hdl.handle.net/1813/7117
date: 2007-04-23
creator: Sabel, Laura S.;Marzullo, Keith
viewed: 36
title: Using Consistent Subcuts for Detecting Stable Properties
abstract: We present a general protocol for detecting whether a property holds in a distributed system, where the property is a member of a subclass of stable properties we call the locally stable properties. Our protocol is based on a decentralized method for constructing a maximal subset of the local states that are mutually consistent, which in turn is based on a weakened version of vector time stamps. The structure of our protocol lends itself to refinement, and we demonstrate its utility by deriving some specialized property-detection protocols, including two previously-known protocols that are known to be efficient.

url: http://hdl.handle.net/1813/7118
date: 2007-04-23
creator: Pingali, Keshav;Li, Wei
viewed: 85
title: Access Normalization: Loop Restructuring for NUMA Compilers
abstract: A common feature of many scalable parallel machines is non-uniform memory access - a processor can access data in its local memory ten to a thousand times faster than it can access non-local data. In addition, when a number of remote accesses must be made, it is usually more efficient to use block transfers of data rather than to use many small messages. To run well on such machines, software must exploit these features. We believe it is too onerous for a programmer to do this by hand, so we have been exploring the use of restructuring compiler technology for this purpose. In this paper, we start with a language like FORTRAN-D with user-specified data distributions and develop a systematic loop transformation strategy called access normalization that restructures loop nests to exploit both locality and block transfers wherever possible. We demonstrate the power of our techniques using routines from the BLAS (Basic Linear Algebra Subprograms) library. Our loop transformation strategy is expressed in the framework of invertible matrices and integer lattice theory and it is an important generalization of Banerjee's framework of unimodular matrices.

url: http://hdl.handle.net/1813/7119
date: 2007-04-23
creator: Xavier, Patrick G.
viewed: 28
title: Provably-Good Approximation Algorithms for Optimal Kinodynamic Robot Motion Plans
abstract: The kinodynamic planning problem is to synthesize a robot motion obeying simultaneous kinematic and dynamics constraints. To maximize robot performance we can consider optimal kinodynamic planning: for a given robot system, find a minimal-time trajectory that goes from a start state to a goal state, avoids

obstacles by a speed-dependent safety margin, and respects the dynamics laws and dynamics bounds governing the system. In general, previous work on algorithmic motion planning does not address dynamics; furthermore, even in simple cases, finding exact globally-optimal solutions is $\cal NP$-hard. In response, we obtain provably-good, polynomial-time approximation algorithms that synthesize optimal kinodynamic trajectories. These algorithms forge new mathematical links between control theory and complexity theory, and our analysis investigates how discrete-control trajectories can approximate optimal solutions We cast optimal kinodynamic planning into the form of an ϵ-approximation problem in which $\epsilon greater than 0$ characterizes closeness to optimality in terms of trajectory time, observance of the safety margin and closeness to the start and goal states If T_{opt} is the time of an optimal trajectory, then an ϵ-optimal trajectory takes at most (1 + ϵ)T_{opt} time. We present (pseudo)-polynomial-time ϵ-approximation algorithms for a family of robot classes, including fully-controllable open kinematic chains. These algorithms run in time polynomial in $\frac{1}{\epsilon}$ and the geometric complexity of the constraints. The basic idea behind the algorithms is to reduce the trajectory planning problem to a shortest-path problem on a polynomial-sized reachability graph embedded in the robot state space. These graphs are generated by control primitives and a timestep that the algorithm chooses to ensure ϵ- optimality. To obtain our complexity and approximation results, we introduce both continuous and combinatorial tools to analyze the robot's dynamical system. These include scaling-tracking proof methods that capture the key insight necessary for provably-good results, tracking lemmas on how closely we can approximate an optimal or time-rescaled optimal trajectory, constructive trajectory proofs, adversary game proofs and Time-Safety planning trade-offs. We also decribe an implementation and experiments in a restricted domain.

url: http://hdl.handle.net/1813/7120
date: 2007-04-23
creator: Vavasis, Stephen A.
viewed: 17
title: Stable Numerical Algorithms for Equilibrium Systems
abstract: An equilibrium system (also known as a KKT system, a saddlepoint system or a sparse tableau) is a square linear system with a certain structure. G. Strang has observed that equilibrium systems arise in optimization, finite elements, structural analysis and electrical networks. Recently, G. W. Stewart established a norm bound for a type of equilibrium system in the case that the "stiffness" portion of the system is very ill-conditioned. In this paper, we investigate the algorithmic implications of Stewart's result. We show that all standard textbook algorithms for equilibrium systems are unstable. Then we show that a certain hybrid method has the right stability property.

url: http://hdl.handle.net/1813/7121
date: 2007-04-23
creator: Fischer, Charles N.
viewed: 17
title: On Parsing Context Free Languages in Parallel Environments
abstract: Non-canonical generalization of several bottom-up parsing methods, including Simple Precedence, LR(k), SLR(k), and LALR(k) are considered. It is seen that these methods can readily be made to generate many concurrent reductions and thus can be used to advantage in parallel environments. it is suggested that such methods could be used to produce practical parsers for such parallel computers as the CDC Star-100. Further, the grammar classes defined by these parallel methods are studied and compared with the grammar classes defined by a number of serial parsing techniques.

url: http://hdl.handle.net/1813/7122

date: 2007-04-23
creator: Bay, Paul Edwin
viewed: 19
title: Area-Universal Interconnection Networks for VLSI Parallel Computers
abstract: A central issue in the design of a general-purpose parallel computer is the choice of an interconnection network and an associated algorithm for routing messages through it. The main results of this thesis are two new interconnection networks, the pruned butterfly and the sorting fat-tree and deterministic routing algorithms for them. Both networks are area-universal, i.e., they can simulate any other routing network fitting in similar VLSI chip area with only polylogarithmic slowdown. Previous area-universal networks were either for the off-line problem, where the message set to be routed is known in advance and substantial precomputation is permitted, or involved randomization, yielding results that hold only with high probability. The two networks introduced here are the first that are simultaneously deterministic and on-line and they use two substantially different routing techniques. The performance of the routing algorithms depends on the difficulty of the problem instance, which is measured by a quantity λ known as the load factor. The pruned butterfly algorithm runs in time O (λlog^2 N), where N is the number of possible sources and destinations for messages and λ is assumed to be polynomial in N. The sorting fat-tree algorithm runs in O ($\lambda log N + log^2 N$) time for a restricted class of message sets including partial permutations. Several related results are also presented in this thesis. A nontrivial lower bound on wire area is proven for a class of tree-based networks that do not modify the content of messages are shown to be subject to an area-time tradeoff. This lower bound implies the sorting fat-tree's area-time performance is optimal for a wide range of possible values for λ. Other results of this work include a new type of sorting circuit and an area-universal VLSI circuit.

url: http://hdl.handle.net/1813/7123
date: 2007-04-23
creator: Ralph, Daniel
viewed: 43
title: On Branching Numbers of Normal Manifolds
abstract: Let $\cal M$ be a finite piecewise linear (pl) manifold of IR^n, and P : $IR^n \rightarrow IR^n$ be pl with respect to $\cal M$, i.e. P is affine on each set in $\cal M$. The branching number of $\cal M$, Kuhn and Lowen [8], is the maximum number of sets in $\cal M$ that can contain any common face of codimension 2. [8, Thm. 5.3] shows that if $\cal M$ has branching number less than or equal to 4, then P is a homeomorphism if and only if it is coherently oriented, i.e. the determinants of P on the sets in $\cal M$ have the same nonzero sign. Let C be a nonempty polyhedral convex set in IR^n, and $A \in IR^{nxn}$. Robinson [14] defines a finite pl manifold $\cal N_C$ of IR^n called the normal manifold of C; and the normal map A_C : $IR^n \rightarrow IR^n$ induced by (A, C), which is pl with respect to $\cal N_C$. [14, Thm. 4.3] shows that A_C is homeomorphic if and only if it is coherently oriented. We show that $\cal N_C$ has branching number less than or equal to 4, hence Robinson's result is actually a corollary of Kuhn and Lowen's. Key Words: Piecewise linear, piecewise affine, branching number, normal map, pl-normal, normal manifold, homeomorphism, coherently oriented.

url: http://hdl.handle.net/1813/7124
date: 2007-04-23
creator: Critchlow, Carol M.
viewed: 14
title: The Inherent Cost of Achieving Causal Consistency
abstract: We consider the problem of distinguishing causally-consistent global states in asynchronous distributed systems. Such states are fundamental to asynchronous systems, because they correspond to

possible simultaneous global states; their detection arises in a variety of distributed applications, including global checkpointing, deadlock detection, termination detection and broadcasting. A consistent-cut protocol is a protocol which in every run will designate for each processor a state, in such a way that these states together form a consistent cut. We analyze the cost of achieving causal consistency in terms of the extent to which a consistent-cut protocol delays events of the underlying system, and the message-complexity required by any such protocol. We refer to the delaying action of a protocol as inhibition. We consider a spectrum of protocol capabilities based on the type of inhibition that occurs: we distinguish local versus global inhibition and prove fundamental relationships between these concepts and the ability to determine causally-consistent states. A protocol using local inhibition may cause the delay of some of a processor's events until that processor has performed some number of local actions; a protocol using global inhibition may force the delay of some of a processor's events until that procesor has received some communication from other processors. Based on a variety of system and protocol characteristics, including the ability to locally or globally inhibit particular types of events, we give several impossibility results and examine some existing protocols. We are then able to present a thirty-six-case summary of protocols and impossibility results for the determination of causally-consistent states as a function of those characteristics. In particular, we demonstrate that local inhibition is necessary and sufficient to solve this problem for general FIFO systems, while global send inhibition is necessary and sufficient for general non-FIFO systems. Regarding message complexity, we demonstrate that a globally inhibitory consistent-cut protocol requires $O (N)$ messages where N is the number of processors in the system. This is true whether the protocol is designed to work for FIFO or non-FIFO systems; the exact lower bounds, however, differ in the two cases. We also prove that a consistent-cut protocol which uses local inhibition only requires O (N^{2}) messages, or, more precisely, O ($\vert \cal C \vert$), where $\cal C$ is the channel set of the system. This latter result illustrates a trade-off between the message complexity of a consistent-cut protocol and the degree of inhibition which it requires.

url: http://hdl.handle.net/1813/7125
date: 2007-04-23
creator: Reppy, John H.
viewed: 22
title: Higher-Order Concurrency
abstract: Concurrent programming is a useful technique for structuring many important classes of applications such as interactive systems. This dissertation presents an approach to concurrent language design that provides a new form of linguistic support for constructing concurrent applications. This new approach treats synchronous operations as first-class values in a way that is analogous to the treatment of functions as first-class values in languages such as ML. The mechanism is set in the framework of the language Concurrent ML (CML), which is a concurrent extension of Standard ML. CML has a domain of first-class values, called events, that represent synchronous operations. Synchronous message passing operations are provided as the base-event values, and combinators are provided for constructing more complex events from other event values. This mechanism allows programmers to define new synchronization and communication abstractions that are first-class citizens, which gives programmers the flexibility to tailor their concurrency abstractions to their applications. The dissertation is organized into three technical parts. The first part describes the design and rationale of CML and shows how first-class synchronous operations can be used to implement many of the communication mechanisms found in other concurrent languages. The second part presents the formal operational semantics of first-class synchronous operations and proves that the polymorphic type system used by CML is sound. The third part addresses practical issues. It describes the use of CML in non-trivial applications, describes the implementation and performance of CML on a single-processor computer, and discusses issues related to the use and implementation of CML on a shared-memory multiprocessor.

url: http://hdl.handle.net/1813/7126

date: 2007-04-23
creator: Buckley, Chris;Allan, James;Salton, Gerard
viewed: 44
title: Automatic Structuring and Retrieval of Large Text Files
abstract: In many operational environments, large text files must be processed covering a wide variety of different topic areas. Aids must then be provided to the user that permit collection browsing and make it possible to locate particular items on demand. The conventional text analysis methods based on preconstructed knowledge-bases and other vocabulary-control tools are difficult to apply when the subject coverage is unrestricted. An alternative approach, applicable to text collections in any subject area, is introduced which uses the document collections themselves as a basis for the text analysis, together with sophisticated text matching operations carried out at several levels of detail. Methods are described for relating semantically similar pieces of text, and for using the resulting hypertext structures for collection browsing and information retrieval.

url: http://hdl.handle.net/1813/7127
date: 2007-04-23
creator: Teitelbaum, Tim
viewed: 14
title: A Formal Syntax for PL/CS
abstract: This document contains a formal syntax for the PL/CS programming language. As is customary, the defining context-free grammar generates a somewhat larger language than PL/CS. That is, only those restrictions conveniently expressed by context-free productions are incorporated in the definition. However, all legal PL/CS programs are contained in the language defined. With some exceptions, the formal syntax defines the language described in: Conway, R., "PL/CS - A Highly-Disciplined Subset of PL/C", Dept. of Computer Science, Cornell University, TR 76-273. The present report supersedes this earlier report as the document defining the syntax of the PL/CS subset.

url: http://hdl.handle.net/1813/7128
date: 2007-04-23
creator: Wayner, Peter C.
viewed: 25
title: Using Content-Addressable Search Engines To Encrypt and Break DES
abstract: A very simple parallel architecture using a modified version of content-addressable memory can be used to cheaply and efficiently encipher and decipher data with DES-like systems. The paper will describe how to implement DES on these modified content-addressable memories at speeds approaching some of the best specialized hardware. The chips can also be used to build a large scale engine for exhaustively searching the entire keyspace of DES.

url: http://hdl.handle.net/1813/7129
date: 2007-04-23
creator: Birman, Kenneth P.;Clark, Timothy
viewed: 38
title: Using the ISIS Resource Manager for Distributed, Fault-Tolerant Computing
abstract: Under the current versions of the UNIXtm operating system, it is difficult to take advantage of the massive computing power of idle or lightly-loaded workstations on a network. This paper introduces the ISIS Resource Manager, a distributed, fault-tolerant application capable of recapturing this processing power, as well as providing a transparent interface to network computing resources.

url: http://hdl.handle.net/1813/7130
date: 2007-04-23
creator: Reppy, John H.;Aitken, William
viewed: 68
title: Abstract Value Constructors: Symbolic Constants for Standard ML
abstract: Standard ML (SML) has been used to implement a wide variety of large systems, such as compilers, theorem provers, graphics libraries and even operating systems. While SML provides a convenient, high-level notation for programming large applications, it does have certain deficiencies. One such deficiency is the lack of a general mechanism for assigning symbolic names to constant values. In this paper, we present a simple extension of SML that corrects this deficiency in a way that fits naturally with the semantics of SML. Our proposal is a generalization of SML's datatype constructors: we introduce constants that generalize nullary datatype constructors (like nil), and

url: http://hdl.handle.net/1813/7131
date: 2007-04-23
creator: Reddy, Satish C.;Trefethen, Anne E.;Trefethen, Lloyd N.
viewed: 31
title: Pseudospectra of the Linear Navier-Stokes Evolution Operator and Instability of Plane Poiseuille and Couette Flows: (preliminary report)
abstract: This is a rough, interim report on some new results concerning the stability of plane Poiseuille and Couette fluid flows, following upon recent work by Henningson and Reddy, Butler and Farrell, Gustavsson and others. We emphasize that the conclusions proposed here have not yet been checked carefully and are subject to change. Our principal results are as follows: 1. Plots of the spectra of the "full" Navier-Stokes operator for Poiseuille and Couette flows, i.e., without restriction to a wave number pair (α, β) or to even or odd modes ($\S\S$4,5). 2. Analogous plots for the pseudospectra of this operator. Comparison of the pseudospectra with the spectra gives a new interpretation of why the physics of these linear flow problems is not controlled by the location of the most unstable eigenvalue ($\S\S$4,5). 3. Demonstration that these pseudospectra predict the Butler-Farrell "optimal" transient energy growth ratios to within a factor of about 2 ($\S$6). 4. Demonstration that about 90% of the Butler-Farrell growth can be achieved by a 3$\times$3 linear model obtained by projecting the Navier-Stokes problem onto the space spanned by three dominant eigenmodes, for Couette flow, or four in the case of Poiseuille flow ($\S$8). 5. Demonstration that although 1 Orr-Sommerfeld mode and 3 Squire modes suffice for the 4$\times$4 model in the Poiseuille case, in keeping with a recent result of Gustavsson, one can do equally well with 2 modes of each kind or with 3 Orr-Sommerfeld modes and 1 Squire mode ($\S$8). 6. Demonstration that the minimal operator perturbation required to destabilize a stable flow has norm of order R^-^{2}, where R is the Reynolds number, though the distance of the least stable eigenvalue from the real axis is $O (R^-$^{1}) ($\S$7). 7. Presentation of a 2$\times$2 model illustrating that if the linear problems described above are capable of transient energy growth of order M (e.g., $M\approx$1000 according to Butler and Farrell), a weak and intrinsically energy-conserving nonlinear term can "bootstrap" that growth to a higher order such as M^2. This supports the view that although nonlinear terms are of course essential to the subcritical instability of fluid flows, the detailed nature of the nonlinear interactions may sometimes be relatively unimportant ($\S$2). 8. Adaptation of this "bootstrapping" idea to the fluid flows considered earlier, particularly the 3$\times$3 approximation for Couette flow with R=1000.

url: http://hdl.handle.net/1813/7132
date: 2007-04-23
creator: Kleinberg, Jon M.;Huttenlocher, Daniel P.
viewed: 23

title: On Invariants of Sets of Points or Line Segments Under Projection
abstract: We consider the problem of computing invariant functions of the image of a set of points or line segments in $\Re^3$ under projection. Such functions are in principle useful for machine vision systems, because they allow different images of a given geometric object to be described by an invariant `key'. We show that if a geometric object consists of an arbitrary set of points or line segments in $\Re^3$, and the object can undergo a general rotation, then there are no invariants of its image under projection. For certain constrained rotations, however, there are invariants (e.g., rotation about the viewing direction). Thus, we precisely delimit the conditions for the existence or nonexistence of invariants of arbitrary sets of points or line segments under projection.

url: http://hdl.handle.net/1813/7133
date: 2007-04-23
creator: Toueg, Sam;Hadzilacos, Vassos;Chandra, Tushar Deepak
viewed: 42
title: The Weakest Failure Detector for Solving Consensus
abstract:

url: http://hdl.handle.net/1813/7134
date: 2007-04-23
creator: Pingali, Keshav;Li, Wei
viewed: 18
title: A Singular Loop Transformation Framework Based on Non-Singular Matrices
abstract: In this paper, we discuss a loop transformation framework that is based on integer non-singular matrices. The transformations included in this framework are called Λ-transformations and include permutation, skewing and reversal, as well as a transformation called loop scaling. This framework is more general than the existing ones; however, it is also more difficult to generate code in our framework. This paper shows how integer lattice theory can be used to generate efficient code. An added advantage of our framework over existing ones is that there is a simple completion algorithm which, given a partial transformation matrix, produces a full transformation matrix that satisfies all dependences. This completion procedure has applications in parallelization and in the generation of code for NUMA machines.

url: http://hdl.handle.net/1813/7135
date: 2007-04-23
creator: Sundaram, Sridhar
viewed: 22
title: Periodic Updates in Processor Networks
abstract: In implementing parallel scientific applications, the crux is often efficiency in communication. So, it becomes important to abstract out and study frequently occurring patterns of communication. We describe one such abstraction, periodic update, which arises in such diverse areas as computational molecular dynamics, distributed systems and n-body simulations. Consider a synchronous network of processors. Every processor needs to know the status of every other processor. The status keeps changing and it is more important to know the correct status of nearer processors. The work done in maintenance of status information should be as little as possible. The periodic update problem is that of sending (and receiving) periodic status updates from every processor to every other processor in the network in order to maintain status information. The time interval between successive updates from one processor to another is given by some increasing function (the periodicity function) of the distance between them. Given a network and a periodicity function, we wish to find efficient protocols for the periodic update problem which have minimum delay (time elapsed between the sending of an update and its receipt) and minimum

peak bandwidth (maximum number of updates sent across any edge in one time-step). We present a general design paradigm and construct periodic update protocols for the one and two dimensional mesh networks for both polynomial and exponential periodicity functions. Given a periodicity function, we demonstrate a trade-off between delay and peak bandwidth. Then, using two general techniques, we transform minimum delay protocols into families of highly efficient protocols with performances spanning the entire spectrum from minimum delay to minimum peak bandwidth.

url: http://hdl.handle.net/1813/7136
date: 2007-04-23
creator: Pai, Dinesh K.;Donald, Bruce Randall
viewed: 32
title: The Motion of Planar Compliantly-Connected Rigid Bodies in ContactWith Applications to Automatic Fastening
abstract: We consider the problem of planning and predicting the motion of a flexible object amidst obstacles in the plane. We model the flexible object as a rigid "root" body, attached to compliant members by torsional springs. The root's position may be controlled, but the compliant members move in response to forces from contact with the environment. Such a model encompasses several important and complicated mechanisms in mechanical design and automated assembly: snap-fasteners, latches, ratchet and pawl mechanisms, and escapements. The problem is to predict the motion of such a mechanism amidst fixed obstacles. For example, our algorithm could be used to determine whether a snap-fastener design can be assembled with a certain plan. In this paper, we analyze the physics of these flexible devices, and develop combinatorially precise algorithms for predicting their movement under a motion plan. Our algorithms determine when and where the motion will terminate, and also computes the time-history of contacts and mating forces. In addition to providing the first known exact algorithm that addresses flexibility in motion planning, we also note that our approach to compliance permits an exact algorithm for predicting motions under rotational compliance, which was not possible in earlier work. We discuss the following issues: the relevance of our approach to engineering (which we illustrate through the examples we ran using our system), the computational methods employed, the algebraic techniques for predicting motions in contact with rotational compliance, and issues of robustness and stability of our geometric and algebraic algorithms. Our computational viewpoint lies in the interface between differential theories of mechanics, and combinatorial collision detection algorithms. From this viewpoint, subtle mathematical difficulties arise in predicting motions under rotational compliance, such as the forced non-genericity of the intersection problems encountered in configuration space. We discuss these problems and their solutions. Finally, we extend our work to predict the forces on the manipulated objects as a function of time, and show how our algorithm can easily be extended to include uncertainty in control and initial conditions. With these extensions, we hope that our system could be used to analyze and design objects that are easy to assemble, even given control and sensing errors, and that require more force to disassemble than to mate.

url: http://hdl.handle.net/1813/7137
date: 2007-04-23
creator: Stodghill, Paul;Pingali, Keshav;Kotlyar, Vladimir;Kodukula, Induprakas;Bau, David
viewed: 18
title: Solving Alignment using Elementary Linear Algebra
abstract: Data and computation alignment is an important part of compiling sequential programs to architectures with non-uniform memory access times. In this paper, we show that elementary matrix methods can be used to determine communication-free alignment of code and data. We also solve the problem of replicating read-only data to eliminate communication. Our matrix-based approach leads to algorithms which are simpler and faster than existing algorithms for the alignment problem.

url: http://hdl.handle.net/1813/7138
date: 2007-04-23
creator: Hunt, Guerney Douglass Holloway
viewed: 26
title: Multicast Flow Control on Local Area Networks
abstract: The primary LAN technologies in use today --- ethernet, FDDI, and token-ring --- all provide hardware support for broadcast and multicast capability. However, distributed systems have traditionally used unicast messaging exclusively, even when multicast communication patterns arise. As the number of distributed applications grows, the load on networks caused by unnecessary unicasts will increase. In addition, for some applications performance and group size are limited by using unicast technologies for multicast. If multicast technologies are exploited, the network load caused by "redundant" packets will be reduced. Exploiting multicast will also improve the performance and scalability of some distributed applications. However, as distributed systems move towards exploiting multicast, multicast flow control protocols are becoming more important. Finding a general, effective solution for multicast flow control will help facilitate the exploitation of the multicast primitives provided in LANs and Wide Area Networks (WANs). This dissertation presents the results of an investigation into multicast performance on local area networks. An analysis of multicast flow control is presented which distinguishes between {\it rate reservation} and {\it rate control}, followed by a discussion of the major design issues associated with multicast flow control and a presentation of a proposed protocol family. The proposed protocol family is based on send-rate control. An unreliable and a reliable multicast flow control protocol based on the proposed family are presented. A study of the performance of these protocols is also presented. This dissertation concludes with an investigation into how well the proposed reliable multicast flow control protocol performs when used to disseminate messages. This dissertation argues that direct rate control has merit as a technique for multicast flow control on local area networks.

url: http://hdl.handle.net/1813/7139
date: 2007-04-23
creator: Briggs, Amy
viewed: 19
title: Efficient Geometric Algorithms for Robot Sensing and Control
abstract: This thesis addresses the problem of automatically generating solutions to robotics tasks that are specified at a high level. In particular, we consider the problems of robot motion planning and the planning of sensor placements. These problems are made difficult by a number of inherent factors. Foremost among these are uncertainty and geometric complexity. Uncertainty arises from the fact that the actions of robots are subject to error. Geometric complexity reflects the fact that real-world task environments are often complex. If we want robot strategies that are both practical and robust, we must develop algorithms that successfully deal with uncertainty and complex geometry. Much of the previous work in the area of task-level planning for robots fails to address at least one of these issues. Many theoretical approaches are algorithmically sophisticated, but do not handle uncertainty, and may be unimplementable in practice. On the other hand, real robot systems often employ simplistic strategies that do not take into account complex geometric interactions. This thesis seeks to bridge the gap between these two extremes. We present efficient planning algorithms for motion and sensing that are both practical and algorithmically sophisticated. Our motion planning algorithm computes one-step motion strategies that guarantee reaching a specified goal in the plane. To deal with uncertainty in robot control, we employ a control model that allows the robot to slide along obstacle surfaces, or comply with the environment. Our analysis of this algorithm yields a precise characterization of the complexity of one-step compliant motion planning with uncertainty. Sensors are needed within autonomous systems to provide execution-time feedback. In this thesis we develop a framework

for planning sensing strategies in a principled way. In particular, we present algorithms for computing the set of placements from which a sensor can monitor a region within a task environment. This work has many applications in the areas of assembly planning, cooperating robots, and robot surveillance. We have demonstrated the practicality of our approach by building a system of robot surveillance with mobile robots employing our strategies for sensor planning.

url: http://hdl.handle.net/1813/7140
date: 2007-04-23
creator: Yuan, Wei;Coleman, Thomas F.
viewed: 36
title: A Quasi-Newton L_{2}-Penalty Method for Minimization Subject toNonlinear Equality Constraints
abstract: We present a modified L_{2} penalty function method for equality constrained optimization problems. The pivotal feature of our algorithm is that at every iterate we invoke a special change of variables to improve the ability of the algorithm to follow the constraint level sets. This change of variables gives rise to a suitable block diagonal approximation to the Hessian which is then used to construct a quasi-Newton method. We show that the complete algorithm is globally convergent with a local Q-superlinearly convergence rate. Preliminary computational results are given for a few problems.

url: http://hdl.handle.net/1813/7141
date: 2007-04-23
creator: Kopke, Peter W.;Henzinger, Thomas A.
viewed: 73
title: Verification Methods for the Divergent Runs of Clock Systems
abstract: We present a methodology for proving temporal properties of the divergent runs of reactive systems with real-valued clocks. A run diverges if time advances beyond any bound. Since the divergent runs of a system may satisfy liveness properties that are not satisfied by some convergent runs, the standard proof rules are incomplete if only divergent runs are considered. First, we develop a sound and complete proof calculus for divergence, which is based on translating clock systems into discrete systems. Then, we show that simpler proofs can be obtained for stronger divergence assumptions, such as unknown epsilon-divergence, which requires that all delays have a minimum duration of some unknown constant epsilon. We classify all real-time systems into an infinite hierarchy, according to how well they admit the translation of eventuality properties into equivalent safety properties.

url: http://hdl.handle.net/1813/7142
date: 2007-04-23
creator: Kopke, Peter W.;Henzinger, Thomas A.
viewed: 81
title: Undecidability Results for Hybrid Systems
abstract: We illuminate the boundary between decidability and undecidability for hybrid systems. Adding any of the following decorations to a timed automaton makes the reachability problem undecidable: 1. a single stopwatch with weak (less than or equal to, greater than or equal to) edge guards 2. a single skewed clock with variable equality tests 3. a single two-slope clock with weak edge guards 4. a single memory cell with weak edge guards As a corollary, we obtain undecidability for linear hybrid systems with triangular differential inclusions, which have invariants of the form x' less than or equal to y'.

url: http://hdl.handle.net/1813/7143
date: 2007-04-23

creator: Allan, James
viewed: 22
title: Automatic Hypertext Construction
abstract: The unprecedented growth of the World Wide Web illustrates the importance of hypertext as a method for organizing the rapidly expanding amount of on-line text. As document collections become larger and more dynamic, however, it is not feasible to construct more than an occasional hypertext manually. This thesis presents entirely automatic methods for gathering documents for a hypertext, linking them, and annotating those connections with a description of the type or nature of the link. The problem of automatically collecting related documents is addressed in Chapter 2, where robust Information Retrieval methods are applied to form high-quality links between documents. A local context check identifies links where ambiguous vocabulary erroneously suggests a relationship. Dynamic part retrieval is employed to select the portions of documents which are most related, allowing parts to be linked when it is more appropriate to link subtopics than entire documents. Chapter 3 presents a taxonomy of hypertext link types and defines the following three classes of links: "pattern-matching" links can be found using simple string-matching methods, "manual" links require substantial application of natural language understanding methods (which are currently beyond the state of the art), and "automatic" links are those which can be found using the methods of this thesis. Chapter 4 begins the work of automatic link typing by describing two novel graphical techniques for visualizing the relationship between two or more documents. "Uniform" visuals display the relationship between documents or document parts without regard to their relative sizes, whereas "varying" visuals include information about sizes and locations. Both methods highlight relationships between documents and motivate the automatic techniques of Chapter 5. Chapter 5, thus, demonstrates automatic methods for identifying the relationships depicted in the visualizations. Using an approach based upon graph simplification, this method automatically identifies revision, summary, expansion, equivalence, comparison, contrast, tangential, and aggregate links. Chapter 6 discusses an informal evaluation of the link typing. Though somewhat inconclusive, the evaluation demonstrates that automatic document linking performs well, but also indicates that much work remains to be done toward understanding automatic link typing.

url: http://hdl.handle.net/1813/7144
date: 2007-04-23
creator: Brown, Russell
viewed: 22
title: Localization, Mapmaking, and Distributed Manipulation with Flexible,Robust Mobile Robots
abstract: Current mobile robots (mobots) have extremely limited usefulness in real-world applications, due primarily to low capability and low reliability. Current mobots cannot navigate in environments which have not been extensively engineered to be mobot-friendly; they are also incapable of performing useful duties at their destination. They often have poorly designed hardware and primitive software-development environments, making the development of new mobile robot protocols slow and difficult. In this thesis, we describe three ways to make mobile robots more usable. We present algorithms for mobile robot self-localization, a design paradigm for reliable mobile robots, and protocols for cooperative large-scale manipulation by mobile robots. Localization is the process of determining the robot's location within its environment. More precisely, it is a procedure which takes as input a geometric map, a current estimate of the robot's pose, and sensor readings, and produces as output an improved estimate of the robot's current pose (position and orientation). We describe an algorithm which performs mobile robot localization using a geometric model of the world and a point-and-shoot rang ing device. We also describe a rasterized version of this algorithm which we've implemented on a real mobile robot equipped with a laser rangefinder we designed. We next focus on the mobile robots themselves. We have designed and built several mobile robots at Cornell, that feature robustness, flexibility, and ease of programming. Using a modular design approach, we've attained an unusual state for a university robotics lab: our mobots are almost always functional. In

their basic configuration, the robots can perform many tasks; also, it is easy to add sensors and actuators to our mobile robots, allowing their use in many different applications (e.g. manipulation). We are interested in protocols for manipulation of large objects (e.g., boxes, wheeled carts) by cooperating mobile robots, particularly protocols that are asynchronous, on-line, and use no communication between mobots. We've developed a Pusher-Steerer model for cooperative manipulation, which enables two mobots to manipulate objects through complex paths. We describe and anal yze the model and describe its performance in several real experiments.

url: http://hdl.handle.net/1813/7145
date: 2007-04-23
creator: Williamson, David;Henzinger, Monika Rauch
viewed: 14
title: On the Number of Small Cuts in a Graph
abstract: We prove that in an undirected graph there are at most $O(n^2)$ cuts of size strictly less than $\ frac{3}{2}$ the size of the minimum cut.

url: http://hdl.handle.net/1813/7146
date: 2007-04-23
creator: Marzullo, Keith;Sabel, Laura S.
viewed: 35
title: Election Vs. Consensus in Asynchronous Systems
abstract: It was shown in 1985 that the {\em Consensus problem} cannot be solved in an asynchronous system if even a single crash failure can occur. In this paper, we show that there are other problems that cannot be solved in an asynchronous system, and for the same intuitive reason: it is impossible to distinguish a very slow processor from a crashed processor. However, these problems are harder than Consensus, in that there are contexts in which Consensus can be solved but these other problems cannot. More precisely, the weakest failure detector that is needed to solve these problems is a Perfect Failure Detector, which is strictly stronger than the weakest failure detector that is needed to solve Consensus. We use a formulation of the Election problem as the prototype for these problems that are harder than Consensus.

url: http://hdl.handle.net/1813/7147
date: 2007-04-23
creator: Van Renesse, Robbert;Hickey, Takako M.
viewed: 23
title: Incorporating System Resource Information into Flow Control
abstract: Upcall-based distributed systems have become widespread in recent years. While upcall-based systems provide some obvious advantages, experiences with these systems have exposed unanticipated problems of unpredictability and inefficiency. Incorporating system resources information into flow control is essential in solving these problems. Variants of window-based flow control suitable for distributed systems are investigated. Next, message packing, which improves network bandwidth usage efficiency, and, consequently, message throughput, is presented. Finally, a back pressure mechanism which controls admission of messages into the system by blocking applications at high load is presented. The combination of the window mechanism and the back pressure mechanism provides end-to-end management of system resources. The former manages network resources, while the latter manages operating system resources. The combination maintains good throughput even under high load.

url: http://hdl.handle.net/1813/7148
date: 2007-04-23

creator: Birman, Kenneth P.;Cooper, David A.
viewed: 19
title: Preserving Privacy in a Network of Mobile Computers
abstract: Even as wireless networks create the potential for access to information from mobile platforms, they pose a problem for privacy. In order to retrieve messages, users must periodically poll the network. The information that the user must give to the network could potentially be used to track that user. However, the movements of the user can also be used to hide the user's location if the protocols for sending and retrieving messages are carefully designed. We have developed a replicated memory service which allows users to read from memory without revealing which memory locations they are reading. Unlike previous protocols, our protocol is efficient in its use of computation and bandwidth. In this paper, we will show how this protocol can be used in conjunction with existing privacy preserving protocols to allow a user of a mobile computer to maintain privacy despite active attacks.

url: http://hdl.handle.net/1813/7150
date: 2007-04-23
creator: Henzinger, Thomas A.;Fix, Limor;Alur, Rajeev
viewed: 19
title: A Determinizable Class of Timed Automata
abstract: We introduce the class of event-recording timed automata (ERA). An event-recording automaton contains, for every event A, a clock that records the time of the last occurrence of A. The class ERA is, on one hand, expressive enough to model (finite) timed transition systems and, on the other hand, determinizable and closed under all boolean operations. As a result, the language inclusion problem is decidable for event-recording automata. We present a translation from timed transition systems to event-recording automata, which leads to an algorithm for checking if two timed transition systems have the same set of timed behaviors. We also consider event-predicting timed automata (EPA), which contain clocks that predict the time of the next occurrence of an event. The class of event-clock automata (ECA), which contain both event-recording and event-predicting clocks, is a suitable specification language for real-time properties. We provide an algorithm for checking if a timed automaton meets a specification that is given as an event-clock automaton.

url: http://hdl.handle.net/1813/7151
date: 2007-04-23
creator: Birman, Kenneth P.;Hayden, Mark
viewed: 39
title: Achieving Critical Reliability With Unreliable Components andUnreliable Glue
abstract: Even the most aggressive quality assurance procedures yield at best probabilistic confidence in the reliability of complex systems. Distributed systems, because of their large numbers of components, are enormously complex engineering artifacts, and hence may appear to be inherently unreliable -- despite the best efforts of researchers and developers. A cellular distributed systems architecture offers the hope of drastically improving the reliability of current technologies in settings where reliability is critical. The approach combines a stateful style of distributed computing within cells with a loosely coupled probabilistic inter-cell computing model based on a probabilistic broadcast primitive. We give an implementation of this primitive, called pbcast, and demonstrate how to use it to implement this methodology. Our approach is compatible with the use of popular distributed computing and reliability technologies, while offering considerable isolation against the spread of failures among cells.

url: http://hdl.handle.net/1813/7153
date: 2007-04-23
creator: Schneider, Fred B.;Bressoud, Thomas C.

viewed: 76
title: Hypervisor-based Fault-tolerance
abstract: Protocols to implement a fault-tolerant computing system are described. These protocols augment the hypervisor of a virtual machine manager to coordinate a primary virtual machine and its backup. The result is a fault-tolerant computing system that does not require modifying the hardware, operating system, or applications programs. A prototype system was constructed for HP's PA-RISC instruction-set architecture. Using this prototype, engineering issues and performance implications of the approach were explored.

url: http://hdl.handle.net/1813/7154
date: 2007-04-23
creator: Wong-Toi, Howard;Kopke, Peter W.;Henzinger, Thomas A.
viewed: 29
title: The Expressive Power of Clocks
abstract: We investigate the expressive power of timing restrictions on labeled transition systems. In particular, we show how constraints on clock variables together with a uniform liveness condition---the divergence of time---can express Buchi, Muller, Streett, Rabin, and weak and strong fairness conditions on a given labeled transition system. We then consider the effect, on both timed and time-abstract expressiveness, of varying the following parameters: time domain (discrete or dense), number of clocks, number of states, and size of constants used in timing restrictions.

url: http://hdl.handle.net/1813/7155
date: 2007-04-23
creator: Kopke, Peter W.;Henzinger, Thomas A.
viewed: 27
title: Hybrid Automata with Finite Mutual Simulations
abstract: Many decidability results for hybrid automata rely upon the finite region bisimulation of timed automata [AD94]. Rectangular automata do not have finite bisimulations [Hen95], yet have many decidable verification problems [PV94,HKPV95]. We prove that every two-dimensional rectangular automaton A with positive-slope variables has a finite mutual simulation relation, which is the intersection of the region bisimulations defined by the extremal slopes of the variables of A. While the mutual simulation is infinite for two-dimensional automata with one variable taking both positive and negative slopes, it forms a regular tesselation of the plane, and therefore can be encoded by one counter. As a corollary, we obtain the decidability of model checking linear temporal logic on these automata.

url: http://hdl.handle.net/1813/7156
date: 2007-04-23
creator: Teitelbaum, Tim;Liu, Yanhong A.
viewed: 87
title: Caching Intermediate Results for Program Improvement
abstract: A systematic approach is given for symbolically caching intermediate results useful for deriving incremental programs from non-incremental programs. We exploit a number of program analysis and transformation techniques, centered around effective caching based on its utilization in deriving incremental programs, in order to increase the degree of incrementality not otherwise achievable by using only the return values of programs that are of direct interest. Our method can be applied straightforwardly to provide a systematic approach to program improvement via caching.

url: http://hdl.handle.net/1813/7157
date: 2007-04-23

creator: Teitelbaum, Tim;Liu, Yanhong A.
viewed: 16
title: Incremental Computation for Transformational Software Development
abstract: Given a program f and an input change $\oplus$, we wish to obtain an incremental program that computes $f(x\oplus y)$ efficiently by making use of the value of $f(x)$, the intermediate results computed in computing $f(x)$, and auxiliary information about x that can be inexpensively maintained. Obtaining such incremental programs is an essential part of the transformational-programming approach to software development and enhancement. This paper presents a systematic approach that discovers a general class of useful auxiliary information, combines it with useful intermediate results, and obtains an efficient incremental program that uses and maintains these intermediate results and auxiliary information. We give a number of examples from list processing, VLSI circuit design, image processing, {\it etc}.

url: http://hdl.handle.net/1813/7158
date: 2007-04-23
creator: Vogels, Werner;Vaysburd, Alex;Malki, Dalia;Hickey, Takako;Hayden, Mark;Guo, Katie;Glade, Bradford B.;Birman, Kenneth P.;Van Renesse, Robbert
viewed: 33
title: Horus: A Flexible Group Communications System
abstract: The Horus system offers flexible group communication support for distributed applications. It is extensively layered and highly reconfigurable, allowing applications to only pay for services they use, and for groups with different communication needs to coexist in a single system. The approach encourages experimentation with new communication properties and incremental extension of the system, and enables us to support a variety of application-oriented interfaces.

url: http://hdl.handle.net/1813/7159
date: 2007-04-23
creator: Lee, Joon Ho
viewed: 16
title: Analyzing the Effectiveness of Extended Boolean Models in InformationRetrieval
abstract: Many extended Boolean models such as fuzzy set, p-norm, et al. have been proposed in the information retrieval literature to support ranking facility for the Boolean retrieval system. They can be explained within the same framework, and each extended Boolean model is characterized by evaluation formulas for AND and OR operations. A variety of operators have been also developed in the area of fuzzy set theory for AND and OR operations, and can be used in extended Boolean models. In this paper we analyze the behavioral aspects of various operators for AND and OR operations, and address important properties in terms of retrieval effectiveness. Our analyses show that the four properties, namely single operand dependency, negative compensation, double operand dependency and unequal importance decrease retrieval effectiveness in some circumstances. This suggests that the two properties, namely positive compensation and equal importance might help retrieval effectiveness. We also provide the experimental results that coincide with our analyses.

url: http://hdl.handle.net/1813/7160
date: 2007-04-23
creator: Lee, Joon Ho
viewed: 13
title: Combining Multiple Evidence from Different Properties of WeightingSchemes
abstract: It has been known that using different representations of either queries or documents, or different retrieval techniques retrieves different sets of documents. Recent work suggests that significant improvements

in retrieval performance can be achieved by combining multiple representations or multiple retrieval techniques. In this paper we propose a simple method for retrieving different documents within a single query representation, a single document representation and a single retrieval technique. We classify the types of documents, and describe the properties of weighting schemes. Then, we explain that different properties of weighting schemes may retrieve different types of documents. Experimental results show that significant improvements can be obtained by combining the retrieval results from different properties of weighting schemes.

url: http://hdl.handle.net/1813/7161
date: 2007-04-23
creator: Sardas, Meir;Harel, David
viewed: 30
title: Randomized Graph Drawing with Heavy-Duty Preprocessing
abstract: We present a graph drawing system for general undirected graphs with straight-line edges. It carries out a rather complex set of preprocessing steps, designed to produce a topologically good, but not necessarily nice-looking layout, which is then subjected to downhill-only version of Davidson and Harel's simulated annealing beautification algorithm. The intermediate layout is planar for planar graphs and attempts to come close to planar for non-planar graphs. The system's results are better and faster than what the annealing approach is able to achieve on its own.

url: http://hdl.handle.net/1813/7162
date: 2007-04-23
creator: Chen, Ze-wei
viewed: 19
title: EFFICIENT ACCESS TO KNOWLEDGE VIA FORWARD CHAINING TACTICS
abstract: The goal of this work is to explore efficient ways to use knowledge in interactive development of formal arguments. The challenge in automatically applying knowledge from a large knowledge base is in defining useful and tractable approximations to the deductive closure of the knowledge base. For an approximation to be useful, it must be deep in some directions. For it to be tractable, it must not be deep in all directions. Further, it must be easy to control this directedness. Thus, we need to make selective inferences from a large knowledge base that are sensitive both to its internal structure and to the query under consideration. To do this, most interactive systems employ a combination of heuristics and explicit user commands. The interaction of these two is intricate: to efficiently give hints to a heuristic prover requires developing a model of reasoning that is both efficiently implementable and easy to understand and use, i.e., fast, having a concise command language and predictable results. Rule-based specifications of approximations is the starting point for the contribution of this thesis in solving the problem described above. In this thesis, we analyze the use of rule-based forward chaining inference procedures and develop several extensions to the basic approach. We propose a new language for forward chaining tactics that can be used to specify goal-directed inference from large knowledge bases. This provides a modular approach to programming the heuristics for theorem proving. The tactic language has clean theoretical properties that make it appropriate for automated analysis and optimization. From the software engineering perspective, this thesis contains an assessment of the new software engineering approach of the theorem prover Ontic: specifying high performance theorem provers in a bottom-up logic programming framework. This perspective provides a much needed link between the Ontic project and other established research paradigms. The analysis tools developed for evaluating the forward chaining approach to obvious reasoning should have broad applications in evaluating other semi-automated approaches and systems. We also develop a language for declarative specification of control for forward chaining reasoning that is analogous to the role of LCF tacticals for specifying control in refinement-style reasoning, as embodied in Nuprl. We arrived at promising conclusions about the potential for combining

these two styles of tactic programming in such problems as the integration of decision procedures and rewriting into interactive theorem provers.

url: http://hdl.handle.net/1813/7163
date: 2007-04-23
creator: Birman, Kenneth P.;Van Renesse, Robbert
viewed: 29
title: Protocol Composition in Horus
abstract: Horus is a communication architecture that treats a protocol as an abstract data type. Protocol layers can be stacked on top of each other in a variety of ways, at run-time. This paper starts out with describing the many classes of protocols that can be supported this way. Next, we describe the Horus object model that we designed for this technology, and the interface between the layers that makes it all work. We then present an example layer which implements a group membership protocol. Then, we look at a example stack of protocols, which provides fault-tolerant, totally ordered communication between a group of processes. We conclude with presenting some remaining challenges in our project.

url: http://hdl.handle.net/1813/7164
date: 2007-04-23
creator: Friedman, Roy
viewed: 29
title: Using Virtual Synchrony to Develop Efficient Fault TolerantDistributed Shared Memories
abstract: This paper shows how to define consistency conditions for distributed shared memories in virtually synchronous environments. Such definitions allow to develop fault tolerant implementations of distributed shared memories, in which during normal execution, operations can be performed very efficiently, and only those operations which take place during a configuration change must be delayed. Three well known consistency conditions, namely, linearizability, sequential consistency, and causal memory, are redefined for virtually synchronous environments. It is then shown how to provide efficient fault tolerant implementations for these definitions.

url: http://hdl.handle.net/1813/7165
date: 2007-04-23
creator: Buckley, Chris;Salton, Gerard;Singhal, Amit
viewed: 32
title: Length Normalization in Degraded Text Collections
abstract: Optical character recognition (OCR) is the most commonly used technique to convert printed material into electronic form. Using OCR, large repositories of machine readable text can be created in a short time. An information retrieval system can then be used to search through large information bases thus created. Many information retrieval systems use sophisticated term weighting functions to improve the effectiveness of a search. Term weighting schemes can be highly sensitive to the errors in the input text, introduced by the OCR process. This study examines the effects of the well known cosine normalization method in the presence of OCR errors and proposes a new, more robust, normalization method. Experiments show that the new scheme is less sensitive to OCR errors and facilitates use of more diverse basic weighting schemes. It also yields significant improvements in retrieval effectiveness over cosine normalization.

url: http://hdl.handle.net/1813/7166
date: 2007-04-23
creator: Sardas, Meir;Harel, David
viewed: 14

title: An Incremental Drawing Algorithm for Planar Graphs
abstract: We present a new algorithm for drawing planar graphs on the plane. It can be viewed as a generalization of the algorithm of Chrobak and Payne, which in turn, is based on an algorithm by de Fraysseix, Pach and Pollack. Our algorithm improves the previous ones in that it does not require a preliminary triangulation step; triangulation proves problematic in drawing graphs ``nicely", as it has the tendency to ruin the structure of the input graph. The new algorithm retains the positive features of the previous algorithms: It embeds a graph of n vertices on a grid of size $(2n-4)\times (n-2)$ in linear time. We have implemented the algorithm as part of a software system for drawing graphs nicely.

url: http://hdl.handle.net/1813/7167
date: 2007-04-23
creator: Jackson, Paul B.
viewed: 30
title: Enhancing the Nuprl Proof Development System and Applying it toComputational Abstract Algebra
abstract: This thesis describes substantial enhancements that were made to the software tools in the Nuprl system that are used to interactively guide the production of formal proofs. Over 20,000 lines of code were written for these tools. Also, a corpus of formal mathematics was created that consists of roughly 500 definitions and 1300 theorems. Much of this material is of a foundational nature and supports all current work in Nuprl. This thesis concentrates on describing the half of this corpus that is concerned with abstract algebra and that covers topics central to the mathematics of the computations carried out by computer algebra systems. The new proof tools include those that solve linear arithmetic problems, those that apply the properties of order relations, those that carry out inductive proof to support recursive definitions, and those that do sophisticated rewriting. The rewrite tools allow rewriting with relations of differing strengths and take care of selecting and applying appropriate congruence lemmas automatically. The rewrite relations can be order relations as well as equivalence relations. If they are order relations, appropriate monotonicity lemmas are selected. These proof tools were heavily used throughout the work on computational algebra. Many examples are given that illustrate their operation and demonstrate their effectiveness. The foundation for algebra introduced classes of monoids, groups, rings and modules, and included theories of order relations and permutations. Work on finite sets and multisets illustrates how a quotienting operation hides details of datatypes when reasoning about functional programs. Theories of summation operators were developed that drew indices from integer ranges, lists and multisets, and that summed over all the classes mentioned above. Elementary factorization theory was developed that characterized when cancellation monoids are factorial. An abstract data type for the operations of multivariate polynomial arithmetic was defined, and the correctness of an implementation of these operations was verified. The implementation is similar to those found in current computer algebra systems. This work was all done in Nuprl's constructive type theory. The thesis discusses the appropriateness of this foundation, and the extent to which the work relied on it.

url: http://hdl.handle.net/1813/7168
date: 2007-04-23
creator: Schneider, Fred B.;Stoller, Scott D.
viewed: 38
title: Faster Possibility Detection by Combining Two Approaches
abstract: A new algorithm is presented for detecting whether a particular computation of an asynchronous distributed system satisfies $\Poss\Phi$ (read "possibly Φ"), meaning the system could have passed through a global state satisfying Φ. Like the algorithm of Cooper and Marzullo, Φ may be any global state predicate; and like the algorithm of Garg and Waldecker, $\Poss\Phi$ is detected quite efficiently if Φ has a certain structure. The new algorithm exploits the structure of some predicates Φ not handled by Garg and Waldecker's algorithm to detect $\Poss\Phi$ more efficiently than is possible with

any algorithm that, like Cooper and Marzullo's, evaluates Φ on every global state through which the system could have passed. A second algorithm is also presented for off-line detection of $\Poss\Phi$. It uses Strassen's scheme for fast matrix multiplication. The intrinsic complexity of off-line and on-line detection of $\Poss\Phi$ is discussed.

url: http://hdl.handle.net/1813/7169
date: 2007-04-23
creator: Gries, David
viewed: 17
title: On Presenting Monotonicity and On EA=>AE
abstract: Two independent topics are treated. First, the problem of weakening/strengthening steps in calculational proofs is discussed and a form of substantiating such steps is proposed. Second, a simple proof of (Ex| R.x: (Ay| S.y: P.x.y)) greater than or equal to (Ay| S.y: (Ex| R.x: P.x.y)) is presented, which uses the idea of a witness for an existnetial quantification.

url: http://hdl.handle.net/1813/7170
date: 2007-04-23
creator: Ho, Pei-Hsin;Henzinger, Thomas A.;Alur, Rajeev
viewed: 31
title: Automatic Symbolic Verification of Embedded Systems
abstract: We present a model-checking procedure and its implementation for the automatic verification of embedded systems. The system components are described as Hybrid Automata---communicating machines with finite control and real-valued variables that represent continuous environment parameters such as time, pressure, and temperature. The system requirements are specified in a temporal logic with stop watches, and verified by symbolic fixpoint computation. The verification procedure---implemented in the Cornell Hybrid Technology Tool, HyTech---applies to hybrid automata whose continuous dynamics is governed by linear constraints on the variables and their derivatives. We illustrate the method and the tool by checking safety, liveness, time-bounded, and duration requirements of digital controllers, schedulers, and distributed algorithms.

url: http://hdl.handle.net/1813/7171
date: 2007-04-23
creator: Krafft, Dean B.;Davis, James R.;Shaw, Erin;Lagoze, Carl
viewed: 39
title: Dienst: Implementation Reference Manual
abstract: We describe the architecture and implementation of Dienst: a protocol and server that provides distributed document libraries over the World Wide Web. Dienst is based on a document model that incorporates unique document names, multiple document formats, and multiple document decompositions. Interoperability among Dienst servers provides the user with a single logical document collection, even though the actual collection is distributed across multiple servers. The Dienst protocol uses HTTP (the protocol of the World Wide Web) as a transport layer, making Dienst servers accessible from any WWW client. Dienst is currently used as the infrastructure for a distributed computer science technical report library by a number of U.S. universities. This document is intended as a guide for Dienst site administrators and implementors of other digital library systems. It describes the architecture of an individual server and network of Dienst servers and includes the server installation instructions. Appendices describe copyright issues and retrospective conversion of the Cornell technical report collection.

url: http://hdl.handle.net/1813/7172

date: 2007-04-23
creator: Greenbaum, Anne
viewed: 16
title: Estimating the Attainable Accuracy of Recursively Computed ResidualMethods
abstract: Many conjugate gradient-like methods for solving linear systems $Ax=b$ use recursion formulas for updating residual vectors, instead of computing the residuals directly. For such methods it is shown that the difference between the actual residuals and the updated approximate residual vectors generated in finite precision arithmetic depends on the machine precision ϵ and on the maximum norm of an iterate divided by the norm of the true solution. It is often observed numerically, and can sometimes be proved, that the norms of the updated approximate residual vectors converge to zero, or, at least, become orders of magnitude smaller than the machine precision. In such cases, the actual residual norm reaches the level $\ epsilon \| A \| \| x \|$ times the maximum ratio of the norm of an iterate to that of the true solution. Using exact arithmetic theory to bound the size of the iterates, we give a priori extimates of the size of the final residual for a number of algorithms.

url: http://hdl.handle.net/1813/7173
date: 2007-04-23
creator: Olson, Clark F.
viewed: 19
title: Improved Curve Detection Through Decomposition of the Hough Transform
abstract: This paper describes techniques to perform fast and accurate curve detection using a variant of the Hough transform. It is shown that the Hough transform can be decomposed into many small subproble ms, where each subproblem considers only curves that pass through some subset of the points. These curves correspond to a manifold in the parameter space. This property allows the effects of localization error to be modeled more accurately than previous systems. The additional use of randomization techniques leads to efficient algorithms. The time required by this method is $O(n)$, where n is the number of edge poin ts in the image, if we are only required to find curves that are significant wit h respect to the complexity of the image. Results are given showing the detecti on of lines and circles in real images.

url: http://hdl.handle.net/1813/7174
date: 2007-04-23
creator: Smith, Brian;Minsky, Yaron;Kozen, Dexter
viewed: 16
title: Efficient Algorithms for Optimal Video Transmission
abstract: This paper addresses the problem of sending an encoded video stream over a channel of limited bandwidth. When there is insufficient bandwidth available, some data must be dropped. For many video encodings, some data are more important than others, leading to a natural prioritization of the data. In this paper we give fast algorithms to determine a prioritization which optimizes the visual quality of the received data. By “optimized visual quality,” we mean that the expected maximum interval of unplayable frames is minimized. Our results are obtained in a model of encoded video data that is applicable to many encoding technologies. The highlight of the model is an interesting relationship between the play order and dependence order of frames. The property allows fast determination of optimal send orders by dynamic programming and is satisfied by all MPEG sequences.

url: http://hdl.handle.net/1813/7175
date: 2007-04-23
creator: Kozen, Dexter;Cheng, Allan
viewed: 12

title: A Complete Gentzen-style Axiomatization for Set Constraints
abstract: Set constraints are inclusion relations between expressions denoting sets of ground terms over a ranked alphabet. They are the main ingredient in set-based program analysis. In this paper we provide a Gentzen-style axiomatization for sequents $\Phi\force\Psi$, where Φ and Ψ are finite sets of set constraints, based on the axioms of termset algebra. Sequents of the restricted form $\Phi\force\bottom$ correspond to positive set constraints, and those of the more general form $\Phi\force\Psi$ correspond to systems of mixed positive and negative set constraints. We show that the deductive system is (i) complete for the restricted sequents $\Phi\force\bottom$ over standard models, (ii) incomplete for general sequents $\Phi\force\Psi$ over standard models, but (iii) complete for general sequents over set-theoretic termset algebras.

url: http://hdl.handle.net/1813/7176
date: 2007-04-23
creator: Stefansson, Kjartan
viewed: 18
title: Newtonian Graphs, Riemann Surfaces and Computation
abstract: In this thesis we study the Newtonian graph and how to compute it. We show different applications of this computation, ranging from numerical root finding to computing the genera of algebraic Riemann surfaces.
Newton's method in the complex plane gives rise to a vector field. Certain curves of flow in this field are of particular interest as they form a connected graph, the Newtonian graph. The faces of the graph are regions corresponding to roots of the input function, and Newton's method on each region "should" converge to that root. We give a symbolic algorithm to compute the Newtonian graph for rational functions. The resulting structure can be used to improve Newton's method to guarantee convergence.
We also show how to extend the notion of Newtonian flow to a Riemann surface of an algebraic function. Again we obtain a Newtonian graph, now living on the abstract Riemann surface. We show how the graph is a tiling of the surface, and can therefore be used to compute the genus of the surface. Then we extend our earlier graph computation to cover the algebraic functions as well. All this computation is very efficient in the sense that it can all be done within the NC complexity class. This gives the first NC algorithm to compute the genus of algebraic Riemann surfaces.

url: http://hdl.handle.net/1813/7177
date: 2007-04-23
creator: Schneider, Fred B.;Gries, David,
viewed: 31
title: Avoiding the Undefined by Underspecification
abstract: We use the appeal of simplicity and an aversion to complexity in selecting a method for handling partial functions in logic. We conclude that avoiding the undefined by using underspecifi- cation is the preferred choice.

url: http://hdl.handle.net/1813/7178
date: 2007-04-23
creator: Ho, Pei-Hsin;Henzinger, Thomas A.
viewed: 74
title: HyTech : The Cornell HYbrid TECHnology Tool
abstract: This paper is addressed to potential users of HyTech, the Cornell Hybrid Technology Tool, an automatic tool for analyzing hybrid systems. We review the formal technologies that have been incorporated into HyTech, and we illustrate the use of HyTech with three nontrivial case studies.

url: http://hdl.handle.net/1813/7179
date: 2007-04-23
creator: Pingali, Keshav;Gupta, Sudeep
viewed: 82
title: Fast Compiled Logic Simulation Using Linear BDDs
abstract: This paper presents a new technique for compiled zero delay logic simulation, and includes extensive experiments that demonstrate its performance on standard benchmarks. Our compiler partitions the circuit into fanout-free regions (FFRs), transforms each FFR into a linear sized BDD, and converts each BDD into executable code. In our approach, the computation is sublinear in the number of variables within each partition because only one path, from root to leaf, of the BDD is executed; therefore in many cases, substantial computation is avoided. In this way, our approach gets some of the advantages of oblivious as well as demand-driven evaluation. We investigated the impact of various heuristics on performance, and based on this data, we recommend good values for design parameters. A performance improvement of up to 67% over oblivious simulation is observed for our benchmarks.

url: http://hdl.handle.net/1813/7180
date: 2007-04-23
creator: Henzinger, Monika;Fredman, Michael
viewed: 36
title: Lower Bounds for Fully Dynamic Connectivity Problems in Graphs
abstract: We prove lower bounds on the complexity of maintaining fully dynamic k-edge or k-vertex connectivity in plane graphs and in $(k-1)$-vertex connected graphs. We show an amortized lower bound of $\Omega (\log n / {k (\log \log n} + \log b))$ per edge insertion, deletion, or query operation in the cell probe model, where b is the word size of the machine and n is the number of vertices in G. We also show an amortized lower bound of $\Omega(\log n /(\log \log n + \log b))$ per operation for fully dynamic planarity testing in embedded graphs. These are the first lower bounds for fully dynamic connectivity problems.

url: http://hdl.handle.net/1813/7181
date: 2007-04-23
creator: Hoppe, Bruce
viewed: 16
title: Efficient Dynamic Network Flow Algorithms
abstract: Dynamic network flows model transportation. A dynamic network consists of a graph with capacities and transit times on its edges. Flow moves through a dynamic network over time. Edge capacities restrict the rate of flow and edge transit times determine how long each unit of flow spends traversing the network. Dynamic network flows have been studied extensively for decades.

This thesis introduces the first polynomial algorithms to solve several important dynamic network flow problems. We solve them by computing chain-decomposable flows, a new class of structured dynamic flows.

We solve the quickest transshipment problem. An instance of this problem consists of a dynamic network with several sources and sinks. Each source has a specified supply and each sink a specified demand of flow. The goal is to move the appropriate amount of flow out of each source and into each sink within the least overall time. Previously, this problem could only be solved efficiently in the special case of a single source and single sink.

Our quickest transshipment algorithm depends on efficient solutions to the dynamic transshipment problem and the lexicographically maximum dynamic flow problem. The former is a version of the quickest transshipment problem in which the time bound is specified. The latter is a maximum flow problem in a dynamic network with prioritized sources and sinks; the goal is to maximize the amount of flow leaving

each high-priority subset of sources and sinks.
We also consider the universally maximum dynamic flow problem. A universally maximum dynamic flow sends flow between a source and sink so that the sink receives flow as quickly as possible; subject to that, the source releases flow as late as possible. We describe the first polynomial algorithm to approximate a universally maximum dynamic flow within a factor of $(1+\eps)$, for any $\eps>0$. We also describe the first polynomial algorithm to compute the value of a universally maximum dynamic flow at a single specified moment of time.

url: http://hdl.handle.net/1813/7182
date: 2007-04-23
creator: Li, Yuying;Coleman, Thomas F.;Branch, Mary Ann
viewed: 19
title: A Subspace, Interior, and Conjugate Gradient Method for Large-ScaleBound-Constrained Minimization Problems
abstract: A subspace adaptation of the Coleman-Li trust region and interior method is proposed for solving large-scale bound-constrained minimization problems. This method can be implemented with either sparse Cholesky factorization or conjugate gradient computation. Under reasonable conditions the convergence properties of this subspace trust region method are as strong as those of its full-space version.
Computational performance on various large-scale test problems are reported; advantages of our approach are demonstrated. Our experience indicates our proposed method represents an efficient way to solve large-scale bound-constrained minimization problems.

url: http://hdl.handle.net/1813/7183
date: 2007-04-23
creator: Piatko, Christine Diane
viewed: 24
title: Geometric Bicriteria Optimal Path Problems
abstract: A bicriteria optimal path simultaneously satisfies two bounds on two measures of path quality. The complexity of finding such a path depends on the particular choices of path quality. This thesis studies bicriteria path problems in a geometric setting using several pairs of path quality, including: path length measured according to different norms (L_{p} and L_{q}); Euclidean length within two or more classes of regions; total turn and Euclidean length; total turn and number of links; and Euclidean length and number of links.
For several cases, finding the bicriteria optimal path is shown to be NP-hard. These NP-hard cases include minimizing path length in two different norms, minimizing travel through two regions, and minimizing length and total turn. In the last case, an $O(En^{2}N^{2})$ pseudo-polynomial time algorithm to find an approximate answer is presented. In contrast, when the two measures of path quality are total turn and number of links, an $O(E^{3}n \log^{2} n)$ exact algorithm is given.
A main result of this thesis examines minimizing the Euclidean length and number of links of a path. When the geometric setting of this problem is a polygon without holes, this thesis presents an $O(n^{3}k^{3} \log(N k/ \epsilon^{1/k}))$ algorithm to find a k-link path with Euclidean length at most $1+\epsilon$ times the length of the shortest k-link path. A faster algorithm for a relaxed case, when the output path is allowed to have $2k$ links, is presented for a polygon with or without holes.
Finally, some approximation algorithms are outlined for finding a minimum link path among polyhedral obstacles.

url: http://hdl.handle.net/1813/7184
date: 2007-04-23

creator: van Renesse, Robbert;Friedman, Roy
viewed: 98
title: Packing Messages as a Tool for Boosting the Performance of TotalOrdering Protocols
abstract: This paper compares the throughput and latency of four protocols that provide total ordering. Two of these protocols are measured with and without message packing. We used a technique that buffers application messages for a short period of time before sending them, so more messages are packed together. The main conclusion of this comparison is that message packing influences the performance of total ordering protocols under high load overwhelmingly more than any other optimization that was checked in this paper, both in terms of throughput and latency. This improved performance is attributed to the fact that packing messages reduces the header overhead for messages, the contention on the network, and the load on the receiving CPUs.

url: http://hdl.handle.net/1813/7185
date: 2007-04-23
creator: Srinivasan, Padmini
viewed: 30
title: Exploring Query Expansion Strategies for MEDLINE
abstract: This paper evaluates the retrieval effectiveness of query expansion strategies on a MEDLINE test collection using Cornell University's Smart retrieval system. Two expansion strategies are tested on their ability to identify appropriate MeSH terms for user queries: expansion using an inter--field statistical thesaurus and expansion via pure retrieval feedback. These expansion strategies do not require prior relevance decisions. The study compares retrieval effectiveness using the original unexpanded and the alternative expanded user queries on a collection of 75 queries and 2,334 MEDLINE citations. Retrieval effectiveness is assessed using eleven point average precision scores (11-AvgP). Expansion by retrieval feedback gives the best improvement of 16.4\% over a baseline performance of 0.5169 11-AvgP. Query expansion using the inter--field thesaurus gives a significant but lower performance improvement (9.9\%) over the same baseline. This study recommends query expansion using retrieval feedback for adding MeSH search terms to a user's initial query.

url: http://hdl.handle.net/1813/7186
date: 2007-04-23
creator: Buckley, Chris;Mitra, Mandar;Salton, Gerard;Singhal, Amit
viewed: 25
title: Document Length Normalization
abstract: In the TREC collection -- a large full-text experimental text collection with widely varying document lengths -- we observe that the likelihood of a document being judged relevant by a user increases with the document length. We show that a retrieval strategy, such as the vector-space cosine match, that retrieves documents of different lengths with roughly equal probability, will not optimally retrieve useful documents from such a collection. We present a modified technique that attempts to match the likelihood of retrieving a document of a certain length to the likelihood of documents of that length being judged relevant, and show that this technique yields significant improvements in retrieval effectiveness.

url: http://hdl.handle.net/1813/7187
date: 2007-04-23
creator: Mai, Kevin;Miller, Justin;Zabih, Ramin
viewed: 41
title: Feature-Based Algorithms for Detecting and Classifying Scene Breaks
abstract: We describe a new approach to the detection and classification of scene breaks in video sequences. Our method can detect and classify a variety of scene breaks, including cuts, fades, dissolves and wipes,

even in sequences involving significant motion. We detect the appearance of intensity edges that are distant from edges in the previous frame. A global motion computation is used to handle camera or object motion. The algorithms we propose withstand compression artifacts such as those introduced by JPEG and MPEG, even at very high compression rates. Experimental evidence demonstrates that our method can detect and classify scene breaks that are difficult to detect with previous approaches. An initial implementation runs at approximately 2 frames per second on a Sun workstation.

url: http://hdl.handle.net/1813/7188
date: 2007-04-23
creator: Kalantar, Michael
viewed: 33
title: Issues in Ordered Multicast Performance: A Simulation Study
abstract: Process groups are an increasingly popular tool for programming distributed systems. Such groups consist of collections of processes that work together to provide reliability, fault tolerance, task distribution, or some other abstraction. A combination of group actions, reliable failure detection, and ordered message delivery are used to provide group functionality. {\em Causal ordering}, one form of message ordering, is fundamental in process group systems. Its cost is therefore an important determinant of overall performance. In order to gain more insight into the behavior of causal order protocols, two simulations of process group systems were developed. The first, a detailed simulation of all system processes, groups, and interconnection networks, was used to study small systems. Using this model, a number of parameters were identified as having the greatest impact on ordered multicast performance. These parameters were used as indices to a set of precomputed probability distribution tables used by the second simulation. The second simulation focused only on key processes --- packet originators and processes in multiple overlapping groups --- and used precomputed probability tables to reduce simulation overhead. Simulations using this model showed that the delays imposed by the ordering protocols result in a tendency for packets to become "convoyed" together. Consequences are larger delays and greater system and network burstiness. We speculate that this tendency for systems to become more bursty, or less uniform, is a general principle. That is, any system which delays actions on a "microscopic" level results in burstiness at a "macroscopic" level. The more times such delays occur, the greater the degree of burstiness. Such a principle would imply that systems with this characteristic are limited in scale by the size of the largest burst that can be handled. It also suggests that protocols that minimize the number and length of delays and which optimize the handling of bursts should be used. In the context of process group systems, burstiness can be limited by minimizing the number of groups through which a packet is filtered and by protocol designs which minimize the number of delays used to control out-of-order message arrival.

url: http://hdl.handle.net/1813/7189
date: 2007-04-23
creator: Wong-Toi, Howard;Ho, Pei-Hsin;Henzinger, Thomas A.,
viewed: 23
title: A User Guide to HyTech
abstract: HyTech is a tool for the automated analysis of embedded systems. This document, designed for the first-time user of HyTech, guides the reader through the underlying system model, and through the input language for describing and analyzing systems. The guide gives several examples of usage, some hints for gaining maximal computational efficiency from the tool, and the complete grammar for the input language. The version of HyTech described in this guide was released in August 1995, and is available through anonymous ftp from ftp.cs.cornell.edu in the directory ~pub/tah/HyTech, and through the World-Wide Web via HyTech's home page http://www.cs.cornell.edu/Info/People/tah/hytech.html

url: http://hdl.handle.net/1813/7190
date: 2007-04-23
creator: Owicki, Susan S.
viewed: 24
title: A Consistent and Complete Deductive System for the Verification of Parallel Programs
abstract: The semantics of a simple parallel programming language is presented in two ways: deductively, by a set of Hoare-like axioms and inference rules, and operationally, by means of an interpreter. It is shown that the deductive system is consistent with the interpreter. It would be desirable to show that the deductive system is also complete with respect to the interpreter, but this is impossible since the programming language contains the natural numbers. Instead it is proven that the deductive system is complete relative to a complete proof system for the natural numbers; this result is similar to Cook's relative completeness for sequential programs. The deductive semantics given here is an extension of an incomplete deductive system proposed by Hoare. The key difference is an additional inference rule which provides for the introduction of auxiliary variables in a program to be verified.

url: http://hdl.handle.net/1813/7191
date: 2007-04-23
creator: Toueg, Sam;Minet, Pascale;Charron-Bost, Bernadette;Anceaume, Emmanuelle
viewed: 16
title: On the Formal Specification of Group Membership Services
abstract: The problem of group membership has been the focus of much theoretical and experimental work on fault-tolerant distributed systems. This has resulted in a voluminous literature and several formal specifications of this problem have been given. In this paper, we examine the two most referenced formal specifications of group membership and show that they are unsatisfactory: One has flaws in the formalism and allows undesirable executions, and the other can be satisfied by useless protocols.

url: http://hdl.handle.net/1813/7192
date: 2007-04-23
creator: Toueg, Sam;Chandra, Tushar
viewed: 33
title: Unreliable Failure Detectors for Reliable Distributed Systems
abstract: We introduce the concept of unreliable failure detectors and study how they can be used to solve Consensus in asynchronous systems with crash failures. We characterise unreliable failure detectors in terms of two properties --- completeness and accuracy. We show that Consensus can be solved even with unreliable failure detectors that make an infinite number of mistakes, and determine which ones can be used to solve Consensus despite any number of crashes, and which ones require a majority of correct processes. We prove that Consensus and Atomic Broadcast are reducible to each other in asynchronous systems with crash failures; thus the above results also apply to Atomic Broadcast. A companion paper shows that one of the failure detectors introduced here is the weakest failure detector for solving Consensus [CHT92].

url: http://hdl.handle.net/1813/7193
date: 2007-04-23
creator: Ho, Pei-Hsin
viewed: 25
title: Automatic Analysis of Hybrid Systems
abstract: Hybrid systems are real-time systems that react to both discrete and continuous activities (such as analog signals, time, temperature, and speed). Typical examples of hybrid systems are embedded systems, timing-based communication protocols, and digital circuits at the transistor level. Due to the rapid

development of microprocessor technology, hybrid systems directly control much of what we depend on in our daily lives. Consequently, the formal specification and verification of hybrid systems has become an active area of research. This dissertation presents the first general framework for the formal specification and verification of hybrid systems, as well as the first hybrid-system analysis tool--HyTech. The framework consists of a graphical finite-state-machine-like language for modeling hybrid systems, a temporal logic for modeling the requirements of the hybrid systems, and a computer procedure that verifies modeled hybrid systems against modeled requirements. The tool HyTech is the implementation of the framework using C++ and Mathematica. More specifically, our hybrid-system modeling language, Hybrid Automata, is an extension of timed automata with discrete and general continuous variables whose dynamics are governed by differential equations. Our requirement modeling language, ICTL, is a branching-time temporal logic, and is an extension of TCTL with stop-watch variables. Our verification procedure is a symbolic model-checking procedure that verifies linear hybrid automata against ICTL formulas. To make HyTech more efficient and effective, we designed and implemented model-checking strategies and abstract operators that can expedite the verification process. To enable HyTech to verify nonlinear hybrid automata, we also introduce two translations from nonlinear hybrid automata to linear hybrid automata that can be fed into HyTech for automatic analysis. We have applied HyTech to analyze more than 30 hybrid-system benchmarks. In this dissertation, we show the application of HyTech to three nontrivial hybrid systems taken from the literature.

url: http://hdl.handle.net/1813/7194
date: 2007-04-23
creator: van Renesse, Robbert;Friedman, Roy
viewed: 25
title: Strong and Weak Virtual Synchrony in Horus
abstract: A formal definition of {\em strong virtual synchrony}, capturing the semantics of virtual synchrony as implemented in Horus, is presented. This definition has the nice property that every message is delivered within the view in which it was sent. However, it is shown that in order to implement strong virtual synchrony, the application program has to block messages during view changes. An alternative definition, called {\em weak virtual synchrony}, which can be implemented without blocking messages, is then presented. This definition still guarantees that messages will be delivered within the view in which they were sent, only that it uses a slightly weaker notion of what the view in which a message was sent is. An implementation of weak virtual synchrony that does not block messages during view changes is developed, and it is shown how to use a system that provides weak virtual synchrony even when strong virtual synchrony is actually needed. To capture additional ordering requirements, the definition of {\em ordered virtual synchrony} is presented. Finally, it is discussed how to extend the definitions in order to cope with the fact that a process can become a member of more than one group.

url: http://hdl.handle.net/1813/7195
date: 2007-04-23
creator: Rosu, Marcel-Catalin
viewed: 16
title: Processor Controlled Off-Processor I/O
abstract: The performance of modern RISC processors on operating system code is well below application code performance. The kernel code implementing communication services across the network is not an exception. Modern networking technologies are characterized by a small packet size, which further increases the communication overhead. We took the approach of removing the kernel layer from the cross-machine communication path while still providing protection. The presence of a programmable communication processor on the network adapter made this experiment possible. The firmware running on the communication processor implements a Virtual Communication Machine (VCM); applications communicate with the VCM

through shared memory without having to switch to kernel mode. Data is transferred directly between application buffers and the network without any intermediate buffering in the user or kernel spaces. The VCM architecture makes this possible; in particular, the VCM can be programmed to access any location in the address space of an application. The main processor controls the communication but it is not directly involved with it; as a consequence, the overhead on the main processor is very low. The design not only provides very low latencies, but also minimizes the effect of communication on the main processor data caches. We implemented the datagram subset of the Berkeley sockets interface on top of the VCM interface and integrated it with a user-level thread package. Multicast capabilities were added to the interface. Performance measured at both the VCM and socket layers is presented.

url: http://hdl.handle.net/1813/7196
date: 2007-04-23
creator: Cooper, David A.
viewed: 17
title: THE DESIGN AND IMPLEMENTATION OF A PRIVATE MESSAGE SERVICE FOR MOBILE COMPUTERS
abstract: Even as wireless networks create the potential for access to information from mobile platforms, they pose a problem for privacy. In order to retrieve messages, users must periodically poll the network. The information that the user must give to the network could potentially be used to track that user. However, the movements of the user can also be used to hide the user's location if the protocols for sending and retrieving messages are carefully designed. In this thesis, we will present a protocol for a replicated memory service which allows users to read from memory without revealing which memory locations they are reading. Unlike previous protocols, this protocol is efficient in its use of computation and bandwidth. We will then show how this protocol can be used in conjunction with existing privacy preserving protocols to allow a user of a mobile computer to maintain privacy despite active attacks. Allowing users to retrieve messages anonymously introduces a new problem. In order to limit memory usage, it is necessary to remove old messages from the system. However, since users may become disconnected from the network for periods of time, it is important that the system hold onto messages until they have been retrieved by their intended recipients. The result is a conflict between the system's need for information and users' desire for privacy. We will present the design of a vacation service which we have developed which stores messages for users which are disconnected which does not require users to reveal any private information. Finally, we will describe the implementation of the private message service and discuss the performance estimates that we derived for the system based on experimental results. As we will show, the potential throughput of the private message service is reasonable.

url: http://hdl.handle.net/1813/7197
date: 2007-04-23
creator: Ely, David;Lagoze, Carl
viewed: 31
title: Implementation Issues in an Open Architectural Framework for Digital ObjectServices
abstract: We provide high level designs for implementing some key aspects of the Kahn/Wilensky Framework for Distributed Digital Object Services. We focus on five aspects of the architecture: 1) Negotiation on terms and conditions initiated by requests for stored digital objects. 2) Replication of handle server data and the notion of a primary handle server, 3) The mechanisms for replicating digital objects in multiple repositories and the assertions concerning such replication. 4) The meaning of mutable and immutable states for digital objects and the mechanisms for changing these states. 5) The basic services that the Repository Access Protocol (RAP) needs to support the infrastructure.

url: http://hdl.handle.net/1813/7198
date: 2007-04-23
creator: Varaiya, Pravin;Puri, Anuj;Kopke, Peter W.;Henzinger, Thomas A.
viewed: 36
title: What's Decidable About Hybrid Automata?
abstract: Hybrid automata model systems with both digital and analog components, such as embedded control programs. Many verification tasks for such programs can be expressed as reachability problems for hybrid automata. By improving on previous decidability and undecidability results, we identify the precise boundary between decidability and undecidability of the reachability problem for hybrid automata. On the positive side, we give an (optimal) PSPACE reachability algorithm for the case of initialized rectangular automata, where all analog variables follow trajectories within piecewise-linear envelopes and are reinitialized whenever the envelope changes. Our algorithm is based on the construction of a timed automaton that contains all reachability information about a given initialized rectangular automaton. The translation has practical significance for verification, because it guarantees the termination of symbolic procedures for the reachability analysis of initialized rectangular automata. The translation also preserves the ω-languages of initialized rectangular automata with bounded nondeterminism. On the negative side, we show that several slight generalizations of initialized rectangular automata lead to an undecidable reachability problem. In particular, we prove that the reachability problem is undecidable for timed automata augmented with a single stopwatch.

url: http://hdl.handle.net/1813/7199
date: 2007-04-23
creator: Kodukula, Induprakas;Avula, Veena
viewed: 24
title: SplitThreads - Split-C Threads
abstract: SplitThreads are enhancements to Split-C by user level non pre-emptive threads. The primary motivation for SplitThreads comes from the fact that the SPMD paradigm of Split-C is a limitation for some important problems. At the same time, Split-C is very efficient and is tunable for good performance. Other related approaches such as Nexus have a large amount of overhead in providing threads capability. This paper presents the addition of a lightweight user-level threads package to Split-C. The performance numbers obtained show significant improvement over existing comparable approaches such as Nexus. The underlying thread library core is QuickThreads. QuickThreads provides minimal support for thread management. Additional functionality is provided by SplitThreads on top of this core. Finally, SplitThreads provides higher level user objects such as I-structures and M-structures

url: http://hdl.handle.net/1813/7200
date: 2007-04-23
creator: Branch, Mary Ann
viewed: 19
title: INEXACT REFLECTIVE NEWTON METHODS FOR LARGE-SCALE OPTIMIZATION SUBJECT TOBOUND CONSTRAINTS
abstract: This thesis addresses the problem of minimizing a large-scale nonlinear function subject to simple bound constraints. The most popular methods to handle bound constrained problems, active-set methods, introduce a combinatorial aspect to the problem. For these methods, the number of steps to converge may be related to the number of constraints. For large problems, this behavior is particularly detrimental. Reflective Newton methods avoid this problem by staying strictly within the constrained region. As a result, these methods have strong theoretical properties. Moreover, they behave experimentally like an unconstrained method: the number of steps to a solution is not strongly correlated with problem size. In this thesis, we

discuss the reflective Newton approach and how it can be combined with inexact Newton techniques, within a subspace trust-region method, to efficiently solve large problems. Two algorithms are presented. The first uses a line search as its globalizing strategy. The second uses a strictly trust-region approach to globally converge to a local minimizer. Global convergence and rate of convergence results are established for both methods. We present computational evidence that using inexact Newton steps preserves the properties of the reflective Newton methods: the iteration counts are as low as when "exact" Newton steps are used. Also, both the inexact and exact methods are robust when the starting point is varied. Furthermore, the inexact reflective Newton methods have fast convergence when negative curvature is encountered, a trait not always shared by similar active-set type methods. The role of negative curvature is further explored by comparing the subspace trust-region approach to other common approximations to the full-space trust-region problem. On problems where only positive curvature is found, these trust-region methods differ little in the number of iterations to converge. However, for problems with negative curvature, the subspace method is more effective in capturing the negative curvature information, resulting in faster convergence. Finally a parallel implementation on the IBM SP2 is described and evaluated; the scalability and efficiency of this implementation are shown to be as good as the matrix-vector multiply routine it depends on.

url: http://hdl.handle.net/1813/7201
date: 2007-04-23
creator: MacDonald, Noel C.;Donald, Bruce R.;Bohringer, Karl F.
viewed: 31
title: Classification and Lower Bounds for MEMS Arrays and Vibratory Parts Feeders:What Programmable Vector Fields Can (and Cannot) Do --- Part I
abstract: Programmable vector fields can be used to control a variety of flexible planar parts feeders. These devices can exploit exotic actuation technologies such as arrayed, massively-parallel microfabricated motion pixels or transversely vibrating (macroscopic) plates. These new automation designs promise great flexibility, speed, and dexterity---we believe they may be employed to orient, singulate, sort, feed, and assemble parts. However, since they have only recently been invented, programming and controlling them for manipulation tasks is challenging. By chaining together sequences of vector fields, the equilibrium states of a part in the field may be cascaded to obtain a desired final state. The resulting strategies require no sensing and enjoy efficient planning algorithms. This paper begins by describing our experimental devices. In particular, we describe our progress in building the {\sc M-Chip} (\underline{m}anipulation \underline{chip}), a massively parallel array of programmable micro-motion pixels. As proof of concept, we demonstrate a prototype {\sc M-Chip} containing over 11,000 silicon actuators in one square inch. Both the {\sc M-Chip}, as well as macroscopic devices such as transversely vibrating plates, may be programmed with vector fields, and their behavior predicted and controlled using our {\em equilibrium analysis}. We demonstrate lower bounds (i.e., impossibility results) on what the devices {\em cannot} do, and results on a classification of control strategies yielding design criteria by which well-behaved manipulation strategies may be developed. We provide sufficient conditions for programmable fields to induce well-behaved equilibria on every part placed on our devices. We define {\em composition operators} to build complex strategies from simple ones, and show the resulting fields are also well-behaved. We discuss whether fields outside this class can be useful and free of pathology.

url: http://hdl.handle.net/1813/7202
date: 2007-04-23
creator: MacDonald, Noel C.;Donald, Bruce R.;Bohringer, Karl F.
viewed: 35
title: New and Improved Manipulation Algorithms for MEMS Arrays and Vibratory PartsFeeders: What Programmable Vector Fields Can (and Cannot) Do --- Part II

abstract: This paper explores how to use programmable vector fields to control flexible planar parts feeders. For a description of these devices and their actuation technology, see our companion paper, Part~I~\cite{BohringerDonaldMacDonald96b}\ifDRAFT{}\else{, also submitted to ICRA}\fi . When a part is placed on our devices, the programmed vector field induces a force and moment upon it. Over time, the part may come to rest in a dynamic equilibrium state. By chaining together sequences of vector fields, the equilibria may be cascaded to obtain a desired final state. By analyzing and constraining the equilibria of programmable vector fields, we can generate and execute plans to orient and sort parts. These plans require no sensing. This paper describes new manipulation algorithms using the tools developed in Part~I~\cite{BohringerDonaldMacDonald96b}. In particular, we improve existing planning algorithms by a quadratic factor, and the plan-length by a linear factor. Using our new and improved strategies, we show how to simultaneously orient and pose any part, without sensing, from an arbitrary initial configuration. We relax earlier dynamic and mechanical assumptions to obtain more robust and flexible strategies. Finally, we consider parts feeders that can only implement a very limited "vocabulary" of vector fields (as opposed to the pixel-wise programmability assumed above). We show how to plan and execute parts-posing and orienting strategies for these devices, but with a significant increase in planning complexity and some sacrifice in completeness guarantees. We discuss the tradeoff between mechanical complexity and planning complexity.

url: http://hdl.handle.net/1813/7203
date: 2007-04-23
creator: MacDonald, Noel C.;Bohringer, Karl F.;Prasad, Rama
viewed: 34
title: DESIGN, FABRICATION, AND CHARACTERIZATION OF SINGLE CRYSTAL SILICON LATCHINGSNAP FASTENERS FOR MICRO ASSEMBLY
abstract: A snap fastener is a deformable device consisting of a pair of mating surfaces that "snap" together during assembly. Because of the simple, linear assembly motion, such latching micro fasteners have a wide range of applications in micro assembly tasks, e.g.\ for devices with multiple or layered components, or micro opto-mechanical plugs. At the micro scale, conventional types of fasteners like screws and hinges are unlikely to work due to present fabrication constraints and large friction forces. Micro snap fasteners also have great potential to be used as sensors with memory.

url: http://hdl.handle.net/1813/7204
date: 2007-04-23
creator: Goldberg, Ken Y.;Bhatt, Vivek;Bohringer, Karl F.
viewed: 18
title: Sensorless Manipulation Using Transverse Vibrations of a Plate
abstract: The existing industrial parts feeders move the parts through a sequence of mechanical filters that reject parts in unwanted orientations. In this paper we develop a new setup that uses a different vibratory mechanism to systematically manipulate parts, by actively orienting and localizing them. The idea is to generate and change dynamic modes for a plate by varying the applied frequency of oscillation. Depending on the node shapes of the plate for these frequencies, the position and orientation of the parts can be controlled. We develop an analysis of the underlying dynamics, and show that it can be used to predict the behavior of objects placed on the vibrating plate. Using this analysis, we propose that the applied frequencies can be automatically sequenced to obtain a "sensorless" strategy for manipulating a given object.

url: http://hdl.handle.net/1813/7205
date: 2007-04-23
creator: Charron-Bost, Bernadette;Toueg, Sam;Hadzilacos, Vassos;Chandra, Tushar Deepak
viewed: 34

title: On the Impossibility of Group Membership
abstract: We prove that the primary-partition group membership problem cannot be solved in asynchronous systems with crash failures, even if one allows the removal or killing of non-faulty processes that are erroneously suspected to have crashed.

url: http://hdl.handle.net/1813/7206
date: 2007-04-23
creator: Singhal, Amit;Salton, Gerard
viewed: 28
title: Selective Text Traversal
abstract: In information retrieval and text processing, the size of the available databases and text collections has grown enormously in the past few years, and users find it difficult to cope with the amount of text that is potentially of interest. As a result, there is growing interest in approaches capable of breaking down large texts into smaller constituent units, and in using short text passages for storage and retrieval purposes. Methods are described in this study for identifying important text passages in large texts, and suggestions are made for implementing useful text reading and text traversal strategies that provide selective text access in accordance with user needs. Some evaluation results for selective text access are appended.

url: http://hdl.handle.net/1813/7207
date: 2007-04-23
creator: Sabel, Laura
viewed: 34
title: Approximating Perfect Failure Detectors in Asynchronous Distributed Systems
abstract: Systems that provide group membership services (e.g., Isis) can be used
to solve many canonical problems in distributed systems, such as Consensus and Leader Election. However, solving these problems has been shown to require {\em failure detectors} of various strengths, all of which are impossible to implement in an asynchronous system. It has been shown that it is possible to solve Consensus in an asynchronous distributed system using a very weak failure detector. However, existing group membership systems do not appear to implement this type of failure detector. Furthermore, there are other problems that can be solved with group membership services, such as Leader Election, that are harder than Consensus and cannot be solved without a perfect failure detector. This leads to an apparent contradiction: how can provably impossible problems be solved in existing group membership systems? In this dissertation, we investigate {\em approximations} to perfect failure detectors in order to obtain acceptable and practical solutions to otherwise-impossible problems such as Election. We argue that approximating a perfect failure detector yields approximate solutions to these problems, and define a notion of approximation that yields solutions that are useful in practice. We give a formal specification of an approximately-perfect failure detector, give two protocols that implement our approximation, and derive upper bounds on the number of tolerable failures for any such protocol. The approximately-perfect failure detector presented in this dissertation is similar to that used in Isis; this implies that the failure detector implemented in group membership services such as Isis are actually approximately-perfect failure detectors, and that the resulting solutions to Consensus, Election, and other problems are approximate solutions. Furthermore, the protocols that implement our specification are very simple and can be easily implemented. Such an implementation could be used in existing or future group membership services, or by other systems programmers for whom group membership services are not necessary but for whom failure detection would be useful.

url: http://hdl.handle.net/1813/7208
date: 2007-04-23
creator: Liu, Yanhong Annie

viewed: 15
title: Incremental Computation: A Semantics-Based Systematic Transformational Approach
abstract: Incremental computation takes advantage of repeated computations on inputs that differ slightly from one another, computing each new output incrementally by making use of the previous output rather than from scratch. This thesis concerns the theory, design, and implementation of a general approach to incremental computation. It also elucidates the essence of improving the efficiency of computations by relating it to incremental computation. Our general approach allows incremental computation to be obtained systematically from non-incremental computation and program efficiency to be systematically improved. This research focuses on identifying the fundamentals of efficient incremental computation out of domain-specific properties and language-specific features, devising a general framework that accommodates these fundamentals, and developing a systematic approach based on the framework that exploits program semantics. Three fundamental aspects of incremental computation are identified: avoiding repeated identical computations, caching useful intermediate results, and discovering appropriate auxiliary information. Given a program f and an operation $\oplus$, an incremental program is developed to compute $f(x\ oplus y)$ efficiently by using $f(x)$, the intermediate results computed in computing $f(x)$, and auxiliary information about x that can be inexpensively maintained. The approach in this thesis is formalized for a simple functional language, but the underlying principles also apply to other programming languages. It exploits program semantics to discover incrementality that is not directly embedded in primitive operators and takes into consideration properties of application domains as well. It is composed of step-wise program analysis and transformation modules that can, for the most part, be mechanized. Since every non-trivial computation proceeds by iteration (or recursion), the approach is used straightforwardly for achieving efficient computation in general, by computing each iteration incrementally using an appropriate incremental program. This method is applied to problems in interactive systems, optimizing compilers, transformational program development, {\it etc}. The design and implementation of a prototype system, CACHET, for obtaining incremental programs is also described.

url: http://hdl.handle.net/1813/7209
date: 2007-04-23
creator: Li, Yuying
viewed: 24
title: A Newton Acceleration of the Weiszfeld Algorithm for Minimizing the Sum ofEuclidean Distances
abstract: The Weiszfeld algorithm for continuous location problems can be considered as an iteratively reweighted least squares method. It exhibits linear convergence. In this paper, a Newton type algorithm with similar simplicity is proposed to solve a continuous multifacility location problem with Euclidean distance measure. Similar to the Weiszfeld algorithm, at each iteration the main computation can be solving a weighted least squares problem. A Cholesky factorization of a symmetric positive definite band matrix, typically with a relatively small band width (e.g., a band width of two for a Euclidean location problem on a plane) is required. This new algorithm can be regarded as a Newton acceleration to the Weiszfeld algorithm with fast global and local convergence. The simplicity and efficiency of the proposed algorithm makes it particularly suitable for large-scale Euclidean location problems and parallel implementation. Computational experience also suggests that the proposed algorithm performs remarkably well in the presence of degeneracy and near degeneracy. In addition, it is proven to be globally convergent. Although the local convergence analysis is still under investigation, computation results suggest that it is typically superlinearly convergent.

url: http://hdl.handle.net/1813/7210
date: 2007-04-23
creator: Van Loan, Charles F.
viewed: 20

title: Building "Computational Intuition" in Freshman Scientists and Engineers
abstract: Undergraduate programs in science and engineering should foster the development of intuition in computational science courses taken during the freshman year, says the author in the first of a two-part series. The second part, to be published in the October issue of SIAM News, will examine the important role of examples in building intuition and communicating the excitement of computational science.

url: http://hdl.handle.net/1813/7211
date: 2007-04-23
creator: Dolev, Danny;Birman, Ken;Malki, Dalia;Keidar, Idit;Friedman, Roy
viewed: 41
title: Deciding in Partitionable Networks
abstract: Motivated by Chandra and Toueg's work, we study decision protocols in a model that closely approximates "real" distributed systems. Our results show how the weakest failure detector and associated consensus algorithm can be adapted to a network in which omission failures can occur during periods when processes suspect one-another as faulty. For protocols in which a majority subset of the participants can reach decisions on behalf of the system as a whole, we also characterize a series of stages that necessarily arise during execution. Jointly, these findings establish a direct relationship between an extended version of the three-phase commit protocol, which makes progress even when a traditional three-phase commit would block, and the consensus protocol of Chandra and Toueg. Although we do not explore the linkage here, our results should also be applicable to other agreement protocols for systems of this sort, such as leader election and dynamic group membership.

url: http://hdl.handle.net/1813/7212
date: 2007-04-23
creator: Mitra, Mandar;Buckley, Chris;Singhal, Amit;Salton, Gerard
viewed: 30
title: Automatic Text Decomposition Using Text Segments and Text Themes
abstract: With the widespread use of full-text information retrieval, passage-retrieval techniques are becoming increasingly popular. Larger texts can then be replaced by important text excerpts, thereby simplifying the retrieval task and improving retrieval effectiveness. Passage-level evidence about the use of words in local contexts is also useful for resolving language ambiguities and improving retrieval output. Two main text decomposition strategies are introduced in this study, including a chronological decomposition into {\em text segments}, and semantic decomposition into {\em text themes}. The interaction between text segments and text themes is then used to characterize text structure, and to formulate specifications for information retrieval, text traversal, and text summarization.

url: http://hdl.handle.net/1813/7213
date: 2007-04-23
creator: Trefethen, Lloyd N.
viewed: 25
title: Pseudospectra of linear operators
abstract: The advent of ever more powerful computers has brought with it a new way of conceiving some of the fundamental eigenvalue problems of applied mathematics. If a matrix or linear operator A is far from normal, its eigenvalues or more generally its spectrum may have little to do with its behavior as measured by quantities such as $\|A^n\|$ or $\EtA$.\ \ More may be learned by examining the sets in the complex plane known as the {\it pseudospectra} of A, defined by level curves of the norm of the resolvent, $\Resz$. Five years ago, the author published a paper that presented computed pseudospectra of thirteen highly non-normal matrices arising in various applications. Since that time, analogous computations have been carried out for

differential and integral operators. This paper, a companion to the earlier one, presents ten examples, each chosen to illustrate one or more mathematical or physical principles.

url: http://hdl.handle.net/1813/7214
date: 2007-04-23
creator: Verma, Arun;Coleman, Thomas F.
viewed: 18
title: The efficient computation of sparse Jacobian matrices using automaticdifferentiation
abstract: This paper is concerned with the efficient computation of sparse Jacobian matrices of nonlinear vector maps using automatic differentiation (AD). Specifically, we propose the use of a graph coloring technique, bi-coloring, to exploit the sparsity of the Jacobian matrix J and thereby allow for the efficient determination of J using AD software. We analyze both a direct scheme and a substitution process. We discuss the results of numerical experiments indicating significant practical potential of this approach.

url: http://hdl.handle.net/1813/7215
date: 2007-04-23
creator: Yeager, Nancy;Overly, Ed;McGrath, Robert;Lagoze, Carl
viewed: 32
title: A Design for Inter-Operable Secure Object Stores (ISOS)
abstract: We describe a distributed object-based design for repositories in a digital library infrastructure. This design for Inter-operable Secure Object Stores, ISOS, defines the interfaces to secure repositories that inter-operate with each other, clients, and other services in the infrastructure. We define the interfaces to ISOS as class definitions in a distributed object system. We also define an extension to CORBA security that is used by repositories to secure access to themselves and their contained objects.

url: http://hdl.handle.net/1813/7216
date: 2007-04-23
creator: Kozen, Dexter
viewed: 20
title: On Regularity-Preserving Functions
abstract: We give a characterization of regularity-preserving functions.

url: http://hdl.handle.net/1813/7217
date: 2007-04-23
creator: Salton, Gerard;Mitra, Mandar;Buckley, Chris;Singhal, Amit
viewed: 35
title: Pivoted Document Length Normalization
abstract: Document length normalization is an important aspect of term weight assignment in an automatic information retrieval system. In this study, we observe that a normalization scheme that retrieves documents of all lengths with similar chances as their likelihood of relevance will outperform another scheme which retrieves documents with chances very different from their likelihood of relevance. We show that the retrieval probabilities for a particular normalization method deviate systematically from the relevance probabilities across different collections. We present pivoted normalization a technique that can be used to reduce the gap between the relevance and the retrieval probabilities. Training pivoted normalization on one collection, we can successfully use it on other (new) text collections, yielding a robust, collection independent normalization technique. We use the idea of pivoting with the well known cosine normalization scheme. We point out some shortcomings of the cosine normalization function and present two new normalization functions --- pivoted unique normalization and pivoted byte size normalization.

url: http://hdl.handle.net/1813/7218
date: 2007-04-23
creator: Telle, Jan;Henzinger, Monika
viewed: 33
title: Faster Algorithms for the Nonemptiness of Streett Automata and forCommunication Protocol Pruning
abstract: This paper shows how a general technique, called {\it lock-step search}, developed for dynamic graph algorithms, can be used to improve the running time of two problems arising in program verification and communication protocol design. (1) We consider the {\it nonemptiness problem for Streett automata}: We are given a directed graph $G=(V,E)$ with $n=|V|$ and $m=|E|$, and a collection of pairs of subsets of vertices, called {\em Streett pairs}, $\langle L_i, U_i \rangle, i= 1..k$. The question is whether G has a cycle (not necessarily simple) which, for each $1 \leq i \leq k$, either contains no vertex from L_i or contains a vertex of U_i. Let $b= \sum_{i=1..k} |L_i|+|U_i|$. The previously best algorithm takes time $O((m+ b)\ min\{n,k\})$. We present an algorithm that takes time $O(m \min \{ \sqrt{m \log n}, k, n\} + b \min \{\log n, k\})$. (2) In {\it communication protocol pruning} we are given a directed graph $G=(V,E)$ with l special vertices. The problem is to efficiently maintain the strongly-connected components of the special vertices on a restricted set of edge deletions. Let m_i be the number of edges in the strongly connected component of the ith special vertex. The previously best algorithm repeatedly recomputes the strongly-connected components which leads to a running time of $O(\sum_i m_i^2)$. We present an algorithm with time $O(\ sqrt{l}\sum_i m_i^{1.5})$.

url: http://hdl.handle.net/1813/7219
date: 2007-04-23
creator: Thorup, Mikkel;Henzinger, Monika
viewed: 16
title: Improved Sampling with Applications to Dynamic Graph Algorithms
abstract: We state a new sampling lemma and use it to improve the running time of dynamic graph algorithms. For the dynamic connectivity problem the previously best randomized algorithm takes expected time $O(\ log^3n)$ per update, amortized over $\Omega(m)$ updates. Using the new sampling lemma, we improve its running time to $O(\log^2n)$. There exists a lower bound in the cell probe model for the time per operation of $\Omega(\log n/\log \log n)$ for this problem. Similarly improved running times are achieved for the following dynamic problems: (1) $O(\log^3 n)$ to maintain the bridges in a graph (the 2-edge connectivity problem); (2) $O(k \log^2n)$ to maintain a minimum spanning tree in a graph with k different weights (the k-weight minimum spanning tree problem); (3) $O(\log^2n \log U/\epsilon')$ to maintain a spanning tree whose weight is a $(1+\epsilon')$-approximation of the weight of the minimum spanning tree, where U is the maximum weight in the graph (the $(1+\epsilon')$-approximate minimum spanning tree problem); and (4) $O(\log^2 n)$ to test if the graph is bipartite (the bipartiteness-testing problem).

url: http://hdl.handle.net/1813/7220
date: 2007-04-23
creator: Kozen, Dexter
viewed: 83
title: Kleene algebra with tests and commutativity conditions
abstract: We give an equational proof, using Kleene algebra with tests and commutativity conditions, of the following classical result: every while program can be simulated by a while program with at most one while loop. The proof illustrates the use of Kleene algebra with extra conditions in program equivalence proofs. We also show, using a construction of Cohen, that the universal Horn theory of *-continuous Kleene algebras

is not finitely axiomatizable.

url: http://hdl.handle.net/1813/7221
date: 2007-04-23
creator: Bloom, Bard;Weber, Sam
viewed: 20
title: Metatheory of the π-Calculus
abstract: Milner's {π}-calculus is a very influential process algebra in which communication channels are first-class objects. One of the basic concepts in the language is the transmission of one channel along another. This leads to immensely powerful programming techniques, which have been used for modelling things from cellular telephones to object-oriented languages. However, the {π}-calculus lacks many operations, such as broadcasting a value to many processes, interrupting processes, checkpointing, and even such basics as sequencing and \t{while}-loops in full generality. Adding all useful operations to the {π}-calculus would make it unusably large and complex. We thus propose a \e{rule format}, called \metapi. The {π}-calculus, and a vast range of other calculi treating channels as first-class data, can be expressed with {\metapi} rules. Any operations defined by {\metapi} rules have the same essential theory as the {π}-calculus. For example, all such operations respect the appropriate notion of strong bisimulation. Furthermore, the {π}-calculus, and all the operations in the previous paragraph, have {\metapi} equivalents. {\metapi} describes the heart of the {π}-calculus without prejudice towards the particular communication mechanisms of the calculus, and thus gives a general framework for working with {π}-like calculi. Further, it can be argued that the {\metapi} rule format is the most general of its kind, in the sense that any obvious extensions to the format would cause important language properties to be violated.

url: http://hdl.handle.net/1813/7222
date: 2007-04-23
creator: Toueg, Sam;Chandra, D. Chandra;Jayanti, Prasad
viewed: 34
title: Fault-tolerant Wait-free Shared Objects
abstract: Wait-free implementations of shared objects tolerate the failure of processes, but not the failure of base objects from which they are implemented. We consider the problem of implementing shared objects that tolerate the failure of both processes and base objects. We identify two classes of object failures: responsive and non-responsive. With responsive failures, a faulty object responds to every operation, but its responses may be incorrect. With non-responsive failures, a faulty object may also "hang" without responding. In each class, we define crash, omission, and arbitrary modes of failure. We show that all responsive failure modes can be tolerated. More precisely, for all responsive failure modes F, object types T, and t, we show how to implement a shared object of type T which is t-tolerant for F. Such an object remains correct and wait-free even if up to t base objects fail according to F. In contrast to responsive failures, we show that even the most benign non-responsive failure mode cannot be tolerated. We also show that randomization can be used to circumvent this impossibility result. Graceful degradation is a desirable property of fault-tolerant implementations: the implemented object never fails more severely than the base objects it is derived from, even if all the base objects fail. For several failure modes, we show whether this property can be achieved, and, if so, how.

url: http://hdl.handle.net/1813/7223
date: 2007-04-23
creator: Brown, Geoffrey;Bloom, Bard;Weber, Sam
viewed: 16
title: Compiling Joy Into Silicon: a Formally Verified Compiler forDelay-Insensitive Circuits

abstract: Manually designing delay-insensitive electronic circuits has proven to be difficult in practice. As an alternative, we designed and implemented a compiler that automatically produces such circuits. The source language for the compiler is a language called "Joy", which is a simple but complete parallel language with a syntax similar to that of many procedural languages. The compiler's output is a netlist suitable for input into standard place-and-route tools. In this paper, we present the highlights of the compilation algorithm, and the proof of correctness for it. This is among the first formally verified algorithms for compiling a general language into circuits.

url: http://hdl.handle.net/1813/7224
date: 2007-04-23
creator: Stetter, Hans J.
viewed: 14
title: Analysis of Zero Clusters in Multivariate Polynomial Systems
abstract: We consider a cluster of m zeros of a multivariate polynomial system which we interpret as a perturbation of a system with an m-fold zero. By algebraic techniques, we find a first order correct representation of the primary ideal of the cluster zeros from which we obtain approximations for the individual zeros in the cluster.

url: http://hdl.handle.net/1813/7225
date: 2007-04-23
creator: Olson, Clark F.
viewed: 18
title: Connectionist Networks for Feature Indexing and Object Recognition
abstract: Feature indexing techniques are promising for object recognition because of their ability to eliminate many feature set matches from consideration without much computation. This work exploits another property of such techniques. They have inherently parallel structure and connectionist network formulations are easy to develop. Once indexing has been performed, a voting scheme such as geometric hashing [Lamdan et al. 1990] can be used to generate object hypotheses in parallel. We give a framework for the connectionist implementation for such indexing and recognition techniques. With sufficient processing elements, recognition can be performed in a small number of time steps. The number of processing elements necessary to achieve peak performance and the fan-in/fan-out required for the processing elements is determined. These techniques have been simulated on a conventional architecture with good results.

url: http://hdl.handle.net/1813/7226
date: 2007-04-23
creator: Maffeis, Silvano
viewed: 22
title: PIRANHA - A Hunter of Crashed CORBA Objects
abstract: No matter how carefully a distributed application has been specified, implemented, and tested, its network objects will crash unexpectedly due to power outages, human lapses, hardware faults, and software bugs. The OMG CORBA standard is becoming popular for interoperability and extensibility. However, fault-tolerance and reliability have not adequately been addressed yet. This paper describes the design and implementation of Piranha --- a CORBA-based, graphical availability management and application monitoring tool. Piranha is unique in that it can be used to increase the availability of many CORBA applications, without complicating their development.

url: http://hdl.handle.net/1813/7227
date: 2007-04-23

creator: Maffeis, Silvano
viewed: 67
title: The Object Group Design Pattern
abstract: This paper describes ``Object Group'', an object behavioral pattern for group communication and fault-tolerance in distributed systems. The Object Group pattern allows the implementation of replicated objects, of load sharing, and of efficient multicast communication over protocols like IP-multicast and UDP-broadcast. Application areas of the pattern are fault-tolerant client/server systems, groupware, and parallel text retrieval engines. Events within an Object Group honor the Virtual Synchrony model. Owing to Virtual Synchrony, the size of an object group can be varied at run-time, while client applications are interacting with the object. A replicated state remains consistent in spite of objects entering and leaving the group dynamically and in spite of failures. The Object Group pattern has been implemented in the Electra and in the Orbix+Isis CORBA Object Request Broker.

url: http://hdl.handle.net/1813/7228
date: 2007-04-23
creator: van Renesse, Robbert;Hickey, Takako M.
viewed: 22
title: Performance of the Horus Asynchronous Group Communication System under HighLoad
abstract: Horus is an asynchronous group communications system designed to support a variety of distributed and parallel applications. This paper reports the performance of continuous $n \times n$ multicasts for a Horus protocol stack that provides fully reliable communication over Ethernet supporting IP multicast. This communication pattern not only is highly demanding from the communications point of view, but also is common for an important class of distributed applications. Specific findings reported in this paper are: providing reliability is expensive under high loss; the cost of providing full reliability is modest compared to that of providing simple reliability; the lack of receivers' resources contributes to high loss; the lack of synchronization among group members also contributes to high loss; and controlling the send rate based on receivers' resource availability is a promising method for maintaining high throughput under high load.

url: http://hdl.handle.net/1813/7229
date: 2007-04-23
creator: von Eicken, Thorsten;Czajkowski, Grzegorz;Chang, Chi-Chao
viewed: 43
title: Design and Performance of Active Messages on the IBM SP-2
abstract: This technical report describes the design, implementation, and evaluation of Active Messages on the IBM SP-2. The implementation benchmarked here uses the standard TB2 network adapter firmware but does not use any IBM software on the Power2 processor. We assume familiarity with the concepts underlying Active Messages. The main performance characteristics are a one-word message round-trip time of 51.0 μs and an asymptotic network bandwidth of 34.3 MB/s. After presenting selected implementation details, the paper focuses on detailed performance analysis, including a comparison with IBM's Message Passing Layer (MPL) and Split-C benchmarks.

url: http://hdl.handle.net/1813/7230
date: 2007-04-23
creator: Maffeis, Silvano
viewed: 33
title: A Fault-Tolerant CORBA Name Server
abstract: OMG CORBA applications require a distributed naming service in order to install and to retrieve object references. High availability of the naming service is important as most CORBA applications need to

access it at least once during their lifetime. Unfortunately, the OMG standards do not deal with availability issues, and the naming services of many of the commercially available CORBA object request brokers introduce single points of failure. In this paper we describe the design and implementation of a replicated, highly-available CORBA name server that adheres to the OMG Common Object Services Specification. Our naming service can be replicated at run-time, while many applications are installing and retrieving object references. We compare our approach with the approaches taken by the ILU, NEO, Orbix, and DOME object request brokers. The performance of our name server is measured for various replication degrees.

url: http://hdl.handle.net/1813/7231
date: 2007-04-23
creator: Szeliski, Richard;Scharstein, Daniel
viewed: 34
title: Stereo Matching with Non-Linear Diffusion
abstract: One of the central problems in stereo matching (and other image registration tasks) is the selection of optimal window sizes for comparing image regions. This paper addresses this problem with some novel algorithms based on iteratively diffusing support at different disparity hypotheses, and locally controlling the amount of diffusion based on the current quality of the disparity estimate. It also develops a novel Bayesian estimation technique which significantly outperforms techniques based on area-based matching (SSD) and regular diffusion. We provide experimental results on both synthetic and real stereo image pairs.

url: http://hdl.handle.net/1813/7232
date: 2007-04-23
creator: Kozen, Dexter;Cheng, Allan
viewed: 17
title: Some Notes on Rational Spaces
abstract: Set constraints are inclusions between expressions denoting set of ground terms over a finitely ranked alphabet Σ. Rational spaces are topological spaces obtained as spaces of runs of topological Σ-hypergraphs. They were introduced by Kozen in \cite{K95a}, where the topological structure of the spaces of solutions to systems of set constraints was given in terms of rational spaces. In this paper we continue the investigation of rational spaces. We give a Myhill-Nerode like characterization of rational points, which in turn is used to re-derive results about the rational points of finitary rational spaces. We define congruences on Σ-hypergraphs, investigate their interplay with the Myhill-Nerode characterization, and finally we determine the computational complexity of some decision problems related to rational spaces.

url: http://hdl.handle.net/1813/7233
date: 2007-04-23
creator: Alvisi, Lorenzo
viewed: 80
title: Understanding the Message Logging Paradigm for Masking Process Crashes
abstract: Message logging is a popular technique for building systems that can tolerate process crashes and transient channel failures. The technique, which was first developed in the mid-80s, is popular because message-logging protocols are relatively simple and require process replication only when a process fails. Surprisingly, however, very little attention has been given to the formal specification of the consistency property that these protocols implement in order to be able to recover failed processes to a consistent state. This dissertation presents the first such formal specification. From this specification, the two major classes of message-logging protocols, namely {\em optimistic} and {\em pessimistic}, are characterized. A third and new class of message-logging protocols, called {\em causal}, is introduced. A notion of optimality, based on three important performance metrics, is proposed, and it is shown that optimal implementations of causal

message-logging protocols exist. In particular, it is shown that causal message-logging protocols combine the positive aspects of optimistic and pessimistic message logging. A subclass of causal message-logging protocols, called {\em family-based logging}, is developed. Family-based logging protocols are optimal and have the additional attractive characteristic that the smaller the maximum number of concurrent failures, the lower their overhead. Furthermore, several compression techniques can be used to reduce this overhead. Finally, it is shown that family-based logging protocols can be implemented in order to take advantage of the different patterns of communication that systems exhibit.

url: http://hdl.handle.net/1813/7234
date: 2007-04-23
creator: Moten, Roderick
viewed: 68
title: Nuprl as a Generic Theorem Prover
abstract: Logical Frameworks are one way to provide generic theorem provers. This paper describes another method using loose semantics. In the paper, we explain loose semantics, describes its use in building a programming calculus in the style of Back's refinement calculus, and relates the idea to Logical Framework or General Logic. Viewing Nuprl as a generic theorem prover using loose semantics can be used to describe the inference engine of Nuprl 4. This is the first attempt to explain the system design of Nuprl and relate it to the code.

url: http://hdl.handle.net/1813/7235
date: 2007-04-23
creator: Birman, Ken;Friedman, Roy
viewed: 19
title: Trading Consistency for Availability in Distributed Systems
abstract: This paper shows that two important classes of actions, {\em non left commuting}\/ and {\em strongly non commuting}, cannot be executed by concurrent partitions in a system that provides serializable services. This result indicates that there is an inherent limitation to the ability of systems to provide services in a consistent manner during network partitions.

url: http://hdl.handle.net/1813/7237
date: 2007-04-23
creator: Vaysburd, Alexey;Friedman, Roy
viewed: 29
title: Implementing Replicated State Machines Over Partitionable Networks
abstract: This paper presents an implementation of a replicated state machine in asynchronous distributed environments prone to node failures and network partitions. This implementation has two appealing properties: It allows minority partitions to continue providing service for idempotent requests, and it guarantees that progress will be made whenever a majority of replicas can communicate with each other.

url: http://hdl.handle.net/1813/7238
date: 2007-04-23
creator: Smith, Frederick;Kozen, Dexter
viewed: 74
title: Kleene Algebra with Tests: Completeness and Decidability
abstract: Kleene algebras with tests provide a rigorous framework for equational specification and verification. They have been used successfully in basic safety analysis, source-to-source program transformation, and concurrency control. We prove the completeness of the equational theory of Kleene algebra with tests

and *-continuous Kleene algebra with tests over language-theoretic and relational models. We also show decidability. Cohen's reduction of Kleene algebra with hypotheses of the form $r=0$ to Kleene algebra without hypotheses is simplified and extended to handle Kleene algebras with tests.

url: http://hdl.handle.net/1813/7239
date: 2007-04-23
creator: Schneider, Fred B.;Gries, David
viewed: 32
title: Adding the Everywhere Operator to Propositional Logic
abstract: Sound and complete modal propositional logic C is presented, in which "P" has the interpretation "P is true in all states". The interpretation is already known as the Carnapian extension of S5. A new axiomatization for C provides two insights. First, introducing an inference rule "textual substitution" allows seamless integration of the propositional and modal parts of the logic, giving a more practical system for writing formal proofs. Second, the two following approaches to axiomatizing a logic are shown to be not equivalent: (i) give axiom schemes that denote an infinite number of axioms and (ii) write a finite number of axioms in terms of propositional variables and introduce a substitution inference rule.

url: http://hdl.handle.net/1813/7240
date: 2007-04-23
creator: Smith, Brian;Dawson, Scott;Lee, William;Moore, Jeffrey
viewed: 14
title: Optimal Parallel MPEG Encoding
abstract: The Tcl/Tk extension, Tcl/Rivl, provides a suite of commands to manipulate audio and video data. Compressing long sequences of MPEG video requires a significant amount of computation power. This paper outlines a parallel algorithm that achieves real-time MPEG compression without specialized hardware.

url: http://hdl.handle.net/1813/7241
date: 2007-04-23
creator: Birman, Ken;Ver\'{\i}ssimo, Paulo;Glade, Brad;van Renesse, Robbert;Sargento, Antonio;Guo, Katherine;Rodrigues, Lu\'{\i}s
viewed: 31
title: A Transparent Light-Weight Group Service
abstract: Virtual synchrony, also known as view synchrony, has proven to be a powerful paradigm to build distributed applications. Informally, virtual synchrony provides to each process group membership information in the form of {\em views} and guarantees that all processes that install a given view have delivered the same set of messages from the previous view. Implementations of virtual synchrony usually require the use of failure detectors and failure recovery protocols. There is a range of applications that require the use of a large number of groups with the same membership. In such applications, significant performance gains can be attained if these groups share the resources required to provide virtual synchrony. A service that maps user groups into instances of a virtually synchronous implementation is called a Light-Weight Group Service. This paper proposes a new design for the Light-Weight Group Service protocols that circumvents some of the limitations of previous approaches. As a test case, the new protocols were implemented in the Horus system, although the underlying principles can be applied to other architectures as well. The paper also presents performance results from this implementation.

url: http://hdl.handle.net/1813/7242
date: 2007-04-23
creator: Trefethen, Lloyd N.;Myers, Chris;Czajkowski, Grzegorz;Chang, Chi-Chao;Menon, Vijay S.;Trefethen,

Anne E.
viewed: 45
title: MultiMATLAB: MATLAB on Multiple Processors
abstract: MATLAB, a commercial product of The MathWorks, Inc., has become one of the principal languages of desktop scientific computing. A system is described that enables one to run MATLAB conveniently on multiple processors. Using short, MATLAB-style commands like Eval, Send, Recv, Bcast, Min, and Sum, the user operating within one MATLAB session can start MATLAB processes on other machines and then pass commands and data between between these various processes in a fashion that maintains MATLAB's traditional user-friendliness. Multi-processor graphics is also supported. The system currently runs under MPICH on an IBM SP2 or a network of Unix workstations, and extensions are planned to networks of PCs. MultiMATLAB is potentially useful for education in parallel programming, for prototyping parallel algorithms, and for fast and convenient execution of easily parallelizable numerical computations on multiple processors.

url: http://hdl.handle.net/1813/7243
date: 2007-04-23
creator: Kopke, Peter W.;Henzinger, Thomas A.
viewed: 16
title: State Equivalences for Rectangular Hybrid Automata
abstract: Three natural equivalence relations on the infinite state space of a hybrid automaton are language equivalence, simulation equivalence, and bisimulation equivalence. When one of these equivalence relations has a finite quotient, certain model checking and controller synthesis problems are decidable. When bounds on the number of equivalence classes are obtained, bounds on the running times of model checking and synthesis algorithms follow as corollaries. We characterize the time-abstract versions of these equivalence relations on the state spaces of rectangular hybrid automata (RHA), in which each continuous variable is a clock with bounded drift. These automata are useful for modeling communications protocols with drifting local clocks, and for the conservative approximation of more complex hybrid systems. Of our two main results, one has positive implications for automatic verification, and the other has negative implications. On the positive side, we find that the (finite) language equivalence quotient for RHA is coarser than was previously known by a multiplicative exponential factor. On the negative side, we show that simulation equivalence for RHA is equality (which obviously has an infinite quotient). Our main positive result is established by analyzing a subclass of timed automata, called one-sided timed automata (OSA), for which the language equivalence quotient is coarser than for the class all of timed automata. An exact characterization of language equivalence for OSA requires a distinction between synchronous and asynchronous definitions of (bi)simulation: if time actions are silent, then the induced quotient for OSA is coarser than if time actions are visible.

url: http://hdl.handle.net/1813/7244
date: 2007-04-23
creator: Cooper, David A.
viewed: 26
title: SCOM: A Security and Privacy Layer for Horus
abstract: A large number of distributed applications will soon be implemented for which the inclusion of some form of security will be important. While the programmers who design these applications may have expertise in the application area, they most likely will not be experts in the areas of distributed computing or security. In both of these areas, a firm knowledge of the subject is necessary in order to avoid subtle, hard to detect flaws in design. The Horus system was created to enable the design and implementation of distributed applications. The ultimate goal of this work is to allow for the implementation of efficient distributed applications while hiding many of the problems associated with the design of such applications from the

applications programmer. In this paper, we describe work we have done to facilitate the implementation of secure distributed applications on top of the Horus system.

url: http://hdl.handle.net/1813/7245
date: 2007-04-23
creator: Foster, Jeffrey
viewed: 13
title: CLP(SC): Implementation and Efficiency Considerations
abstract: CLP(SC) is a constraint logic programming language over set constraints proposed by Kozen [7]. In this paper, we describe a complete C++ implementation of CLP(SC). We describe the data structures used to represent systems of set constraints and an efficient algorithm, a modification of one given in [7], for unifying constraints. In addition, we investigate two further techniques for increasing efficiency: keeping track of variable equalities and doing PROLOG-style unification.

url: http://hdl.handle.net/1813/7246
date: 2007-04-23
creator: Schneider, Fred B.;Alvisi, Lorenzo
viewed: 22
title: A Graphical Interface for CHIP
abstract: CHIP (Cornell Hypothetical Instructional Processor) [BBDS83] is a computer system designed as an educational tool for teaching undergraduate courses in operating system and machine architecture. This document describes CHIP's graphical interface and covers in a tutorial how the interface is used to debug and execute CHIP programs.

url: http://hdl.handle.net/1813/7247
date: 2007-04-23
creator: Toueg, Sam;Aguilera, Marcos K.
viewed: 79
title: Randomization and Failure Detection: A Hybrid Approach to SolveConsensus
abstract: We present a Consensus algorithm that combines randomization and unreliable failure detection, two well-known techniques for solving Consensus in asynchronous systems with crash failures. This hybrid algorithm combines advantages from both approaches: it guarantees deterministic termination if the failure detector is accurate, and probabilistic termination otherwise. In executions with no failures or failure detector mistakes, the most likely ones in practice, Consensus is reached in only two asynchronous rounds.

url: http://hdl.handle.net/1813/7248
date: 2007-04-23
creator: Daniel, Ron, Jr.;Lynch, Clifford A.;Lagoze, Carl
viewed: 83
title: The Warwick Framework: A Container Architecture for Aggregating Sets ofMetadata
abstract: We describe a result of the June 1996 Warwick Metadata II Workshop. This Warwick Framework is a container architecture for aggregating logically, and perhaps physically, distinct packages of metadata. This architecture allows separate administration and access to metadata packages, provides for varying syntax in each package in conformance with semantic requirements, and it promotes interoperability and extensibility by allowing tools and agents to selectively access and manipulate individual packages and ignore others. At the conclusion of the paper we propose implementations of the Framework in HTML, MIME, SGML, and distributed objects.

url: http://hdl.handle.net/1813/7249
date: 2007-04-23
creator: Huttenlocher, Daniel P.;Olson, Clark F.
viewed: 71
title: An Object Recognition System for Complex Imagery that Models theProbability of a False Positive
abstract: This paper describes an object recognition system for use in complex imagery that can perform recognition adaptively by setting the matching threshold such that the probability of a false positive is low. In order to accurately model small, irregularly shaped objects, we represent the objects using dense sets of edge pixels with associated local orientations. Three-dimensional objects are modeled by a set of two-dimensional views of the object. We allow translation, rotation, and scaling of the views to approximate full three-dimensional motion of the object. We use a version of the Hausdorff measure to determine which positions of an object model are good matches to an image. These positions are determined efficiently through the examination of a hierarchical cell decomposition of the transformation space, which allows large volumes of the space to be pruned quickly. Additional techniques are used to decrease the computation time of the method when matching is performed against a catalog of object models. We then describe a new model of the matching process that allows the probability of a false positive to be estimated efficiently at run-time. Finally, we give results of this system recognizing object in infrared and intensity images.

url: http://hdl.handle.net/1813/7250
date: 2007-04-23
creator: Lagoze, Carl;Davis, James R.
viewed: 31
title: The Networked Computer Science Technical Report Library
abstract: The Networked Computer Science Technical Report Library (NCSTRL) is a distributed digital library of research results from computer science departments and laboratories in the USA and abroad. NCSTRL benefits readers, authors, and departments. Researchers throughout the world can use familiar Internet tools (the World Wide Web) to search for, browse, read, and download technical reports from participating institutions. Authors benefit by reaching a wider audience. Departments gain a clean, effective management system for distributing their technical reports and eliminate much of their current copying and mailing charges. This article describes the design of NCSTRL, its historical basis in earlier work, and the expected course of the development.

url: http://hdl.handle.net/1813/7251
date: 2007-04-23
creator: Trefethen, L. N.;Viswanath, D.
viewed: 29
title: Matrix Behaviour, Unitary Reducibility, and Hadamard Products
abstract: The question investigated here is: if two matrices A and B in $\CNN$ have identical behaviour in a unitarily invariant norm $\norm{\cdot}$, \ie,\ $\norm{p(A)} = \norm{p(B)}$ for every polynomial p with complex coefficients, what properties do A and B have in common? After a preliminary result about eigenvalues, it is shown with a mildly restrictive assumption that if A is unitarily reducible, so is B. A theorem is proved about Hadamard products of the form $H\circ\invt{H}$, where H is Hermitian positive definite. Finally, an example is produced where A and B have identical behaviour in the Frobenius norm, but are not related to each other in any simple way.

url: http://hdl.handle.net/1813/7252
date: 2007-04-23
creator: Bilardi, Gianfranco;Pingali, Keshav

viewed: 22
title: Optimal Control Dependence Computation and the Roman Chariots Problem
abstract: The control dependence relation plays a fundamental role in program restructuring and optimization. The usual representation of this relation is the control dependence graph (CDG), but the size of the CDG can grow quadratically with the input program, even for structured programs. In this paper, we introduce the augmented postdominator tree, APT, a data structure which can be constructed in space and time proportional to the size of the program, and which supports enumeration of a number of useful control-dependence sets in time proportional to their size. Therefore, APT provides an optimal representation of control dependence. Specifically, the APT data structure supports enumeration of the set cd(e), which is the set of statements control dependent on control-flow edge e, of the set conds(w), which is the set of edges on which statement w is dependent, and of the set cdeq(w), which is the set of statements having the same control dependences as w. Technically, APT can be viewed as a factored representation of the CDG where queries are processed using an approach known as filtered search.

url: http://hdl.handle.net/1813/7253
date: 2007-04-23
creator: Smith, Frederick;Kozen, Dexter;Cohen, Ernie
viewed: 14
title: The Complexity of Kleene Algebra with Tests
abstract: Kleene algebras with tests provide a natural framework for equational specification and verification. Kleene algebras with tests and related systems have been used successfully in basic safety analysis, source-to-source program transformation, and concurrency control. The equational theory of Kleene algebras with tests has been shown to be decidable in at most exponential time by an efficient reduction to Propositional Dynamic Logic. In this paper we prove that the theory is PSPACE-complete.

url: http://hdl.handle.net/1813/7254
date: 2007-04-23
creator: Schneider, Fred B.;van Renesse, Robbert;Johansen, Dag
viewed: 29
title: Supporting Broad Internet Access to TACOMA
abstract: Any provider of software is faced with a problem if that software must be installed on autonomous sites of a large network. This paper reports experiences in addressing this network-software installation-problem for TACOMA, an internet agent infrastructure. The paper describes a WWW-based scheme and an email-based scheme for avoiding software installation at all sites that might launch TACOMA agents.

url: http://hdl.handle.net/1813/7255
date: 2007-04-23
creator: Schneider, Fred B.;van Renesse, Robbert;Johansen, Dag;Minsky, Yaron
viewed: 25
title: Cryptographic Support for Fault-Tolerant Distributed Computing
abstract: In an open distributed system, agents comprising an application must not only survive (possibly malicious) failures of the hosts they visit, but they must also be resilient to the potentially hostile actions of other hosts. In particular, faulty hosts that are not visited by agents can confound a naive replica-management scheme by spoofing. Cryptographic protocols to solve this problem are summarized, as well as some experiments that show how replication can actually speed up some applications.

url: http://hdl.handle.net/1813/7256
date: 2007-04-23

creator: Kopke, Peter W.
viewed: 14
title: The Theory of Rectangular Hybrid Automata
abstract: A {\em hybrid automaton\/} consists of a finite automaton interacting with a dynamical system. Hybrid automata are used to model embedded controllers and other systems that consist of interacting discrete and continuous components. A hybrid automaton is {\em rectangular\/} if each of its continuous variables~x satisfies a nondeterministic differential equation of the form $a\le\frac{dx}{dt}\le b$, where a and~b are rational constants. Rectangular hybrid automata are particularly useful for the analysis of communication protocols in which local clocks have bounded drift, and for the conservative approximation of systems with more complex continuous behavior. We examine several verification problems on the class of rectangular hybrid automata, including reachability, temporal logic model checking, and controller synthesis. Both dense-time and discrete-time models are considered. We identify subclasses of rectangular hybrid automata for which these problems are decidable and give complexity analyses. An investigation of the structural properties of rectangular hybrid automata is undertaken. One method for proving the decidability of verification problems on infinite-state systems is to find finite quotient systems on which analysis can proceed. Three state-space equivalence relations with strong connections to temporal logic are bisimilarity, similarity, and language equivalence. We characterize the quotient spaces of rectangular hybrid automata with respect to these equivalence relations.

url: http://hdl.handle.net/1813/7257
date: 2007-04-23
creator: Gries, David
viewed: 67
title: A calculational proof of Andrews's challenge
abstract: This space is left deliberately non-blank

url: http://hdl.handle.net/1813/7258
date: 2007-04-23
creator: Gries, David
viewed: 17
title: Formal versus semiformal proof in teaching predicate logic
abstract: This space is left deliberately non-blank

url: http://hdl.handle.net/1813/7259
date: 2007-04-23
creator: Scharstein, Daniel
viewed: 58
title: View Synthesis Using Stereo Vision
abstract: This thesis investigates the use of stereo vision for the application of view synthesis. View synthesis --- the problem of creating images of a scene as it would appear from novel viewpoints --- has traditionally been approached using methods from computer graphics. These methods, however, suffer from low rendering speed, limited achievable realism, and, most severely, their dependence on a global scene model, which typically needs to be constructed manually. In this thesis, we present a new approach to view synthesis that avoids the above problems by synthesizing new views from existing images of a scene. Using an image-based representation of scene geometry computed by stereo vision methods, a global model can be avoided, and realistic new views can be synthesized quickly using image warping. The new application of stereo for view synthesis makes it necessary to re-evaluate the requirements on stereo algorithms. We compare view synthesis to several traditional applications of stereo, and conclude that stereo vision is better suited for view

synthesis than for applications requiring explicit 3D reconstruction. We also discuss ways of dealing with partially occluded regions of unknown depth and with completely occluded regions of unknown texture, and present experiments demonstrating that it is possible to efficiently synthesize realistic new views even from inaccurate and incomplete depth information. This thesis also contributes several novel stereo algorithms that are motivated by the specific requirements imposed by view synthesis. We introduce a new evidence measure based on intensity gradients for establishing correspondences between images. This measure combines the notions of similarity and confidence, and allows stable matching and easy assigning of canonical depth interpretations in image regions of insufficient information. We also present new diffusion-based stereo algorithms that are motivated by the need to correctly recover object boundaries. In particular, we develop a novel Bayesian estimation technique that significantly outperforms area-based algorithms using fixed-sized windows. We provide experimental results for all algorithms on both synthetic and real images.

url: http://hdl.handle.net/1813/7260
date: 2007-04-23
creator: Birman, Ken;Friedman, Roy
viewed: 35
title: Using Group Communication Technology to Implement a Reliable andScalable Distributed IN Coprocessor
abstract: In this paper we explore the use of group communication technology, developed in the Horus project to implement a reliable and scalable distributed IN coprocessor. The proposed implementation can handle up to 20,000 calls per second with 12 computing nodes, can tolerate a single node failure or recovery, and can recover from periods of overload. Our work suggests that group communication technology can bring substantial benefits, including scalability, fault-tolerance, and real-time responsiveness to the most demanding telecommunications applications.

url: http://hdl.handle.net/1813/7261
date: 2007-04-23
creator: Birman, Kenneth;Hayden, Mark
viewed: 15
title: Probabilistic Broadcast
abstract: We present a class of scalable and probabilisticly reliable communication protocols. The protocols are based on a probabilistic system model and thus their properties tend to be probabilistic in nature. The protocols are scalable in two senses. First, the message costs and latencies of the protocols grow slowly with the system size. Second, the reliability of the protocols, expressed in terms of the probability of a failed run of a protocol, approaches 0 exponentially fast as the number of processes is increased. This scalable reliability is achieved through a form of gossip protocol which is strongly self-stabilizing in a sense similar, although not identical to, the notion of self stabilizing systems proposed by Dijkstra.

url: http://hdl.handle.net/1813/7262
date: 2007-04-23
creator: Yan, Thomas
viewed: 35
title: The Geobucket Data Structure for Polynomials
abstract: The {\em geobucket\/} data structure is suitable as an intermediate representation of polynomials for performing large numbers of polynomial additions and lead term extractions. A sum involving {N} terms has worst-case running time {$O(N\log{N})$} both online and offline, matching or surpassing the obvious/standard alternatives. This makes the geobucket a good choice for performing the reduction step of \grobner\ basis computations.

url: http://hdl.handle.net/1813/7263
date: 2007-04-23
creator: Malkhi, Dahlia;Keidar, Idit;Friedman, Roy;Dolev, Danny
viewed: 84
title: Failure Detectors in Omission Failure Environments
abstract: We study failure detectors in an asynchronous environment that admits message omission failures. In such environments, processes may fail by crashing, but may also {\em disconnect\/} from each other. We adapt Chandra and Toueg's definitions of failure detection completeness and accuracy to the omissions failure model, and define a weak failure detector less than or greater than W(om) that allows any majority of the processes that become connected to reach a Consensus decision, despite any number of transient communication failures in their past. We provide a protocol that solves the Consensus problem in this model whenever a majority of the processes become connected, regardless of past omissions. Moreover, in our protocol it is not necessary to save and repeatedly send all past messages, which makes it more efficient than previous protocols in this model.

url: http://hdl.handle.net/1813/7264
date: 2007-04-23
creator: Toueg, Sam;Charron-Bost, Bernadette;Basu, Anindya
viewed: 19
title: Solving Problems in the Presence of Process Crashes and Lossy Links
abstract: We study the effect of link failures on the solvability of problems in asynchronous systems that are subject to process crashes: given a problem that can be solved in a system with process crashes and reliable links, is the problem solvable even if links are lossy? We answer this question for two types of lossy links, and show that the answer depends on the maximum number of processes that may crash and the nature of the problem to be solved. In particular, we prove that the answer is positive if fewer than half of the processes may crash or if the problem specification does not refer to the state of processes that crash. However, in general, the answer is negative even if each link can loose only a finite number of messages.

url: http://hdl.handle.net/1813/7265
date: 2007-04-23
creator: van Renesse, Robbert;Friedman, Roy;Baldoni, Roberto
viewed: 39
title: The Hierarchical Daisy Architecture for Causal Delivery
abstract: In this paper, we propose the {\em hierarchical daisy architecture}\/, which provides causal delivery of messages sent to any subset of processes. The architecture provides fault tolerance and maintains the amount of control information within a reasonable size. It divides processes into {\em logical}\/ groups. Messages inside a logical group are sent directly, while messages that need to cross logical groups' bounderies are forwarded by servers. We proof the correctness of the daisy architecture and discuss possible optimizations.

url: http://hdl.handle.net/1813/7266
date: 2007-04-23
creator: Birman, Kenneth;Verissimo, Paulo;Glade, Brad;van Renesse, Robbert;Sargento, Antonio;Guo, Katherine;Rodrigues, Luis
viewed: 39
title: A Dynamic Light-Weight Group Service
abstract: The virtual synchrony model for group communication has proven to be a powerful paradigm for building distributed applications. Implementations of virtual synchrony usually require the use of failure

detectors and failure recovery protocols. In applications that require the use of a large number of groups, significant performance gains can be attained if these groups share the resources required to provide virtual synchrony. A service that maps user groups onto instances of a virtually synchronous implementation is called a Light-Weight Group Service. This paper proposes a new design for the Light-Weight Group protocols that enables the usage of this service in a transparent and dynamic manner. As a test case, the new design was implemented in the Horus system, although the underlying principles can be applied to other architectures as well. The paper also presents performance results from this implementation.

url: http://hdl.handle.net/1813/7267
date: 2007-04-23
creator: Rodrigues, Lu\'{\i}s;Guo, Katherine
viewed: 27
title: Dynamic Light-Weight Groups
abstract: The virtual synchrony model for group communication has proven to be a powerful paradigm for building distributed applications. In applications that require the use of a large number of groups, significant performance gains can be attained if these groups share the resources required to provide virtual synchrony. A service that maps user groups onto instances of a virtually synchronous implementation is called a Light-Weight Group Service. This paper discusses the usage of Light-Weight Group protocols in dynamic environments, where mappings cannot be defined a priori and may change over time. We show that it is possible to establish mappings that promote sharing and, at the same time, minimize interference. These mappings can be established in an automated manner, using heuristics applied locally at each node. Experiments using an implementation in the Horus system show that significant performance improvements can be achieved with this approach.

url: http://hdl.handle.net/1813/7268
date: 2007-04-23
creator: vanRenesse, Robbert;Hayden, Mark
viewed: 21
title: Optimizing Layered Communication Protocols
abstract: Layering of protocols offers several well-known advantages, but typically leads to performance inefficiencies. We present a model for layering, and point out where the performance problems occur in stacks of layers using this model. We then investigate the common execution paths in these stacks and how to identify them. These paths are optimized using three techniques: optimizing the computation, compressing protocol headers, and delaying processing. All of the optimizations can be automated in a compiler with the help of minor annotations by the protocol designer. We describe the performance that we obtain after implementing the optimizations by hand on a full-scale system.

url: http://hdl.handle.net/1813/7269
date: 2007-04-23
creator: Schneider, Fred B.;Stoller, Scott D.
viewed: 23
title: Automated Analysis of Fault-Tolerance in Distributed Systems
abstract: This paper describes a method for automated analysis of fault-tolerance properties of distributed systems. The framework is based on ideas from stream-processing semantics for networks of processes and abstract interpretation of programs. The stream-processing model provides modularity and a clean algorithmic basis for the analysis. For efficiency, all aspects of a system's behavior can be approximated in the analysis, including: values (the data transmitted in messages), multiplicities (the number of times each value is sent), and orderings (the order in which values are sent). The approximation mechanisms are based

on abstract interpretation, symbolic computation, and partial orders. Approximations are essential to support abstraction from aspects of a system's behavior that do not directly impact its fault-tolerance. Another feature of our approach is that perturbations due to failures can be represented explicitly. This allows fault-tolerance requirements to be expressed as bounds on the acceptable perturbations to a system's behavior as a consequence of certain failures. This facilitates separation of fault-tolerance from other correctness requirements and sometimes enables more efficient analysis. The analysis has been implemented in a prototype tool.

url: http://hdl.handle.net/1813/7270
date: 2007-04-23
creator: Trefethen, L. N.;Viswanath, D.
viewed: 17
title: Condition Numbers of Random Triangular Matrices
abstract: \begin{abstract} Let L_n be a lower triangular matrix of dimension n each of whose nonzero entries is an independent $N(0,1)$ variable, \ie, a random normal variable of mean 0 and variance 1. It is shown that $\kn$, the 2-norm condition number of L_n, satisfies \begin{equation*} \sqrt[n]{\kn} \rightarrow 2 \:\:\: \text{\it almost surely} \end{equation*} as $n\rightarrow\infty$. This exponential growth of $\kn$ with n is in striking contrast to the linear growth of the condition numbers of random {\it dense} matrices with n that is already known. This phenomenon is not due to small entries on the diagonal (\ ie, small eigenvalues) of L_n. Indeed, it is shown that a lower triangular matrix of dimension n whose diagonal entries are fixed at 1 with the subdiagonal entries taken as independent $N(0,1)$ variables is also exponentially ill-conditioned with the 2-norm condition number $\kn$ of such a matrix satisfying \ begin{equation*} \sqrt[n]{\kn}\rightarrow 1.305683410\ldots \:\:\:\text{\it almost surely} \end{equation*} as $n\rightarrow\infty$. A similar pair of results about complex random triangular matrices is established. The results for real triangular matrices are generalized to triangular matrices with entries from any symmetric, strictly stable distribution. \end{abstract}

url: http://hdl.handle.net/1813/7271
date: 2007-04-23
creator: Mosse, Daniel;Friedman, Roy
viewed: 20
title: Load Balancing Schemes for High-Throughput Distributed Fault-TolerantServers
abstract: Clusters of workstations, connected by a fast network, are emerging as a viable architecture for building high-throughput fault-tolerant servers. This type of architecture is more scaleable and more cost-effective than a tightly coupled multiprocessor and may achieve as good a throughput. Two of the most important issues that a designer of such clustered servers must consider in order for the system to meet its fault-tolerance and throughput goals are the load balancing scheme and the fault-tolerance scheme that the system will use. This paper explores several combinations of such fault tolerance and load-balancing schemes, and compare their impact on the maximum throughout achievable by the system, and on its survivability. In particular, we show that a fault-tolerance scheme may have an effect on the throughput of the system, while a load-balancing scheme may affect the ability of the system to override failures. We study the scaleability of the different schemes under different loads and failure conditions. The validation of our schemes is done using data taken from emulations of an intelligent networking coprocessor of a telephone switch, which follows, for example, the SS7 signaling protocol.

url: http://hdl.handle.net/1813/7272
date: 2007-04-23
creator: Ramakrishnan, Raghu;Livny, Miron;Seshadri, Praveen
viewed: 41

title: The Case for Enhanced Abstract Data Types
abstract: Support for complex data in object-relational database systems is based on abstract data types (ADTs). We argue that the current ADT approach inhibits the performance of queries that involve expensive operations on data types. Instead, we propose the Enhanced Abstract Data Type (E-ADT) paradigm, which treats operations on data types as declarative expressions that can be optimized. In this paper, we describe the E-ADT paradigm and PREDATOR, an object-relational database system based on E-ADTs. An E-ADT is an abstract data type enhanced with query optimization. Not only does an E-ADT provide operations (or methods) that can be used in SQL queries, it also supports internal interfaces that can be invoked to optimize these operations. This added functionality is provided without compromising the modularity of data types and the extensibility of the type system. Building such a database system requires fundamental changes in the architecture of the query processing engine; we present the system-level interfaces of PREDATOR that support E-ADTs, and describe the internal design details. Initial performance results from supporting image, time-series, and audio data as E-ADTs demonstrate an order of magnitude in performance improvements over the current ADT approach. Further, we describe how the E-ADT paradigm enables future research that can improve several aspects of object-relational query optimization. Consequently, we make the case that next-generation object-relational database systems should be based on E-ADT technology.

url: http://hdl.handle.net/1813/7273
date: 2007-04-23
creator: Bressoud, Thomas C.
viewed: 17
title: Building a Virtually Fault-Tolerant System
abstract: All schemes for implementing fault-tolerance involve some form of replication. Replicas are assumed to fail independently, and each replica performs the same computation. Replicas may execute in parallel or, in the case of primary-backup protocols, in response to failures. Replication only works, however, if replicas are coordinated. Each replica must receive the same inputs in the same order, and each must be deterministic in its response to these inputs. The key engineering issue that the designer of a fault-tolerant computing system must address is deciding where in the system to implement replica coordination. Some of the alternatives include implementing replica coordination in the processor or network hardware, in the operating system, or in the applications software. A new solution is to implement replica coordination by augmenting the hypervisor of a virtual-machine manager and coordinating a primary virtual machine with its backup. This hypervisor-based fault-tolerance is transparent to the operating system and the applications programs executing above the hypervisor. In addition, this selection allows a single hypervisor design to be used for all processors in an architectural family. In this dissertation, we describe the protocols to implement hypervisor-based fault-tolerance. To assess the practicality of the approach, we constructed a prototype system for HP's PA-RISC architecture. The prototype hypervisor supports a single HP-UX virtual machine and implements the replica-coordination protocols. The prototype hypervisor has been instrumented to measure the overhead of all hypervisor-based activity. We have measured the performance of CPU-intensive workloads and disk I/O intensive workloads in this architecture and have built models allowing us to predict the performance for some alternative architectures.

url: http://hdl.handle.net/1813/7274
date: 2007-04-23
creator: Hayden, Mark;Friedman, Roy;Birman, Ken
viewed: 73
title: The Maestro Group Manager: A Structuring Tool For Applications WithMultiple Quality of Service Requirements
abstract: {\em Maestro} is a tool for managing sets of protocol stacks that satisfy varied quality of service or

security requirements. Intended primarily for multimedia groupware settings, it permits a single application to efficiently operate over multiple side-by-side protocol stacks, each specialized to a different communication stream. Maestro can also be used to manage other sorts of external protocol stacks, for example to orchestrate connection setups that require coordinated actions at all endpoints in a multicast group. Our tools are fault-tolerant and secure; they can safely distribute session keys or handle delicate synchronization tasks that would otherwise complicate the managed stacks and potentially interfere with their quality-of-service objectives. Moreover, Maestro can automatically track subgroup membership on the basis of ``properties'', facilitating its use by developers who prefer not to work directly with multicast communication interfaces.

url: http://hdl.handle.net/1813/7275
date: 2007-04-23
creator: von Eicken, Thorsten;Basu, Anindya;Welsh, Matt
viewed: 26
title: Incorporating Memory Management into User-Level Network Interfaces
abstract: User-level network interfaces allow applications direct access to the network without operating system intervention on every send and receive. Messages are transferred directly to and from user-space by the network interface while observing the traditional protection boundaries between processes. Current user-level network interfaces limit this message transfer to a per-process region of permanently-pinned physical memory to allow safe DMA. This approach is inflexible in that it requires data to be copied into and out of this memory region, and does not scale to a large number of processes. This paper presents an extension to the U-Net user-level network architecture (U-Net/MM) allowing messages to be transferred directly to and from any part of an application's address space. This is achieved by integrating a translation look-aside buffer into the network interface and coordinating its operation with the operating system's virtual memory subsystem. This mechanism allows network buffer pages to be pinned and unpinned dynamically. Two implementations of U-Net/MM are described, demonstrating that existing commodity hardware and commercial operating systems can efficiently support the architecture.

url: http://hdl.handle.net/1813/7276
date: 2007-04-23
creator: Cardie, Claire;Komissarchik, Julia
viewed: 41
title: Word Sense Disambiguation Using Numerical Constraint Satisfaction
abstract: In this paper we present a description and evaluation of a word sense disambiguation mechanism that is an extension of the work by Ide and Veronis. The mechanism's underlying approach is a numerical constraint satisfaction algorithm applied to the network built using an on-line dictionary. In this work we aim to duplicate the original results and extend the method to large-scale applications. To determine the scalability of the approach, we evaluate the mechanism on 20 ambiguous words taken in their contexts of different size from the Brown corpus. We offer a discussion of encountered difficulties and describe several possible directions that can be investigated to improve the mechanism's performance and scalability.

url: http://hdl.handle.net/1813/7277
date: 2007-04-23
creator: Gries, David;Aaron, Eric
viewed: 68
title: Formal Justification of Underspecification for S5
abstract: We formalize the notion of underspecification as a means of avoiding problems with partial functions in modal logic S5 and some semantically related logics. For these logics, underspecification respects validity, so incorporating it into their semantics leaves their classes of valid formulae unchanged.

url: http://hdl.handle.net/1813/7278
date: 2007-04-23
creator: Karr, David A.
viewed: 21
title: Specification, Composition, and Automated Verification of LayeredCommunication Protocols
abstract: Horus is a general-purpose layered message-passing system for distributed programming. A programmer of a distributed application can select protocol layers from among those provided by Horus and arrange these in a stack, thereby creating a custom-built message-passing protocol with strong (or not so strong) properties underneath the application. For the full value of Horus's modularity to be exploited, an application programmer must be able to choose just the layers and stacking order that will provide the desired properties. A programmer who is limited to only a few ``tried-and-true'' alternatives may end up paying a performance cost (such as excessive synchronization messages) for unnecessary properties, simply because he or she cannot confidently build a less costly stack underneath a given application. This dissertation describes a formal method that supports the engineering of new Horus protocol stacks by precisely specifying and mechanically verifying communication properties of these stacks. Various communication properties can be described in English, but are also described succinctly in a mathematical model (the Temporal Logic of Actions) that supports sound reasoning about whether the properties are satisfied by an implementation. Each protocol layer guarantees various properties at its interfaces, depending on what assumed properties its neighbors provide to it. Relatively straightforward formal reasoning can then show that certain properties will be provided to the applications at the top of the stack. This method of reasoning about protocol stacks can efficiently be automated so that it can be used by practitioners. A prototype of the verifier has been implemented in Java and published on the World Wide Web.

url: http://hdl.handle.net/1813/7279
date: 2007-04-23
creator: Kozen, Dexter
viewed: 17
title: On the Complexity of Reasoning in Kleene Algebra
abstract: We study the complexity of reasoning in Kleene algebra and *-continuous Kleene algebra in the presence of extra equational assumptions E; that is, the complexity of deciding the validity of universal Horn formulas $E\imp s=t$, where E is a finite set of equations. We obtain various levels of complexity based on the form of the assumptions E. Our main results are: for *-continuous Kleene algebra, \begin{itemize} \item if E contains only commutativity assumptions $pq=qp$, the problem is Π_1^0-complete; \item if E contains only monoid equations, the problem is Π_2^0-complete; \item for arbitrary equations E, the problem is Π_1^1-complete. \end{itemize} The last problem is the universal Horn theory of the *-continuous Kleene algebras. This resolves an open question of Kozen (1994).

url: http://hdl.handle.net/1813/7280
date: 2007-04-23
creator: Stodghill, Paul;Pingali, Keshav;Kotlyar, Vladimir
viewed: 38
title: Unified framework for sparse and dense SPMD code generation(preliminary report)
abstract: We describe a novel approach to sparse {\em and} dense SPMD code generation: we view arrays (sparse and dense) as distributed relations and parallel loop execution as distributed relational query evaluation. This approach provides for a uniform treatment of arbitrary sparse matrix formats and partitioning information formats. The relational algebra view of computation and communication sets provides new opportunities for the optimization of node program performance and the reduction of communucation set generation

and index translation overhead.

url: http://hdl.handle.net/1813/7281
date: 2007-04-23
creator: Singhal, Amitabh
viewed: 21
title: Term Weighting Revisited
abstract: Term weighting is an essential part of the modern information retrieval systems. Out of the three main components of a term weighting strategy --- term frequency, inverse document frequency, and document length normalization --- the term frequency factor has been investigated recently by researchers. In this work, we study the inverse document frequency, and document length normalization components of term weights. We observe that a document length normalization scheme that retrieves documents of all lengths with similar chances as their likelihood of relevance will outperform another scheme which retrieves documents with chances very different from their likelihood of relevance. We present {\em pivoted normalization\/}, a technique that can be used to modify normalization functions to reduce the gap between the relevance and the retrieval probabilities. We present two new normalization functions --- {\em pivoted unique normalization\/} and {\em pivoted byte size normalization}, both of which yield significant improvements over the previous state of the art normalization functions. When optical character recognition is used to create large information bases, term weighting schemes can be highly sensitive to the errors in the input text, introduced by the OCR process. This work examines the effects of the well known {\em cosine normalization\/} method in the presence of OCR errors, and proposes a new, more robust, normalization method. Experiments show that the new scheme is less sensitive to OCR errors and facilitates the use of more diverse basic weighting schemes. This study also explains why the use of cosine normalization in presence of the inverse document frequency factor is not advisable in large document collections. When a user types a natural language query for an IR system, certain keywords in the query are more pertinent to the user's information need than others. Most modern IR systems incorporate these distinctions by using an inverse document frequency ({\em idf\/}) factor in term weighting. Preliminary experiments show that the usefulness of an {\em idf\/} type function is high at low ranks. We observe that the main reason for this effect is the widened gap between the weights of the rare terms and the non-rare query terms. The standard {\em idf\/} function works very well across query sets. Experiments show that there is room for improvement in the {\em idf\/} function. Further studies are needed to discover a better replacement for the standard {\em idf\/} function.

url: http://hdl.handle.net/1813/7282
date: 2007-04-23
creator: Stodghill, Paul;Pingali, Keshav;Kotlyar, Vladimir
viewed: 18
title: A Relational Approach to the Compilation of Sparse Matrix Programs
abstract: We present a relational algebra based framework for compiling efficient sparse matrix code from dense DO-ANY loops and a specification of the representation of the sparse matrix. We present experimental data that demonstrates that the code generated by our compiler achieves performance competitive with that of hand-written codes for important computational kernels.

url: http://hdl.handle.net/1813/7283
date: 2007-04-23
creator: Stoller, Scott D.
viewed: 16
title: A Method and Tool for Analyzing Fault-Tolerance in Systems
abstract: As computers are integrated into systems that have stringent fault-tolerance requirements, there is

a growing need for techniques to establish that these systems actually satisfy those requirements. Informal arguments do not supply the desired level of assurance for critical systems. This dissertation presents a rigorous, automated approach to analyzing distributed systems, with a focus on checking fault-tolerance requirements, and describes a prototype implementation of the analysis. The analysis is a novel hybrid of ideas from stream-processing semantics of networks of processes, abstract interpretation of programs, and symbolic computation. The underlying principles of the analysis method are general, but specialized techniques---such as the use of perturbations to represent changes to normal behavior caused by failures---are developed to deal efficiently with the types of systems and requirements that arise in establishing fault-tolerance. The method is illustrated with three examples: the Oral Messages algorithm for Byzantine Agreement, due to Lamport, Shostak and Pease, a standard protocol for FIFO reliable broadcast, and a (subtly) flawed protocol for fault-tolerant moving agents.

url: http://hdl.handle.net/1813/7284
date: 2007-04-23
creator: Sturgill, David
viewed: 76
title: Nagging: A General, Fault-Tolerant Approach to Parallel Search Pruning
abstract: For some interesting problems, all known algorithms rely, to some degree, on exhaustive search. Since combinatorial search cannot scale to large problem instances, no general-case solutions to these problems are available. However, because solutions to many of these problems have practical value, various software techniques have been developed to avoid or reduce search in a number of useful, special cases. Unfortunately, different software techniques exhibit varying performance advantages from one problem instance to the next; given a particular problem instance, it is not always clear which approach would be most effective. This paper introduces a parallel search-pruning technique called nagging which is means of coordinating the activity of a number of different search procedures. Under this technique, search-based problem solvers compete in parallel to solve parts of a particular problem instance. Each problem solver contributes to advancing the search wherever it is the most effective. Nagging's intrinsic fault tolerance and scalability make it particularly suitable for commonly available, low-bandwidth, high-latency distributed computing environments. It is sufficiently general to be effective in a number of domains. A prototype implementation has been developed for first-order theorem proving, a domain both responsive to a very simple nagging model and amenable to many refinements of this model. Nagging is evaluated by testing this implementation on a suite of well-known theorem proving problems.

url: http://hdl.handle.net/1813/7285
date: 2007-04-23
creator: Kesselman, Carl;von Eicken, Thorsten;Czajkowski, Grzegorz;Chang, Chi-Chao
viewed: 31
title: Evaluating the Performance Limitations of MPMD Communication
abstract: The MPMD approach for parallel computing is attractive for programmers who seek fast development cycles, high code re-use, and modular programming, or whose applications exhibit irregular computation loads and communication patterns. Remote method invocation is widely adopted as the communication abstraction for crossing address space boundaries. However, the communication overheads of existing RMI-based systems are usually an order of magnitude higher than those found in highly tuned SPMD systems. This problem has thus far limited the appeal of high-level programming languages based on MPMD models in the parallel computing community. This paper investigates the fundamental limitations of MPMD communication using a case study of two parallel programming languages, Compositional C++ (CC++) and Split-C, that provide support for a global name space. To establish a common comparison basis, a new implementation of CC++ was developed to use Active Messages and a native threads package. A series of micro-benchmarks

compares the communication performance of this new CC++ implementation with Split-C on an IBM SP multi-computer. The impact of these costs on three applications is also evaluated and suggests that MPMD communication can be used effectively in many high-performance parallel applications.

url: http://hdl.handle.net/1813/7286
date: 2007-04-23
creator: Toueg, Sam;Chen, Wei;Aguilera, Marcos Kawazoe
viewed: 85
title: Heartbeat: A Timeout-Free Failure Detector for Quiescent ReliableCommunication
abstract: We study the problem of achieving reliable communication with quiescent algorithms (i.e., algorithms that eventually stop sending messages) in asynchronous systems with process crashes and lossy links. We first show that it is impossible to solve this problem without failure detectors. We then show how to solve it using a new failure detector, called heartbeat. In contrast to previous failure detectors that have been used to circumvent impossibility results, the heartbeat failure detector is implementable, and its implementation does not use timeouts. These results have wide applicability: they can be used to transform many existing algorithms that tolerate only process crashes into quiescent algorithms that tolerate both process crashes and message losses. This can be applied to consensus, atomic broadcast, k-set agreement, atomic commitment, etc. The heartbeat failure detector is novel: it is implementable without timeouts and it does not output lists of suspects as typical failure detectors do. If we restrict failure detectors to output only lists of suspects, quiescent reliable communication requires less than or greater than P [ACT97a], which is not implementable. Combined with the results of this paper, this shows that traditional failure detectors that output only lists of suspects have fundamental limitations.

url: http://hdl.handle.net/1813/7287
date: 2007-04-23
creator: Toueg, Sam;Chen, Wei;Aguilera, Marcos Kawazoe
viewed: 38
title: Quiescent Reliable Communication and Quiescent Consensus inPartitionable Networks
abstract: We consider partitionable networks with process crashes and lossy links, and focus on the problems of reliable communication and consensus for such networks. For both problems we seek algorithms that are quiescent, i.e., algorithms that eventually stop sending messages. We first tackle the problem of reliable communication for partitionable networks by extending the results of [ACT97a]. In particular, we generalize the specification of the heartbeat failure detector HB, show how to implement it, and show how to use it to achieve quiescent reliable communication. We then turn our attention to the problem of consensus for partitionable networks. We first show that, even though this problem can be solved using a natural extension of less than or greater than S, such solutions are not quiescent --- in other words, less than or greater than S alone is not sufficient to achieve quiescent consensus in partitionable networks. We then solve this problem using less than or greater than S and the quiescent reliable communication primitives that we developed in the first part of the paper. Our model of failure detectors for partitionable networks, a natural extension of the model in [CT96], is also a contribution of this paper.

url: http://hdl.handle.net/1813/7288
date: 2007-04-23
creator: Stodghill, Paul;Pingali, Keshav;Kotlyar, Vladimir
viewed: 16
title: Compiling Parallel Sparse Code for User-Defined Data Structures
abstract: We describe how various sparse matrix and distribution formats can be handled using the {\ em relational} approach to sparse matrix code compilation. This approach allows for the development of

compilation techniques that are independent of the storage formats by viewing the data structures as relations and abstracting the implementation details as access methods.

url: http://hdl.handle.net/1813/7289
date: 2007-04-23
creator: Kozen, Dexter;Heegard, Chris;Andrews, Kenneth
viewed: 22
title: A Theory of Interleavers
abstract: An interleaver is a hardware device commonly used in conjunction with error correcting codes to counteract the effect of burst errors. Interleavers are in widespread use and much is known about them from an engineering standpoint. In this paper we propose a mathematical model that provides a rigorous foundation for the theoretical study of interleavers. The model captures precisely such notions as block and convolutional interleavers, spread, periodicity, causality, latency, and memory usage. Using this model, we derive several optimality results on the latency and memory usage of interleavers. We describe a family of block interleavers and show that they are optimal with respect to latency among all block interleavers with a given spread. We also give tight upper and lower bounds on the memory requirements of interleavers.

url: http://hdl.handle.net/1813/7290
date: 2007-04-23
creator: Stodghill, Paul
viewed: 19
title: A Relational Approach to the Automatic Generation of Sequential SparseMatrix Codes
abstract: This thesis presents techniques for automatically generating sparse codes from dense matrix algorithms through a process called \emph{sparse compilation}. We will start by recognizing that sparse computations are ubiquitous to scientific computation, that these codes are difficult to write by hand, and that they are difficult for conventional compilers to optimize. We will present the sparse compiler as an alternative to writing these codes by hand or using sparse libraries. We will show how many aspects of sparse compilation can be modeled in terms of relational database concepts, These include the following: queries to express sparse computations, relations to model sparse matrices, the join operation to model simultaneous efficient access of sparse matrices. Using this model, the problem of sparse compilation can be seen as an instance of the query optimization problem. We will discuss two basic strategies for sparse compilation based upon this relational approach. One strategy is targeted towards algorithms that can be described using inner join queries, which include matrix-vector multiplication and matrix-matrix multiplication. This approach is the one that we have currently implemented. The other can handle a larger class of dependence-free matrix algorithms. Although it is more general, the latter approach introduced does not generate as efficient code for some problems as the former approach. We will show that these two approaches are grounded in properties of the relational algebra and draw connections with previous work that has been described in the database literature. We also discuss how conventional dense optimizations and fill can be handled within the overall relational framework. We will discuss the Bernoulli Sparse Compiler and use experimental results to show that this system is able to generate sparse implementations from non-trivial dense matrix algorithms that are as efficient as hand-written codes. In addition, this compiler provides a novel mechanism that allows the user to extend its repertoire of sparse matrix storage formats. Thus, the user is not only able to choose the data structures for storing the sparse matrices, but to describe these data structures as well.

url: http://hdl.handle.net/1813/7291
date: 2007-04-23
creator: Schneider, Fred B.
viewed: 14

title: Towards Fault-tolerant and Secure Agentry
abstract: Processes that roam a network--agents--present new technical challenges. Two are discussed here. The first problem, which arises in connection with implementing fault-tolerant agents, concerns how a voter authenticates the agents comprising its electorate. The second is to characterize security policies that are enforceable as well as approaches for enforcing those policies.

url: http://hdl.handle.net/1813/7292
date: 2007-04-23
creator: Kreitz, Christoph
viewed: 15
title: Formal Reasoning about Communication Systems I: Embedding ML into TypeTheory.
abstract: We present a semantically correct embedding of a subset of the Ocaml programming language into the type theory of NuPRL. The subset is that needed to build the Ensemble group communication system. We describe the essential methodologies for representing language constructs by type-theoretical expressions. Tactics representing derived inference rules and a programming logic for these constructs will be discussed as well as algorithms for translating an Ocaml-program into NuPRL-objects and vice versa. The formal representations and the translation algorithms will serve as the foundation for the development of automated reasoning tools for the verification and optimization of a group communication systems.

url: http://hdl.handle.net/1813/7293
date: 2007-04-23
creator: Karr, David;Vaysburd, Alexey;Hayden, Mark;Birman, Ken;van Renesse, Robbert
viewed: 29
title: Building Adaptive Systems Using Ensemble
abstract: Trends in networking and distributed computing are creating a new generation of applications that must adapt as the environment within which they execute changes. Examples of adaptations include switching protocols to overcome a security exposure or failure mode seen only in certain setting, changing data rates to accommodate a slow link, or adapting the behavior of a high level application to match the set of participants using the application. We describe the Ensemble system, a tool for building adaptive distributed programs.

url: http://hdl.handle.net/1813/7294
date: 2007-04-23
creator: Vaysburd, Alexey;Friedman, Roy
viewed: 19
title: High-Performance Replicated Distributed Objects in PartitionableEnvironments
abstract: This paper presents an implementation of replicated distributed objects in asynchronous environments prone to node failures and network partitions. This implementation has several appealing properties: It guarantees that progress will be made whenever a majority of replicas can communicate with each other; it allows minority partitions to continue providing service for idempotent requests; it offers the application the choice between optimistic or safe message delivery. Performance measurements have shown that our implementation incurs low latency and achieves high throughput while providing globally consistent replicated state machine semantics. The paper discusses both the protocols and interfaces to support efficient object replication at the application level.

url: http://hdl.handle.net/1813/7295
date: 2007-04-23
creator: Toueg, Sam;Chen, Wei;Aguilera, Marcos Kawazoe

viewed: 18
title: On the Weakest Failure Detector for Quiescent Reliable Communication
abstract: We consider the problem of achieving reliable communication with quiescent algorithms (i.e., algorithms that eventually stop sending messages) in asynchronous systems with process crashes and lossy links, and show that, among failure detectors with bounded output size, less than or greater than P is the weakest one that can be used to solve this problem. Combined with a result in [ACT97a], this shows that failure detectors that are commonly used in practice, i.e., those that output lists of suspects, are not always the best ones to solve a problem.

url: http://hdl.handle.net/1813/7296
date: 2007-04-23
creator: Li, Yuying;Coleman, T. F.
viewed: 16
title: Combining Trust Region and Affine Scaling Linearly ConstrainedNonconvex Minimization
abstract: An interior point method is proposed for a general nonlinear (nonconvex) minimization with linear inequality constraints. This method is a combination of the trust region idea for nonlinearity and affine scaling technique for constraints. Using this method, the original objective function is monotonically decreased. In the proposed approach, a Newton step is derived directly from the complementarity conditions. A trust region subproblem is formed which yields an approximate Newton step as its solution asymptotically. The objective function of the trust region subproblem is the quadratic approximation to the original objective function plus an augmented quadratic convex term. Similar to an augmented Lagrangian function, this augmentation adds positive curvature in the range space of the constraint normals. The global convergence is achieved by possibly using trust regions with different shapes. A reflection technique, which accelerates convergence, is described. Explicit sufficient decrease conditions are proposed. Computational results of a two-dimensional trust region implementation are reported for large-scale problems. Preliminary experiments suggest that this method can be effective; a relatively small number of function evaluations are required for some medium and large test problems.

url: http://hdl.handle.net/1813/7297
date: 2007-04-23
creator: Li, Yuying;Coleman, T. F.
viewed: 25
title: A Trust Region and Affine Scaling Interior Point Method for NonconvexMinimization with Linear Inequality Constraints
abstract: A trust region and affine scaling interior point method (TRAM) is proposed for a general nonlinear minimization with linear inequality constraints in [8]. In the proposed approach, a Newton step is derived from the complementarity conditions. Based on this Newton step, a trust region subproblem is formed, and the original objective function is monotonically decreased. Explicit sufficient decrease conditions are proposed for satisfying complementarity, dual feasibility and second order optimality. The objective of this paper is to establish global and local convergence properties of the proposed trust region and affine scaling interior point method. It is shown that the proposed decrease conditions are sufficient for achieving complementarity, dual feasibility and second order optimality respectively. It is also established that a trust region solution is asymptotically in the interior of the proposed trust region subproblem and a damped trust region step can achieve quadratic convergence.

url: http://hdl.handle.net/1813/7298
date: 2007-04-23
creator: Nogin, Aleksey

viewed: 24
title: Improving the Efficiency of Nuprl Proofs
abstract: In order to use Nuprl system as a programming language with built-in verification one has to improve the efficiency of the programs extracted from the Nuprl proofs. In the current paper we consider proofs from the Nuprl automata library. In some of these proofs (pigeon-hole principle, decidability of the state reachability, decidability of the equivalence relation on words induced by the automata language) sources of exponential-time complexity have been detected and replaced by new complexity cautious proofs. The new proofs now lead to polynomial-time algorithms extracted by the same Nuprl extractor, thus eliminating all known unnecessary exponentials from the Nuprl automata library. General principles of efficient programming on Nuprl are also discussed. Key Words and Phrases: automata, constructivity, Myhill-Nerode theorem, Nuprl, program extraction, program verification, state minimization.

url: http://hdl.handle.net/1813/7299
date: 2007-04-23
creator: Morrisett, Greg;Smith, Frederick
viewed: 20
title: Mostly-Copying Collection: A Viable Alternative to ConservativeMark-Sweep
abstract: Many high-level language compilers generate C code and then invoke a C compiler to do code generation, register allocation, stack management, and low-level optimization. To date, most of these compilers link the resulting code against a conservative mark-sweep garbage collector in order to reclaim unused memory. We introduce a new collector, MCC, based on mostly-copying collection, and characterize the conditions that favor such a collector over a mark-sweep collector. In particular we demonstrate that mostly-copying collection outperforms conservative mark-sweep under the same conditions that accurate copying collection outperforms accurate mark-sweep: Specifically, MCC meets or exceeds the performance of a mature mark-sweep collector when allocation rates are high, and physical memory is large relative to the live data.

url: http://hdl.handle.net/1813/7300
date: 2007-04-23
creator: Moten, Roderick
viewed: 15
title: Concurrent Refinement in Nuprl
abstract: This dissertation reports on the design, implementation, and analysis of the first parallel interactive theorem prover, called the MP refiner. The MP refiner is a shared memory multi-processor implementation of the inference engine of Nuprl. The inference engine of Nuprl is called the refiner. The MP refiner is implemented in the functional programming language Standard ML and is compatible with the refiner of Nuprl 4.1. Parallelism is provided in the MP refiner using an extension to the runtime system of the SML/NJ compiler for Standard ML. The MP refiner provides AND-parallelism and OR-parallelism expressed in terms of concurrent tactics. Concurrent tactics are created using the new tacticals PTHEN and PORELSLEL. The process of evaluating concurrent tactics is called concurrent refinement. The MP refiner is a collection of threads operating as sequential refiners running on separate processors. Concurrent tactics exploit parallelism by spawning tactics to be evaluated by other refiner threads simultaneously. Tests conducted with the MP refiner running on a four processor Sparc shared--memory multi-processor reveal that concurrent refinement can significantly decrease the elapsed time of constructing proofs interactively. The concurrent tactics constructed with course-grain tactics gave speedups slightly less than two. On the other hand, the concurrent tactics using fine-grain tactics gave speedups close to three. The granularity of a tactic depends on the amount of primitive inferences it invokes. The poor speedups of concurrent tactics constructed with course-grain tactics resulted from bus contention between the multiple processors caused by the memory

management of SML/NJ. The design of the MP refiner is based on a rigorous mathematical description of the refiner. The mathematical description includes a model of concurrent refinement. In addition, this disseration presents the first complete rigorous presentation of the Nuprl second order substitution algorithm and the first thorough description of the various components that make up the refiner.

url: http://hdl.handle.net/1813/7301
date: 2007-04-23
creator: Birman, Ken;Vogels, Werner;van Renesse, Robbert;Guo, Katherine
viewed: 30
title: Hierarchical Message Stability Tracking Protocols
abstract: Protocols which track message stability are an important part of reliable multicast protocols in fault-tolerant distributed systems. To reliably deliver multicast messages in a process group, each process maintains copies of all messages it sends and receives. If a member fails to receive a message, any process which has the message in its buffer can retransmit it. In order to prevent these buffers from growing out of bound, stability tracking protocols must be used. That is, whenever a process learns that a message has been received by everyone, it declares this message {\it stable} and releases it from the buffer. We investigate several message stability tracking protocols commonly used in a number of popular reliable multicast protocols with a focus on their performance in large scale settings with thousands of participants. To improve the scalability of these protocols significantly, we derive a set of new protocols using a spanning tree structure which scale to at least tens of thousands of participants.

url: http://hdl.handle.net/1813/7302
date: 2007-04-23
creator: Bohringer, Karl-Friedrich
viewed: 15
title: PROGRAMMABLE FORCE FIELDS FOR DISTRIBUTED MANIPULATION, AND THEIRIMPLEMENTATION USING MICRO-FABRICATED ACTUATOR ARRAYS
abstract: Programmable force vector fields can be used to control a variety of flexible planar parts feeders such as massively-parallel micro actuator arrays or transversely vibrating (macroscopic) plates. These new automation designs promise great flexibility, speed, and dexterity---they may be employed to position, orient, singulate, sort, feed, and assemble parts. A wealth of geometric and algorithmic problems arise in the control and programming of manipulation systems with many independent actuators. The theory of programmable force fields represents the first systematic attack on massively-parallel distributed manipulation based on geometric and physical reasoning. We show how to develop combinatorially precise planning algorithms that synthesize force field strategies for controlling a very large number of distributed actuators in a principled, geometric, task-level fashion. When a part is placed on our devices, the programmed force field induces a force and moment upon it. Over time, the part may come to rest in a dynamic equilibrium state. By chaining together sequences of force fields, the equilibrium states of a part in the field may be cascaded to obtain a desired final state. The resulting strategies require no sensing and enjoy efficient planning algorithms. This thesis introduces new experimental devices that can implement programmable force fields. In particular, we describe the M-Chip (Manipulation Chip), a massively-parallel array of programmable micro-motion pixels. Both the M-Chip, as well as macroscopic devices such as transversely vibrating plates, may be programmed with force fields, and their behavior predicted and controlled using our equilibrium analysis. We demonstrate lower bounds (i.e., impossibility results) on what the devices cannot do, and results on a classification of control strategies yielding design criteria by which well-behaved manipulation strategies may be developed. We define composition operators to build complex strategies from simple ones, and show the resulting fields are also well-behaved. Finally, we consider parts feeders that can only implement a very limited ``vocabulary'' of force fields. We show how to plan and execute parts-posing and orienting strategies for these devices,

but with a significant increase in planning complexity and some sacrifice in completeness guarantees. We discuss the tradeoff between mechanical complexity and planning complexity.

url: http://hdl.handle.net/1813/7303
date: 2007-04-23
creator: Liu, Jianguo;Coleman, Thomas F.
viewed: 40
title: An Exterior Newton Method for Convex Quadratic Programming
abstract: We propose an exterior Newton method for convex quadratic programming problems.

url: http://hdl.handle.net/1813/7304
date: 2007-04-23
creator: Viswanath, Divakar
viewed: 101
title: Random Fibonacci sequences and the number 1.13198824...
abstract: \begin{abstract} For the familiar Fibonacci sequence --- defined by $f_1 = f_2 = 1$, and $f_n = f_{n-1} + f_{n-2}$ for $n greater than 2$ --- f_n increases exponentially with n at a rate given by the golden ratio $(1+\sqrt{5})/2=1.61803398\ldots$. But for a simple modification with both additions and subtractions --- the {\it random} Fibonacci sequences defined by $t_1=t_2=1$, and for $n greater than 2$, $t_n = \pm t_{n-1} \pm t_{n-2}$, where each $\pm$ sign is independent and either $+$ or $-$ with probability $1/2$ --- it is not even obvious if $\abs{t_n}$ should increase with n. Our main result is that \begin{equation*} \sqrt[n]{\abs{t_n}} \rightarrow 1.13198824\ldots\:\:\: \text{as}\:\:\: n \rightarrow\infty \end{equation*} with probability 1. Finding the number $1.13198824\ldots$ involves the theory of random matrix products, Stern-Brocot division of the real line, a fractal-like measure, a computer calculation, and a rounding error analysis to validate the computer calculation. \end{abstract}

url: http://hdl.handle.net/1813/7305
date: 2007-04-23
creator: Glew, Neal;Crary, Karl;Walker, David;Morrisett, Greg
viewed: 37
title: From System F to Typed Assembly Language (Extended Version)
abstract: We motivate the design of a statically typed assembly language (TAL) and present a type-preserving translation from System F to TAL. The TAL we present is based on a conventional RISC assembly language, but its static type system provides support for enforcing high-level language abstractions, such as closures, tuples, and objects, as well as user-defined abstract data types. The type system ensures that well-typed programs cannot violate these abstractions. In addition, the typing constructs place almost no restrictions on low-level optimizations such as register allocation, instruction selection, or instruction scheduling. Our translation to TAL is specified as a sequence of type-preserving transformations, including CPS and closure conversion phases; type-correct source programs are mapped to type-correct assembly language. A key contribution is an approach to polymorphic closure conversion that is considerably simpler than previous work. The compiler and typed assembly language provide a fully automatic way to produce proof carrying code, suitable for use in systems where untrusted and potentially malicious code must be checked for safety before execution.

url: http://hdl.handle.net/1813/7306
date: 2007-04-23
creator: Hayden, Mark
viewed: 15

title: Distributed Communication in ML
abstract: We present our experience in implementing a group communication toolkit in Objective Caml, a dialect of the ML family of programming languages. We compare the toolkit both quantitatively and qualitatively to a predecessor toolkit which was implemented in C. Our experience shows that using the high-level abstraction features of ML gives substantial advantages. Some of these features, such as automatic memory management and message marshalling, allowed us to concentrate on those pieces of the implementation which required careful attention in order to achieve good performance. We conclude with a set of suggested changes to both the ML language and the particular implementation we used.

url: http://hdl.handle.net/1813/7307
date: 2007-04-23
creator: Mardis, Scott;Cardie, Claire
viewed: 28
title: Proposal for A Framework for the High-Precision Identification ofLinguistic Relationships
abstract: Current research in Information Retrieval and Information Extraction demands high-precision syntactic and semantic information from natural language text. We propose a plan for developing a framework to identify, with high-precision, the linguistic relationships between pairs of words in natural language text. Related research is reviewed and preliminary results are given. In our plan we outline the linguistic identification task: a new way to evaluate NLP systems.

url: http://hdl.handle.net/1813/7308
date: 2007-04-23
creator: Han, Shih-Ping
viewed: 28
title: Superlinearly Convergent Variable Metric Algorithms for General Nonlinear Programming Problems
abstract: In this paper variable metric algorithms are extended to solve general nonlinear programming problems. In the algorithm we iteratively solve a linearly constrained quadratic program which contains an estimate of the Hessian of the Lagrangian. We suggest the variable metric updates for the estimates of the Hessians and justify our suggestion by showing that, when some well known update such as the Davidon-Fletcher-Powell update are so employed, the algorithm converges locally with a superlinear rate. Our algorithm is in a sense a natural extension of the variable metric algorithm to the constrained optimization and this extension offers us not only a class of effective algorithms in nonlinear programming but also a unified treatment of constrained and unconstrained optimization in the variable metric approach.

url: http://hdl.handle.net/1813/7309
date: 2007-04-23
creator: Vogels, Werner;Johansen, Dag, Jacobsen, Kjetil, Sudmann, Nils P., Kare J. Lauvset,
viewed: 30
title: USING SOFTWARE DESIGN PATTERNS TO BUILD DISTRIBUTED ENVIRONMENTALMONITORING APPLICATIONS
abstract: Tools developers face the challenge of exposing a development methodology to users while concealing details of the underlying system. If that system is complex and subject to evolution, this problem can be particularly difficult. Here, we discuss the use of software design patterns in conjunction with StormCast, a system of tools developed to support environmental and weather monitoring tasks in the Arctic. Now entering its 5th generation, each version of StormCast has expanded the capabilities of the underlying distributed data management tools and computational facilities. This paper reviews StormCast 5.0, presents the design patterns used by developers, and describes several applications in terms of the application of these patterns.

url: http://hdl.handle.net/1813/7310
date: 2007-04-23
creator: Birman, Kenneth P.;Vogels, Werner;van Renesse, Robbert;Hayden, Mark;Guo, Katherine
viewed: 41
title: GSGC: An Efficient Gossip-Style Garbage Collection Scheme for ScalableReliable Multicast
abstract: To deliver multicast messages reliably in a group, each member maintains copies of all messages it sends and receives in a buffer for potential local retransmission. The storage of these messages is costly and buffers may grow out of bound. Garbage collection is needed to address this issue. Garbage collection occurs once a process learns that a message in its buffer has been received by every process in the group. The message is declared stable and is released from the process's buffer. This paper proposes a gossip-style garbage collection scheme called GSGC for scalable reliable multicast protocols. This scheme achieves fault-tolerance and scalability without relying on the underlying multicast protocols. It collects and disseminates information in the multicast group by making each group member periodically gossip information to a random subset of the group. Extending the global gossip protocol further, this paper also investigates a local gossip scheme that achieves improved scalability and significantly better performance. Simulations conducted in a WAN environment are used to evaluate the performance of both schemes.

url: http://hdl.handle.net/1813/7311
date: 2007-04-23
creator: Zabih, Ramin;Veksler, Olga;Boykov, Yuri
viewed: 76
title: A Variable Window Approach to Early Vision
abstract: Early vision relies heavily on rectangular windows for tasks such as smoothing and computing correspondence. While rectangular windows are efficient, they yield poor results near object boundaries. We describe an efficient method for choosing an arbitrarily shaped connected window, in a manner which varies at each pixel. Our approach can be applied to many problems, including image restoration and visual correspondence. It runs in linear time, and takes a few seconds on traditional benchmark images. Performance on both synthetic and real imagery with ground truth appears promising.

url: http://hdl.handle.net/1813/7312
date: 2007-04-23
creator: Zabih, Ramin;Veksler, Olga;Boykov, Yuri
viewed: 41
title: Markov Random Fields with Efficient Approximations
abstract: Markov Random Fields (MRF's) can be used for a wide variety of vision problems. In this paper we address the estimation of first-order MRF's with a particular clique potential that resembles a well. We show that the maximum {\em a posteriori} estimate of such an MRF can be obtained by solving a multiway cut problem on a graph. This allows the application of near linear-time algorithms for computing provably good approximations. We formulate the visual correspondence problem as an MRF in our framework, and show that this yields quite promising results on real data with ground truth.

url: http://hdl.handle.net/1813/7313
date: 2007-04-23
creator: Salton, Gerard;Yu, C. T.
viewed: 26
title: Precision Weighting - An Effective Automatic Indexing Method
abstract: A great many automatic indexing methods have been implemented and evaluated over the last few

years, and automatic procedures comparable in effectiveness to conventional manual ones are now easy to generate. Two drawbacks of the available automatic indexing methods are the absence of reliable linguistic inputs during the indexing process, and the lack of formal, analytical proofs concerning the effectiveness of the proposed methods. The precision weighting procedure described in the present study uses relevance criteria to weight the terms occurring in user queries as a function of the balance between relevant and nonrelevant documents in which these terms occur; this approximates a semantic know-how of term importance. Formal mathematical proofs are given under well-defined conditions of the effectiveness of the method.

url: http://hdl.handle.net/1813/7314
date: 2007-04-23
creator: von Eicken, Thorsten;Hu, Deyu;Czajkowski, Grzegorz;Chang, Chi-Chao;Hawblitzel, Chris
viewed: 41
title: Implementing Multiple Protection Domains in Java
abstract: Safe language technology can be used for protection within a single address space. This protection is enforced by the language's type system, which ensures that references to objects cannot be forged. A safe language alone, however, lacks many features taken for granted in more traditional operating systems, such as rights revocation, thread protection, resource management, and support for domain termination. This paper describes the J-Kernel, a portable Java-based protection system that addresses these issues. A number of micro-benchmarks are presented to characterize the costs of language-based protection, and an extensible web server based on the J-Kernel demonstrates the use of safe language techniques in a large application.

url: http://hdl.handle.net/1813/7315
date: 2007-04-23
creator: Kozen, Dexter
viewed: 16
title: Efficient Code Certification
abstract: We introduce a simple and efficient approach to the certification of compiled code. We ensure a basic but nontrivial level of code safety, including control flow safety, memory safety, and stack safety. The system is designed to be simple, efficient, and (most importantly) relatively painless to incorporate into existing compilers. Although less expressive than the proof carrying code of Necula and Lee or typed assembly language of Morrisett et al., our certificates are compact and relatively easy to produce and to verify. Unlike JAVA bytecode, our system operates at the level of native code; it is not interpreted and no further compilation is necessary.

url: http://hdl.handle.net/1813/7316
date: 2007-04-23
creator: Hayden, Mark
viewed: 18
title: The Ensemble System
abstract: Ensemble is a group communication system that demonstrably achieves a wide range of goals. It is a general-purpose communication system intended for constructing reliable distributed applications; it is a flexible framework for carrying out research in group ware protocols; it is a large-scale, system-style implementation built in a state-of-the-art programming language\rc{lines of ML?}; and it is also a mathematical object designed to be amenable to formal analysis and manipulation. Thus, Ensemble straddles a number of disciplines of computer science ranging from systems architectures to formal methods. The principal advances described in this thesis are the creation of the Ensemble system and the demonstration that it exhibits the properties just mentioned. The thesis begins by presenting the Ensemble architecture, as well as background in group communication. We describe the various components of the architecture, give examples of their

interactions, and compare this architecture with that of other layered communication systems. The Ensemble protocols make heavy use of layered micro-protocols. We describe optimization techniques that greatly reduce the performance overheads introduced by layering and show how the architecture facilitates these optimizations. In addition we show how to formalize these optimizations in type theory and implement them using the Nuprl theorem prover. Ensemble is implemented in a dialect of the ML programming language. We describe how the use of ML impacted the system, and present a wide range of comparisons between Ensemble and a similar system implemented in C.

url: http://hdl.handle.net/1813/7317
date: 2007-04-23
creator: Verma, Arun;Coleman, Thomas F.
viewed: 36
title: ADMIT-1 : Automatic Differentiation and MATLAB Interface Toolbox
abstract: ADMIT-1 enables you to compute {\em sparse} Jacobian and Hessian matrices, using automatic differentiation technology, from a MATLAB environment. You need only supply a function to be differentiated and ADMIT-1 will exploit sparsity if present to yield sparse derivative matrices (in sparse MATLAB form). A generic AD tool, subject to some functionality requirements, can be plugged into ADMIT-1; examples include ADOL-C ~\cite{Griewank1996b} (C/C++ target functions) and ADMAT ~\cite{admat} (MATLAB target functions). ADMIT-1 also allows for the calculation of gradients and has several other related functions.

url: http://hdl.handle.net/1813/7318
date: 2007-04-23
creator: Schneider, Fred B.
viewed: 16
title: Enforceable Security Policies
abstract: A precise characterization is given for the class of security policies that can be enforced using mechanisms that work by monitoring system execution, and a class of automata is introduced for specifying those security policies. Techniques to enforce security policies specified by such automata are also discussed. READERS NOTE: A substantially revised version of this document is available as TR99-1759.

url: http://hdl.handle.net/1813/7319
date: 2007-04-23
creator: Schmidt, Erik Meineche
viewed: 22
title: Succinctness of Descriptions of Unambiguous Context-Free Languages
abstract: There is no recursive function bounding the succintness gained using ambiguous grammars over unambiguous ones in the description of unambiguous context-free languages.

url: http://hdl.handle.net/1813/7320
date: 2007-04-23
creator: Crary, Karl
viewed: 22
title: Programming Language Semantics in Foundational Type Theory
abstract: There are compelling benefits to using foundational type theory as a framework for programming language semantics. I give a semantics of an expressive programming calculus in the foundational type theory of Nuprl. Previous type-theoretic semantics have used less expressive type theories, or have sacrificed important programming constructs such as recursion and modules. The primary mechanisms of this semantics for the core calculus are partial types, for typing recursion, set types, for encoding power and

singleton kinds, which are used for subtyping and module programming, and very dependent function types, for encoding signatures. I then extend the semantics to modules using phase-splitting.

url: http://hdl.handle.net/1813/7321
date: 2007-04-23
creator: Worona, Steven L.;Moore, Charles G. III;Conway, Richard W.
viewed: 23
title: User's Guide to TSO-PL/CT
abstract: NO ABSTRACT SUPPLIED

url: http://hdl.handle.net/1813/7322
date: 2007-04-23
creator: Kedem, Zvi M.;Kirkpatrick, David G.
viewed: 29
title: Addition Requirements for Rational Functions
abstract: A notion of rank or independence for arbitrary sets of rational functions is developed, which bounds from below the number of additions and subtractions required of all straight-line algorithms which compute those functions. This permits a uniform derivation of the best lower bounds known for a number of familiar sets of rational functions. The result is proved without the use of substitution arguments. This not only provides an interesting contrast to standard approaches for arithmetic lower bounds, but also allows the algebraic setting to be somewhat generalized. Keywords: additions, algorithms, analysis of algorithms, arithmetic complexity, computational complexity, dimensionality, lower bounds, matrix multiplication, optimality, polynomials, rational functions.

url: http://hdl.handle.net/1813/7323
date: 2007-04-23
creator: Kozen, Dexter
viewed: 76
title: Typed Kleene Algebra
abstract: In previous work we have found it necessary to argue that certain theorems of Kleene algebra hold even when the symbols are interpreted as nonsquare matrices. In this note we define and investigate typed Kleene algebra, a typed version of Kleene algebra in which objects have types s pointing to t. Although nonsquare matrices are the principal motivation, there are many other useful interpretations: traces, binary relations, Kleene algebra with tests. We give a set of typing rules and show that every expression has a unique most general typing (mgt). Then we prove the following metatheorem that incorporates the abovementioned results for nonsquare matrices as special cases. Call an expression 1-free if it contains only the Kleene algebra operators (binary) +, (unary) +, 0, and ., but no occurrence of 1 or *. Then every universal 1-free formula that is a theorem of Kleene algebra is also a theorem of typed Kleene algebra under its most general typing. The metatheorem is false without the restriction to 1-free formulas.

url: http://hdl.handle.net/1813/7324
date: 2007-04-23
creator: von Eicken, Thorsten;Hawblitzel, Chris
viewed: 41
title: A Case for Language-Based Protection
abstract: The use of language mechanisms to enforce protection boundaries around software modules has become increasingly attractive. This paper examines the advantages and disadvantages of language-based protection over more traditional protection mechanisms, such as standard virtual memory protection

hardware, software fault isolation, and capability systems. Arguably, state-of-the-art language-based protection is more flexible and as safe as these other mechanisms. Two major remaining issues are the performance of language-based protection, and the management of resources. Regarding the latter, techniques to build an operating system kernel capable of managing resources and revoking rights are presented.

url: http://hdl.handle.net/1813/7325
date: 2007-04-23
creator: Kleinberg, Jon
viewed: 18
title: An Efficient Algorithm for Polymer Sequence Design
abstract: Polymer sequence design is a natural inverse problem to protein structure prediction: given a target structure in three dimensions, we wish to design an amino acid sequence that will fold to it. A model of Sun, Brem, Chan, and Dill casts this problem as an optimization on a space of sequences of hydrophobic (H) and polar (P) monomers; the goal is to find a sequence which achieves a dense hydrophobic core with few solvent-exposed hydrophobic residues. Sun et al. developed a heuristic method to search the space of sequences, without a guarantee of optimality or near-optimality; Hart subsequently raised the computational tractability of constructing an optimal sequence in this model as an open question. Here we answer this question by providing an efficient algorithm to construct optimal sequences; the method has a polynomial running time, and performs very efficiently in practice. We illustrate the implementation of our method on structures drawn from the Protein Data Bank, and discuss some possible extensions of the model.

url: http://hdl.handle.net/1813/7326
date: 2007-04-23
creator: Spivey-Knowlton, Michael;Aaron, Eric
viewed: 84
title: Frequency vs. Probability Formats: Framing the Three Doors Problem
abstract: Instead of subscribing to the view that people are unable to perform Bayesian probabilistic inference, recent research suggests that the algorithms people naturally use to perform Bayesian inference are better adapted for information presented in a natural frequency format than in the common probability format. We tested this hypothesis on the notoriously difficult three doors problem, inducing subjects to consider the likelihoods involved in terms of natural frequencies or in terms of probabilities. We then examined their ability to perform the mathematics underlying the problem, a stronger indication of Bayesian inferential performance than merely whether they gave the correct answer to the problem. With a robustness that may surprise people unfamiliar with the effects of information formats, the natural frequency group demonstrated dramatically greater normative mathematical performance than the probability group. This supports the importance of information formats in a more complex context than in previous studies.

url: http://hdl.handle.net/1813/7327
date: 2007-04-23
creator: Kreitz, Christoph;Hafizogullari, Ozan
viewed: 39
title: Dead Code Elimination Through Type Inference
abstract: We introduce a method to detect and eliminate dead code in typed functional programming languages. Our approach relies on a type system with simple subtypes for specifying dead code and a type inference algorithm for it. Through a careful seperation of the type system and the problem-specific assumptions we avoid \emph{ad hoc} rules in the type system. This, combined with the fact that our approach makes the flow information in a program explicit and is based on well-understood concepts makes our approach a good candidate for a general framework for program analysis. Our technique can be used in

optimizing compilers, optimization of programs extracted from theorem provers, optimization of modular systems, and other areas of software engineering.

url: http://hdl.handle.net/1813/7328
date: 2007-04-23
creator: Crary, Karl
viewed: 27
title: Admissibility of Fixpoint Induction over Partial Types
abstract: Partial types allow the reasoning about partial functions in type theory. The partial functions of main interest are recursively computed functions, which are commonly assigned types using fixpoint induction. However, fixpoint induction is valid only on admissible types. Previous work has shown many types to be admissible, but has not shown any dependent products to be admissible. Disallowing recursion on dependent product types substantially reduces the expressiveness of the logic; for example, it prevents much reasoning about modules, objects and algebras. In this paper I present two new tools, predicate-admissibility and monotonicity, for showing types to be admissible. These tools show a wide class of types to be admissible; in particular, they show many dependent products to be admissible. This alleviates difficulties in applying partial types to theorem proving in practice. I also present a general least upper bound theorem for fixed points with regard to a computational approximation relation, and show an elegant application of the theorem to compactness.

url: http://hdl.handle.net/1813/7329
date: 2007-04-23
creator: Crary, Karl
viewed: 18
title: Simple, Efficient Object Encoding using Intersection Types
abstract: I present a type-theoretic encoding of objects that interprets method dispatch by self-application (i.e., method functions are applied to the objects containing them) but still validates the expected subtyping relationships. The naive typing of self-application fails to validate the expected subtyping relationships because it is too permissive and allows application to similarly typed objects that are not self. This new encoding solves this problem by constraining methods to be applied only to self using existential and intersection types. Using this typing, I give a full account of objects including self types and method update. I also present another application of this object encoding to fully abstract, closure-passing closure conversion. The typing constructs used in this encoding appear to be quite rich, but they may be axiomatized in a novel, restricted fashion that is metatheoretically simple.

url: http://hdl.handle.net/1813/7330
date: 2007-04-23
creator: Toueg, Sam;Chen, Wei;Aguilera, Marcos Kawazoe
viewed: 99
title: Failure Detection and Consensus in the Crash-Recovery Model
abstract: We study the problems of failure detection and consensus in asynchronous systems in which processes may crash and recover, and links may lose messages. We first propose new failure detectors that are particularly suitable to the crash-recovery model. We next determine under what conditions stable storage is necessary to solve consensus in this model. Using the new failure detectors, we give two consensus algorithms that match these conditions: one requires stable storage and the other does not. Both algorithms tolerate link failures and are particularly efficient in the runs that are most likely in practice --- those with no failures or failure detector mistakes. In such runs, consensus is achieved within 3d time and with 4n messages, where d is the maximum message delay and n is the number of processes in the system.

url: http://hdl.handle.net/1813/7331
date: 2007-04-23
creator: Kumar, Amit;Kleinberg, Jon
viewed: 74
title: Wavelength Conversion in Optical Networks
abstract: In many models of optical routing, we are given a set of communication paths in a network, and we must assign a wavelength to each path so that paths sharing an edge receive different wavelengths. The goal is to assign as few wavelengths as possible, in order to make as efficient use as possible of the optical bandwidth. Wilfong and Winkler considered the problem of placing wavelength converters in such a network: if a node of the network contains a converter, any path that passes through this node may change its wavelength. Having converters at some of the nodes can reduce the number of wavelengths required for routing, down to the following natural {\em congestion bound}: even with converters, we will always need at least as many wavelengths as the maximum number of paths sharing a single edge. Thus Winkler and Wilfong defined a set S of nodes in a network to be {\em sufficient} if, placing converters at the nodes in S, every set of paths can be routed with a number of wavelengths equal to its congestion bound. They showed that finding a sufficient set of minimum size is NP-complete. In this paper, we provide a polynomial-time algorithm to find a sufficient set for an arbitrary directed network whose size is within a factor of 2 of minimum. For the special case of planar graphs with bi-directional edges, we obtain a polynomial-time approximation scheme. Our techniques establish a connection between the problem of finding a minimum sufficient set and an interesting simultaneous generalization of the Vertex Cover and Feedback Vertex Set problems in undirected graphs.

url: http://hdl.handle.net/1813/7332
date: 2007-04-23
creator: Vaysburd, Alexey
viewed: 16
title: Building Reliable Interoperable Distributed Objects with The MaestroTools
abstract: This work presents the Maestro Tools for development of reliable interoperable object-oriented distributed applications. We discuss the three fundamental parts of Maestro -- the object group tools, the client/object interoperability tools, and the group protocols which implement state machine replication of distributed objects -- with a special focus on practical usability and system integration issues.

url: http://hdl.handle.net/1813/7333
date: 2007-04-23
creator: von Eicken, Thorsten;Czajkowski, Grzegorz
viewed: 87
title: JRes: A Resource Accounting Interface for Java
abstract: In order to better support the Internet the computing model on server systems is undergoing several important changes. First, recent research ideas concerning dynamic operating system extensibility are finding their way into the commercial domain, resulting in designs of extensible databases and Web servers. Second, both ordinary users and service providers must deal with untrusted downloadable executable code of unknown origin and intentions. Across the board, Java has emerged as the language of choice for Internet-oriented software. We argue that, in order to realize its full potential in applications dealing with untrusted code, Java needs a flexible resource accounting interface. The design and prototype implementation of such an interface JRes - is presented in this paper. The interface allows to account for heap memory, CPU time, and network resources consumed by individual threads or collections of threads. JRes allows limits to be set on resources available to threads and it can invoke callbacks when these limits are exceeded. The JRes

prototype described in this paper is implemented on top of standard Java virtual machines and requires only a small amount of native code.

url: http://hdl.handle.net/1813/7334
date: 2007-04-23
creator: Spivey, Michael;Aaron, Eric
viewed: 65
title: Designing a Calculational Logic Theorem Prover: Insight into SearchProcedure via Eye Movements
abstract: We are designing and implementing an automated theorem prover that will in part attempt to simulate human performance on calculational logic theorem proving. To support this project, we recorded and analyzed people's eye movements while they constructed calculational proofs. Our findings confirm some expected behaviors (based on strategies and principles taught to students) that may previously have seemed untestable, such as the influence of the form of the current proof step and of syntax in general on the microcognition of the problem solver. The experiment also uncovered other interesting patterns, such as the seemingly inefficient but widely occurring tendency to attend to premises that are not used in the proof under consideration. Overall, we gained insights into microcognition that could not have been gained merely by studying written proofs. We expect these insights to directly impact the theorem prover under development, but they may also find a wider audience, appealing to educators and logicians who are familiar with calculational methods and student performance on calculational proofs. Our findings also support the notion that analyses of eye movements can improve our understanding of the way people perform some theorem proving tasks.

url: http://hdl.handle.net/1813/7335
date: 2007-04-23
creator: VERMA, ARUN
viewed: 15
title: STRUCTURED AUTOMATIC DIFFERENTIATION
abstract: Differentiation is one of the fundamental problems in numerical mathemetics. The solution of many optimization problems and other applications require knowledge of the gradient, the Jacobian matrix, or the Hessian matrix of a given function. Many large scale optimization applications (e.g., inverse problems) are very complex in nature. It becomes impractical to consider the function evaluation of such problems as a ``black-box'' function, since the computation is structured in some manner, going through a set of defined structured steps, i.e., problem structure. It pays to expose the problem structure in the computation to be able to compute the derivatives efficiently thus making the solution procedure practical. Automatic differentiation (AD) can compute fast and accurate derivatives of any degree computationally via propagating Taylor series coefficients using the chain rule. AD doesn't incur any truncation error and to compute the derivatives efficiently thus making the problem solution practical. would yield exact results if the calculations were done in real arithmetic; in other words the derivatives obtained are accurate to machine precision. This thesis is concerned with the efficient application of AD to large (and complex) optimization problems. The major theme is the structure exploitation of the user problem. We present methodologies which allow AD to exploit problem structure. An important idea is the exploitation of sparsity in the Jacobian matrices: We present a scheme which combines the forward and reverse modes of AD. Problem structure can be viewed in many different ways; one way is to look at the granularity of the operations involved. For example, differentiation carried out at the matrix-vector operations can lead to great savings in the time as well as space requirements. Figuring out the {\em kind} of computation is another way to view structure, e.g., partially separable or composite functions whose structur e can be exploited to get performance gains. In this thesis we develop a general structure framework which can be viewed hierarchically and allows for structure exploitation at various levels. For example, for time integration schemes employing stencils it is possible to exploit structure

at both the stencil level and the timestep level. We also present some advanced structure exploitation ideas, e.g., parallelism in structured computations and using structure in implicit computations. The use of AD as a derivative computing engine naturally automates all the methodologies presented in this work -- we present ways to make the design of numerical optimization software very transparent, and the presentation of problems by the user as easy as possible.

url: http://hdl.handle.net/1813/7336
date: 2007-04-23
creator: Toueg, Sam;Aguilera, Marcos Kawazoe
viewed: 27
title: Correctness Proof of Ben-Or's Randomized Consensus Algorithm
abstract: We present a correctness proof for Ben-Or's Randomized Consensus Algorithm for the case in which processes can fail by crashing, and a majority of processes is correct. This is the first time that the proof of Ben-Or's algorithm appears for this case. The proof has been extracted from [AT96]: it is a simplification of the correctness proof of a more complex consensus algorithm that involves both randomization and failure detection.

url: http://hdl.handle.net/1813/7337
date: 2007-04-23
creator: Ting, Dennis W.
viewed: 15
title: Some Results of the Space Requirements of Dynamic Memory Allocation Algorithms
abstract: Some Results of the Space Requirements of Dynamic Memory Allocation Algorithms

url: http://hdl.handle.net/1813/7338
date: 2007-04-23
creator: Guo, Katherine
viewed: 64
title: Scalable Message Stability Detection Protocols
abstract: In group communication, in order to deliver multicast messages reliably in a group, it is common practice for each member to maintain copies of all messages it sends and receives in a buffer for potential local retransmission. The storage of these messages is costly and buffers may grow out of bound. A form of garbage collection is needed to address this issue. Garbage collection occurs once a process learns that a message in its buffer has been received by every process in the group. The message is declared {\it stable} and is released from the buffer. An important part of garbage collection is message stability detection. This dissertation presents the result of an investigation into message stability detection protocols. A number of message stability detection protocols used in popular reliable multicast protocols are studied with a focus on their performance in large scale settings. This dissertation proposes a new gossip-style protocol with improved scalability and fault tolerance. This dissertation also shows that by adding a hierarchical structure to the set of basic protocols, their performance can be significantly improved when the number of participants is large.

url: http://hdl.handle.net/1813/7339
date: 2007-04-23
creator: Pearson, David
viewed: 30
title: Parallel Computing as a Commodity
abstract: Massively parallel computers have become undisputed champions in the supercomputing arena. The global computer industry, however, is increasingly dominated by consumer machines. In this thesis, we

argue that everyday computers must become highly parallel machines in order to sustain the performance gains we have come to expect. For parallel computation to become a commodity, there must be an architecture which can be scaled as easily as memory arrays are now. We also need to establish that parallelism can benefit everyday applications and that operating systems for such machines can provide as comfortable and robust an environment as we have on sequential machines. We introduce an architecture based on cellular automata---meshes of simple, locally-connected processors in either 2 or 3 dimensions. We argue that this architecture is easily scalable, and from a theoretical viewpoint it is essentially as efficient as any other scalable architecture. We show two instances of this architecture, a simple one implemented in silicon and a more complex one implemented through a simulator. To show the viability of this architecture for everyday tasks, we have developed fast parallel algorithms for RSA encryption (using residue number systems and a new method for converting one RNS to another) and for document formatting (using a space-filling curve for data layout to achieve optimal $O(\droot{n})$ running time on a d-dimensional mesh). We also describe the design of an operating system for a cellular array based on the notion of the OS as the periphery, rather than the kernel, and show several advantages in security and performance this confers. Finally, we investigate the 3-dimensional dynamic allocation problem faced by such a system. This problem is NP-hard even in its static form, but we describe a simple best-fit allocator that works well in practice.

url: http://hdl.handle.net/1813/7340
date: 2007-04-23
creator: Schneider, Fred B.;Gries, David
viewed: 16
title: Formalizations Of Substitution Of Equals For Equals
abstract: Inference rule "substitution of equals for equals" has been formalized in terms of simple substitution (which performs a replacement even though a free occurrence of a variable is captured), contextual substitution (which prevents such capture), and function application. We show that in connection with pure first-order predicate calculus, the function-application and no-capture versions of the inference rule are the same and are weaker than the capture version. We discuss the deductive apparatus needed for the no-capture version to be as powerful as the capture version.

url: http://hdl.handle.net/1813/7341
date: 2007-04-23
creator: Hayden, Mark;Minsky, Yaron;Van Renesse, Robbert
viewed: 25
title: A Gossip-Style Failure Detection Service
abstract: Failure Detection is valuable for system management, replication, load balancing, and other distributed services. To date, Failure Detection Services scale badly in the number of members that are being monitored. This paper describes a new protocol based on gossiping that does scale well and provides timely detection. We analyze the protocol, and then extend it to discover and leverage the underlying network topology for much improved resource utilization. We then combine it with another protocol, based on broadcast, that is used to handle partition failures.

url: http://hdl.handle.net/1813/7342
date: 2007-04-23
creator: Paul, Sanjoy;Keshav, Srinivasan
viewed: 15
title: Centralized Multicast
abstract: Most current schemes for multicast routing assume that multicast routers participate both in forwarding multicast packets and in control algorithms for routing, resource reservation, and group

management. By separating data and control flow, and by centralizing control in distinct control elements, we have designed a simple and scalable approach to IP multicast that we call Centralized Multicast. We present the details of our approach, a proof of its correctness, analysis of its performance, and a discussion of its advantages over current schemes.

url: http://hdl.handle.net/1813/7343
date: 2007-04-23
creator: Naumov, Pavel
viewed: 37
title: Publishing Formal Mathematics on the Web
abstract: Paper describes the design of the Nuprl Web Publisher - an automated tool for converting formal, computer-generated, mathematical texts into a set of hyper-linked HTML pages that preserves original, non-linear, text structure. The current version of the Web Publisher, also developed by the author, provides access to term structure of the displayed formulas and links to definitions of abstractions used in these formulas.

url: http://hdl.handle.net/1813/7344
date: 2007-04-23
creator: Payette, Sandra;Lagoze, Carl
viewed: 33
title: An Infrastructure for Open-Architecture Digital Libraries
abstract: A digital library is a managed collection of digital objects and services that support the storage, discovery, retrieval, and preservation of those objects. We describe an open architecture in which core digital library functionality is partitioned into a set of well-defined services. Each service can be accessed through a set of service requests that define its public interface. This paper describes a general digital object model and a set of service components, which include a naming service, a repository service, an index service, and a collection service. Interoperability is promoted when digital libraries are assembled from this set of core service components.

url: http://hdl.handle.net/1813/7345
date: 2007-04-23
creator: Schneider, Fred B.;Stoller, Scott
viewed: 19
title: Automated Stream-Based Analysis of Fault-Tolerance
abstract: A rigorous, automated approach to analyzing fault-tolerance of distributed systems is presented. The method is based on a stream model of computation that incorporates approximation mechanisms. One application is described: a protocol for fault-tolerant

url: http://hdl.handle.net/1813/7346
date: 2007-04-23
creator: Toueg, Sam;Chen, Wei;Aguilera, Marcos Kawazoe
viewed: 24
title: On Quiescent Reliable Communication
abstract: We study the problem of achieving reliable communication with quiescent algorithms (i.e., algorithms that eventually stop sending messages) in asynchronous systems with process crashes and lossy links. We first show that it is impossible to solve this problem without failure detectors. We then show that, among failure detectors that output lists of suspects, the weakest one that can be used to solve this problem is less than or greater than P, a failure detector that cannot be implemented. To overcome this difficulty, we introduce an implementable failure detector called Heartbeat and show that it can be used to achieve quiescent reliable

communication. Heartbeat is novel: in contrast to typical failure detectors, it does not output lists of suspects and it is implementable without timeouts. With Heartbeat, many existing algorithms that tolerate only process crashes can be transformed into quiescent algorithms that tolerate both process crashes and message losses. This can be applied to consensus, atomic broadcast, k-set agreement, atomic commitment, etc.

url: http://hdl.handle.net/1813/7347
date: 2007-04-23
creator: Seshadri, Praveen
viewed: 17
title: Relational Query Optimization with Enhanced ADTs
abstract: Object-relational queries access large complex data types and expensive methods of those data types. In earlier work, we modeled complex types as "Enhanced ADTs" (E-ADTs) and demonstrated the resulting performance improvements when implemented in the PREDATOR system. This paper explores the opportunities for further improvements through interactions between relational query optimization and E-ADT optimization. We identify four broad categories of optimization opportunities and study specific examples in each of these categories. These examples span query rewrite, indexing, aggregation and join optimization. Our conclusion is that non-trivial interactions exist between E-ADTs and relational queries, and that special optimization techniques are necessary to achieve good performance. These techniques have been prototyped in PREDATOR, and we present experimental results that demonstrate their effect.

url: http://hdl.handle.net/1813/7348
date: 2007-04-23
creator: Tabor, Whitney
viewed: 38
title: Dynamical Automata
abstract: The recent work on automata whose variables and parameters are real numbers (e.g., Blum, Shub, and Smale, 1989; Koiran, 1993; Bournez and Cosnard, 1996; Siegelmann, 1996; Moore, 1996) has focused largely on questions about computational complexity and tractability. It is also revealing to examine the metric relations that such systems induce on automata via the natural metrics on their parameter spaces. This brings the theory of computational classification closer to theories of learning and statistical modeling which depend on measuring distances between models. With this in mind, I develop a generalized method of identifying pushdown automata in one class of real-valued automata. I show how the real-valued automata can be implemented in neural networks. I then explore the metric organization of these automata in a basic example, showing how it fleshes out the skeletal structure of the Chomsky Hierarchy and indicates new approaches to problems in language learning and language typology.

url: http://hdl.handle.net/1813/7349
date: 2007-04-23
creator: Rodeh, Ohad Birman, Ken Hayden, Mark Dolev, Danny
viewed: 44
title: Dynamic Virtual Private Networks
abstract: We extend traditional Virtual Private Networks (VPNs) with fault-tolerance and dynamic membership properties, defining a Dynamic Virtual Private Network (DVPN). We require no new hardware and make no special assumptions about line security. An implementation exhibits low overheard, provides guarantees of authenticity and confidentiality to any IP application running over the virtual network. Our system is lightweight, allowing the use of multiple fine-grained VPNs. Instead of using many point-to-point secure connections to bridge insecure communication paths we share a single symmetric encryption key throughout the VPN. This permits tight control of the VPN membership and fast dynamic membership change. Since

we lower the cost of a single DVPN, we propose using multiple DVPNs to implement fine grained security. By enforcing policies over communication between DVPNs, our scheme supports multilevel security.

url: http://hdl.handle.net/1813/7350
date: 2007-04-23
creator: Hickey, Takako
viewed: 32
title: Availability and Consistency in a Partitionable Low Bandwidth Network
abstract: The Internet is a partitionable low bandwidth network. Two computers connected by the Internet could temporarily become unable to communicate for various reasons, from a failure at either end, to overloading of an intermediate node connecting the two, to an out-of-date routing table. The bandwidth of the Internet is relatively low: its data transfer speed is inadequate for applications that need to access very large data objects. Since its introduction the Internet kept a much faster rate of increase for the data available than for the data transfer speed. This trend is not likely to change any time soon. This thesis presents techniques to deal with availability and consistency in partitionable low bandwidth networks, and it presents a service suitable for use in such networks. The first part of the thesis presents replication techniques suitable in a partitionable network. A partitionable network puts goals of availability and consistency at odds. Making objects available in a partitionable network requires replication; yet modifications of replicated objects during a partition can introduce inconsistencies. We show various replication techniques that provide continuous availability while managing inconsistencies among replicas. The second part of the thesis describes the PEX system, an example of a service that instantiates these abstractions. PEX is an execution service that facilitates processing of remote data. It allows computations to be performed near data, so that data need not be copied over the network. It provides a session interface which facilitates the management of related computations operating on scattered data. Internally, PEX replicates various information, including sessions, using some of the techniques introduced in the first section of the thesis. This permits the system to keep computations running in the face of partitions. The third part of the thesis gives two example applications that use PEX (a distributed shell and a parallel make) and reports the performance of the PEX system.

url: http://hdl.handle.net/1813/7351
date: 2007-04-23
creator: Viswanath, Divakar
viewed: 82
title: Lyapunov Exponents from Random Fibonacci Sequences to the LorenzEquations
abstract: Ph.D. thesis. Please see inside document for an abstract.

url: http://hdl.handle.net/1813/7352
date: 2007-04-23
creator: Summers, Kristen
viewed: 25
title: Automatic Discovery of Logical Document Structure
abstract: The availability of large, heterogeneous repositories of electronic documents is increasing rapidly, and the need for flexible, sophisticated document manipulation tools is growing correspondingly. These tools can benefit greatly by exploiting logical structure, a hierarchy of visually observable organizational components of a document, such as paragraphs, lists, sections, em etc. Knowledge of this structure can enable a multiplicity of applications, including hierarchical browsing, structural hyperlinking, logical component-based retrieval, and style translation. Most work on the problem of deriving logical structure from document layout either relies on knowledge of the particular document style or finds a single flat set of text blocks. This thesis describes an implemented approach to discovering a full logical hierarchy in generic

text documents, based primarily on layout information. Since the styles of the documents are not known a priori, the precise layout effects of the logical structure are unknown. Nonetheless,typographical capabilities and conventions provide cues that can be used to deduce a logical structure for a generic document. In particular, the key idea is that analyses of the text contours at appropriate levels of granularity offer a rich source of information about document structure. The problem of logical structure discovery is divided into problems of segmentation, which separates the text into logical pieces, and classification, which labels the pieces with structure types. The segmentation algorithm relies entirely on layout-based cues, and the classification algorithm uses word-based information only when this is demonstrably unavoidable. Thus, this approach is particularly appropriate for scanned-in documents, since it is more robust with respect to OCR errors than a content-oriented approach would be. It is applicable, however, to the problem of analyzing any electronic document whose original formatting style rules remain unknown; thus, it can provide the basis for flexible document manipulation tools in heterogeneous collections.

url: http://hdl.handle.net/1813/7353
date: 2007-04-23
creator: Crary, Karl
viewed: 33
title: Type-Theoretic Methodology for Practical Programming Languages
abstract: The significance of type theory to the theory of programming languages has long been recognized. Advances in programming languages have often derived from understanding that stems from type theory. However, these applications of type theory to practical programming languages have been indirect; the differences between practical languages and type theory have prevented direct connections between the two. This dissertation presents systematic techniques directly relating practical programming languages to type theory. These techniques allow programming languages to be interpreted in the rich mathematical domain of type theory. Such interpretations lead to semantics that are at once denotational and operational, combining the advantages of each, and they also lay the foundation for formal verification of computer programs in type theory. Previous type theories either have not provided adequate expressiveness to interpret practical languages, or have provided such expressiveness at the expense of essential features of the type theory. In particular, no previous type theory has supported a notion of partial functions (needed to interpret recursion in practical languages), and a notion of total functions and objects (needed to reason about data values), and an intrinsic notion of equality (needed for most interesting results). This dissertation presents the first type theory incorporating all three, and discusses issues arising in the design of that type theory. This type theory is used as the target of a type-theoretic semantics for a expressive programming calculus. This calculus may serve as an internal language for a variety of functional programming languages. The semantics is stated as a syntax-directed embedding of the programming calculus into type theory. A critical point arising in both the type theory and the type-theoretic semantics is the issue of admissibility. Admissibility governs what types it is legal to form recursive functions over. To build a useful type theory for partial functions it is necessary to have a wide class of admissible types. In particular, it is necessary for all the types arising in the type-theoretic semantics to be admissible. In this dissertation I present a class of admissible types that is considerably wider than any previously known class.

url: http://hdl.handle.net/1813/7354
date: 2007-04-23
creator: Walter, Bruce
viewed: 30
title: DENSITY ESTIMATION TECHNIQUES FOR GLOBAL ILLUMINATION
abstract: In this thesis we present the density estimation framework for computing view-independent global illumination solutions. The framework consists of three phases: particle tracing, density estimation, and

decimation. Monte Carlo particle tracing is used to accurately simulate the light transport under a general spectral geometric-optics based physical model. Next kernel density estimation is used to reconstruct perceptual illumination functions. Finally decimation is used to optimize the resulting mesh for compactness and rapid interactive display as Gouraud-shaded triangles. The three principal contributions of this work are the framework's separation of transport and function reconstruction computations, its ability to produce accurate solutions with precisely known error characteristics, and the techniques that we introduce to improve its efficiency and accuracy. Particle tracing's generality allows us to eliminate or delay many common simplifying assumptions and improves our accuracy and error analysis. Delaying the density estimation until particle tracing is complete allows us to make better use of the expensive particle data. The separation of global transport and local representation computations also reduces the computational complexity of each phase, enhances the framework's scalability, and exposes abundant opportunities for parallelism. Another advantage is that we can solve directly for the radiant exitance without needing to estimate the more complicated spectral radiance function. Despite its advantages, if naively implemented the framework would be prohibitively expensive. Thus we also introduce several techniques that significantly improve its accuracy and efficiency. These include the separation of luminance and chromaticity bandwidths, perceptually-motivated noise visibility predictors, statistical bias detection techniques to automatically enhance underresolved illumination features, a local polynomial density estimation method to eliminate boundary bias, and wavelength importance sampling to reduce the spectral noise. Results of the framework are shown for some complex environments and compared against measured data for a simple scene. The strength of our framework is that it can simulate a wider variety of lighting effects, with fewer simplifying assumptions, and more precise error analysis that current view-independent methods. Furthermore, because of its accuracy, our density estimation framework solutions are used as reference solutions for judging the quality and effectiveness of more approximate but faster rendering methods.

url: http://hdl.handle.net/1813/7355
date: 2007-04-23
creator: Toueg, Sam;Aguilera, Marcos Kawazoe
viewed: 25
title: A Simple Bivalency Proof that t-Resilient Consensus Requires t+1 Rounds
abstract: We use a straightforward bivalency argument borrowed from [FLP85] to show that in a synchronous system with up to t crash failures solving consensus requires at least t+1 rounds. The proof is simpler and more intuitive than the traditional one: It uses an easy forward induction rather than a more complex backward induction which needs the induction hypothesis several times.

url: http://hdl.handle.net/1813/7356
date: 2007-04-23
creator: Pierce, David;Cardie, Claire
viewed: 19
title: Proposal for an Interactive Environment for Information Extraction
abstract: Information extraction systems have been successfully deployed for domains ranging from terrorist activities to medical records. However, building these systems remains costly for users who lack annotated training corpora or knowledge engineering expertise. This paper proposes a framework for an interactive information extraction environment in which the user trains the system by example and by feedback about performance. If successful, this will be the first system that allows end-users to create information extraction systems without the aid of computational linguists and NLP system designers.

url: http://hdl.handle.net/1813/7357
date: 2007-04-23

creator: Dolev, Danny;Xiao, Zhen;Hayden, Mark;Birman, Kenneth P.;Rodeh, Ohad
viewed: 36
title: Ensemble Security
abstract: Ensemble is a Group Communication System built at Cornell and the Hebrew Universities. It allows processes to create {\it process groups} in which scalable reliable fifo-ordered multicast and point-to-point communication are supported. The system also supports other communication properties, such as multicast causal and total ordering, flow control, etc.. This paper describes the security protocols and infrastructure of Ensemble. Applications using Ensemble with the extensions described here benefit from strong security properties. Assuming trusted authenticated members may not be corrupted, all communication is secured from tampering by outsiders. Our work extends previous work performed in the Horus system (Ensemble's predecessor) adding support for multiple partitions, efficient rekeying, and application defined security policies. Unlike Horus, which used its own security infrastructure with non-standard key distribution and timing services, Ensemble's security mechanism is based on a standard and very widely used security infrastructure: the PGP authentication engine.

url: http://hdl.handle.net/1813/7358
date: 2007-04-23
creator: Mariano, Adrian;Li, Yuying;Coleman, Thomas F.
viewed: 24
title: Segmentation of Pulmonary Nodule Images Using Total VariationMinimization
abstract: Total variation minimization has edge preserving and enhancing properties which make it suitable for image segmentation. We present Image Simplification, a new formulation and algo rithm for image segmentation. We illustrate the edge enhancing properties of total variation minimization in a discrete setting by giving exact solutions to the problem for piecewise constant functions in the presence of noise. In this case, edges can be exactly recovered if the noise is sufficiently small. After optimization, segmentation is completed using edge detection. We find that our image segmentation approach yields good results when applied to the segmentation of pulmonary nodules.

url: http://hdl.handle.net/1813/7359
date: 2007-04-23
creator: Huttenlocher, Dan;Kleinberg, Jon;Kedem, Klara;Chew, Paul
viewed: 83
title: Fast Detection of Common Geometric Substructure in Proteins
abstract: We consider the problem of identifying common three-dimensional substructures between proteins. Our method is based on comparing the shape of the α-carbon backbone structures of the proteins in order to find 3D rigid motions that bring portions of the geometric structures into correspondence. We propose a geometric representation of protein backbone chains that is compact yet allows for similarity measures that are robust against noise and outliers. We represents the structure of the backbone as a sequence of unit vectors, defined by each adjacent pair of α-carbons; we then define a measure of the similarity of two protein structures based on the RMS (root mean squared) distance between corresponding orientation vectors in the two proteins. Our measure has several advantages over standard position-based RMS measures that are commonly used for comparing protein shapes. In particular, the measure behaves well for comparing substructures, because unlike position-based measures the nonmatching portions of the structure do not dominate the measure. At the same time, it avoids the quadratic space and computational difficulties associated with the use of distance matrices and contact maps. We show applications of our approach to detecting common contiguous substructures in pairs of proteins, as well as the more difficult problem of identifying common protein domains (i.e., larger substructures that are not necessarily contiguous along the protein chain).

url: http://hdl.handle.net/1813/7360
date: 2007-04-23
creator: Verma, Arun;Li, Yuying;Coleman, Thomas F
viewed: 28
title: Reconstructing the unknown volatility function
abstract: Using market European option prices, a method for computing a {\em smooth} local volatility function in a 1-factor continuous diffusion model is proposed. Smoothness is introduced to facilitate accurate approximation of the true local volatility function from a finite set of observation data. It is emphasized that accurately approximating the true local volatility function is crucial in hedging even simple European options, and pricing exotic options. A spline functional approach is used: the local volatility function is represented by a spline whose values at chosen knots are determined by solving a constrained nonlinear optimization problem. The optimization formulation is amenable to various option evaluation methods; a partial differential equation implementation is discussed. Using a synthetic European call option example, we illustrate the capability of the proposed method in reconstructing the unknown local volatility function. Accuracy of pricing and hedging is also illustrated. Moreover, it is demonstrated that, using a different constant implied volatility for an option with different strike/maturity can produce erroneous hedge factors. In addition, real market European call option data on the S and P 500 stock index is used to compute the local volatility function; stability of the approach is demonstrated.

url: http://hdl.handle.net/1813/7361
date: 2007-04-23
creator: Kreitz, Christoph
viewed: 16
title: Formal Reasoning about Communication Systems II: Automated Fast-TrackReconfiguration
abstract: We present formal techniques for improving the performance of group communication systems built with the Ensemble toolkit. For common sequences of operations we identify a fast-track through a stack of communication protocols and reconfigure the system's code accordingly. Our techniques are implemented as fully automated tactics of the NuPRL proof development system and are based on an embedding the implementation language of Ensemble into the logical language of NuPRL. Together with verification techniques to be developed in the near future they will lead to a logical programming environment for the construction of reliable and efficient group communication systems.

url: http://hdl.handle.net/1813/7362
date: 2007-04-23
creator: von Eicken, Thorsten;Chang, Chi-Chao
viewed: 30
title: A Software Architecture for Zero-Copy RPC in Java
abstract: RPC has established itself as one of the more powerful communication paradigms for distributed computing. In recent years, object-oriented languages have impacted RPC semantics, with a number of variants providing remote method invocation and various forms of distributed object systems. At the same time, performance has changed little with the bottleneck being the network transport, in particular the in-kernel protocol implementations. This paper describes J-RPC, an RPC architecture that leverages user-level network interfaces (UNI) to circumvent the kernel on the critical path. It describes how the wire format and the RPC system can be engineered to allow zero-copy reception of Java objects and zero-copy transmission of arrays. All objects received are fully type-checked and can be directly used by the receiving program. The design is connection-oriented for performance and leverages the JVM's garbage collector when managing receive buffers. An implementation built from an off-the-shelf JVM and a commercial UNI is used to evaluate

the architecture and the tradeoffs of type-safe, zero-copy data marshaling.

url: http://hdl.handle.net/1813/7363
date: 2007-04-23
creator: Naumov, Pavel
viewed: 35
title: Formalizing Reference Types in NuPRL, PhD Thesis
abstract: This dissertation defines a Type Theory based semantics for Java-like reference type constructors. The primary focus is made on finding an adequate axiomatization of reference types in Type Theory. An extension of Type Theory, called {\em Reference Type Theory}, is introduced. It adds to the Type Theory language a reference type constructor and operations on reference type elements as primitive notions. The dissertation provides informal graph-based semantics for the Reference Type Theory, describes inference rules for this theory, and proves their consistency. Reference Type Theory is formalized in the Nuprl Proof Development System. This formalization is used to define a formal semantics for a fragment of the Java programming language and to verify several simple Java programs.

url: http://hdl.handle.net/1813/7364
date: 2007-04-23
creator: Liben-Nowell, David
viewed: 16
title: On the Structure of Syntenic Distance
abstract: This paper examines some of the rich structure of the syntenic distance measure of the evolutionary distance between genomes. This model, introduced by Ferretti, Nadeau, and Sankoff, abstracts away from the order of genes, and considers chromosomes as unordered sets of genes. The syntenic distance between two genomes is given by the minimum number of moves (fusing two chromosomes, fissioning one chromosome, or completing a reciprocal translocation between two chromosomes) required to transform one into the other. We consider previously unanalyzed approximation algorithm given by Ferretti et al, and prove that it is in fact a 2-approximation and that, further, it outperforms the algorithm presented by DasGupta et al on all instances. We prove a number of properties which give insight into the structure of optimal move sequences. We prove a monotonicity property for the syntenic distance, and give bounds on the number of moves required to solve the hardest instance of any given size. We then demonstrate that there exist instances in which any move sequence working solely within connected components is $2 - \epsilon$ times longer than optimal, which indicates that all previously proposed approximation algorithms can be no better than 2-approximations.

url: http://hdl.handle.net/1813/7365
date: 2007-04-23
creator: Naumov, Pavel
viewed: 24
title: Theory of Reference Types
abstract: Type Theory language is extended by a new constructor to deal with types, representing circular data structures. Although this constructor was designed to model Java reference types, it is general enough to represent self-referring data in many other programming languages. Informal introduction of the new reference type constructor is followed by a set of inference rules and a proof of their consistency.

url: http://hdl.handle.net/1813/7366
date: 2007-04-23
creator: Salton, Gerard;Bergmark, D.

viewed: 23
title: Clustered File Generation and Its Application to Computer Science Taxonomies
abstract: A clustered file organization is one where related, or similar records are grouped into classes, or clusters of items in such a way that all items within a cluster are jointly retrievable. Such a file organization is advantageous for interactive searching where tentative query formulations may be used and the records may be specified incompletely or approximately. An inexpensive file clustering method applicable to large files is given together with an appropriate file search method. The method is used to cluster a file of research articles in computer science based on citation similarities between the papers; this leads to the identification of groups of active computer science research topics and of productive computer scientists.

url: http://hdl.handle.net/1813/7367
date: 2007-04-23
creator: Huttenlocher, Daniel;Boykov, Yuri
viewed: 26
title: A New Bayesian Framework for Object Recognition
abstract: We describe a new approach to feature-based object recognition, using maximum a posteriori (MAP) estimation under a Markov random field (MRF) model. The main advantage of this approach is that it allows explicit modeling of dependencies between individual features of an object. For instance, we use the approach to model the fact that mismatched features due to partial occlusions tend to form spatially coherent groups rather than being independent. Efficient computation of the MAP estimate in our framework can be accomplished by finding a minimum cut on an appropriately defined graph. An even more efficient approximation, that does not use graph cuts, is also presented. This approximation technique, which we call spatially coherent matching (SCM), is closely related to generalized Hausdorff matching. We report some Monte Carlo experiments showing that the SCM technique improves substantially on the tradeoff between correct detection and false alarms compared with previous feature matching methods such as the Hausdorff distance.

url: http://hdl.handle.net/1813/7368
date: 2007-04-23
creator: Kleinberg, Jon
viewed: 17
title: Efficient Algorithms for Protein Sequence Design and the Analysis ofCertain Evolutionary Fitness Landscapes
abstract: Protein sequence design is a natural inverse problem to protein structure prediction: given a target structure in three dimensions, we wish to design an amino acid sequence that is likely fold to it. A model of Sun, Brem, Chan, and Dill casts this problem as an optimization on a space of sequences of hydrophobic (H) and polar (P) monomers; the goal is to find a sequence which achieves a dense hydrophobic core with few solvent-exposed hydrophobic residues. Sun et al. developed a heuristic method to search the space of sequences, without a guarantee of optimality or near-optimality; Hart subsequently raised the computational tractability of constructing an optimal sequence in this model as an open question. Here we resolve this question by providing an efficient algorithm to construct optimal sequences; our algorithm has a polynomial running time, and performs very efficiently in practice. We illustrate the implementation of our method on structures drawn from the Protein Data Bank. We also consider extensions of the model to larger amino acid alphabets, as a way to overcome the limitations of the binary H/P alphabet. We show that for a natural class of arbitrarily large alphabets, it remains possible to design optimal sequences efficiently. Finally, we analyze some of the consequences of this sequence design model for the study of evolutionary fitness landscapes. A given target structure may have many sequences that are optimal in the model of Sun et al.; following a notion raised by the work of J. Maynard Smith, we can ask whether these optimal sequences are ``connected'' by

successive point mutations. We provide a polynomial-time algorithm to decide this connectedness property, relative to a given target structure. We develop the algorithm by first solving an analogous problem expressed in terms of submodular functions, a fundamental object of study in combinatorial optimization.

url: http://hdl.handle.net/1813/7369
date: 2007-04-23
creator: von Eicken, Thorsten;Hu, Deyu;Chang, Chi-Chao;Hawblitzel, Chris;Czajkowski, Grzegorz;Spoonhower, Daniel
viewed: 28
title: Design and Evaluation of an Extensible Web and Telephony Server based on the J-Kernel
abstract: This paper describes the design and performance of the J-Server, an integrated web and telephony server that allows untrusted Java servlets to be dynamically uploaded to extend the server's functionality. The J-Kernel provides for protection and communication between J-Server servlets, and ensures that servlets can be cleanly terminated. A resource monitor called JRes is used to account for servlet resource usage. Two sample applications show that the overhead of J-Kernel task boundary crossings is small compared to the applications' overall running time. Experience developing applications for the J-Server demonstrates the benefits of extensible systems based on safe language protection, and the flexibility of the servlet model.

url: http://hdl.handle.net/1813/7370
date: 2007-04-23
creator: Zagorodnov, Dmitrii;Jacobsen, Kjetil;Schneider, Fred B.;Marzullo, Keith;Johansen, Dag
viewed: 80
title: NAP: Practical Fault-Tolerance for Itinerant Computations
abstract: NAP, a detection and recovery based scheme for implementing fault-tolerant itinerant computations, is presented. We give the semantics for the scheme and describe a protocol that implements NAP in Tacoma.

url: http://hdl.handle.net/1813/7371
date: 2007-04-23
creator: Inouye, Alan S.;Bellovin, Steven M.;Schneider, Fred B.
viewed: 27
title: Critical Infrastructures You Can Trust: Where Telecommunications Fits
abstract: This paper discusses two NISs: the public telephone network (PTN) and the Internet. Being themselves large and complex NISs, they not only merit study in their own right but can help us to understand some of the technical problems faced by the developers and operators of other NISs. In addition, the high cost of building a global communications infrastructure from the ground up implies that one or both of these two networks is likely to furnish communications services for most other NISs. Therefore, an understanding of the vulnerabilties of the PTN and Internet informs the assessment of the trustworthiness of other NISs. Ideas for improving the trustworthiness of the PTN and Internet are also proposed, both for the short-term (by improved use of existing technologies and procedures) and for the long-term (by identifying some areas where the state-of-the-art is inadequate and research is therefore needed). Finally, some observations are offered about Internet telephony and the use of the Internet for critical infrastructures.

url: http://hdl.handle.net/1813/7372
date: 2007-04-23
creator: von Eicken, Thorsten;Seshadri, Praveen;Mayr, Tobias;Czajkowski, Grzegorz
viewed: 41
title: Resource Control for Database Extensions
abstract: While object-relational database servers can be extended with user-defined functions (UDFs), the

security of the server may be compromised by these extensions. The use of Java to implement the UDFs is promising because it addresses some security concerns. However, it still permits interference between different users through the uncontrolled consumption of resources. In this paper, we explore the use of a Java resource management mechanism (JRes) to monitor resource consumption and enforce usage constraints. JRes enhances the security of the server in the presence of extensions allowing for (i) detection and neutralization of denial-of-service attacks aimed at resource monopolization, (ii) monitoring resource consumption which enables precise billing of users relying on UDFs, and (iii) obtaining feedback that can be used for adaptive query optimization. The feedback can be utilized either by the UDFs themselves or by the database system to dynamically modify the query execution plan. Both models have been prototyped in the Cornell Predator database system. We describe the implementation techniques, and present experiments that demonstrate the effects of the adaptive behavior facilitated by JRes. We conclude that, minimally, a database system supporting extensions should have a built-in resource monitoring and controlling mechanism. Moreover, in order to fully exploit information provided by the resource control mechanisms, both the query optimizer and the UDFs themselves should have access to this information.

url: http://hdl.handle.net/1813/7373
date: 2007-04-23
creator: Seshadri, Praveen;Mayr, Tobias
viewed: 17
title: Client-Site Query Extensions
abstract: We explore the execution of queries with client-site user-defined functions (UDFs). Many UDFs can only be executed at the client site, for reasons of scalability, security, confidentiality, or availability of resources. How should a query with client-site UDFs be executed? We demonstrate that the standard execution technique for server-site UDFs performs poorly. Instead, we adapt well-known distributed database algorithms and apply them to client-site UDFs. The resulting query execution techniques are implemented in the Cornell Predator database system, and we present performance results to demonstrate their effectiveness. We also reconsider the question of query optimization in the context of client-site UDFs. The known techniques for expensive UDFs are inadequate because they do not take the location of the UDF into account. We present an extension of traditional 'System-R' optimizers that suitably optimize queries with client-site operations.

url: http://hdl.handle.net/1813/7374
date: 2007-04-23
creator: Seshadri, Praveen;Chen, Zhiyuan
viewed: 14
title: A Compression Framework for Query Results
abstract: Decision-support applications in emerging environments require that entire SQL query results be shipped to clients for further analysis and presentation. These clients may use low bandwidth connections (like modems) or have severe memory restrictions (like palmtops). Consequently, there is a need to compress the results of a query for efficient transfer and client-side storage. This paper explores a variety of techniques that address this issue. We model the problem as the choice of an appropriate compression plan and present a framework to model acceptable compression plans. The factors that influence this choice include schema information and statistics on stored tables. Importantly, we demonstrate that the query itself and its evaluation plan can provide semantic information that can be used to compress the result. We demonstrate that these techniques can result in 75% greater compression than standard compression tools like WinZip on queries adapted from the TPC-D benchmark. We identify two topics for future research: the choice of an optimal compression plan, and the integration of query result compression into the regular query evaluation plan.

url: http://hdl.handle.net/1813/7375

date: 2007-04-23
creator: Morrisett, Greg;Weirich, Stephanie;Crary, Karl
viewed: 14
title: Intensional Polymorphism in Type-Erasure Semantics
abstract: Intensional polymorphism, the ability to dispatch to different routines based on types at run time, enables a variety of advanced implementation techniques for polymorphic languages, including tag-free garbage collection, unboxed function arguments, polymorphic marshalling, and flattened data structures. To date, languages that support intensional polymorphism have required a type-passing (as opposed to type-erasure) interpretation where types are constructed and passed to polymorphic functions at run time. Unfortunately, type-passing suffers from a number of drawbacks: it requires duplication of constructs at the term and type levels, it prevents abstraction, and it severely complicates polymorphic closure conversion. We present a type-theoretic framework that supports intensional polymorphism, but avoids many of the disadvantages of type passing. In our approach, run-time type information is represented by ordinary terms. This avoids the duplication problem, allows us to recover abstraction, and avoids complications with closure conversion. In addition, our type system provides another improvement in expressiveness; it allows unknown types to be refined in place thereby avoiding certain beta-expansions required by other frameworks.

url: http://hdl.handle.net/1813/7376
date: 2007-04-23
creator: Caldwell, James
viewed: 35
title: Decidability Extracted: Synthesizing "Correct-by-Construction" DecisionProcedures from Constructive Proofs
abstract: The topic of this thesis is the extraction of efficient and readable programs from formal constructive proofs of decidability. The proof methods employed to generate the efficient code are new and result in clean and readable Nuprl extracts for two non-trivial programs. They are based on the use of Nuprl's set type and techniques for extracting efficient programs from induction principles. The constructive formal theories required to express the decidability theorems are of independent interest. They formally circumscribe the mathematical knowledge needed to understand the derived algorithms. The formal theories express concepts that are taught at the senior college level. The decidability proofs themselves, depending on this material, are of interest and are presented in some detail. The proof of decidability of classical propositional logic is relative to a semantics based on Kleene's strong three-valued logic. The constructive proof of intuitionistic decidability presented here is the first machine formalization of this proof. The exposition reveals aspects of the Nuprl tactic collection relevant to the creation of readable proofs; clear extracts and efficient code are illustrated in the discussion of the proofs.

url: http://hdl.handle.net/1813/7377
date: 2007-04-23
creator: Kozen, Dexter
viewed: 19
title: On Hoare Logic and Kleene Algebra with Tests
abstract: We show that Kleene algebra with tests subsumes propositional Hoare logic. Thus the specialized syntax and deductive apparatus of Hoare logic are inessential and can be replaced by ordinary equational reasoning. It follows from the reduction that propositional Hoare logic is in PSPACE; we show that it is PSPACE-complete.

url: http://hdl.handle.net/1813/7378
date: 2007-04-23

creator: Kozen, Dexter;Hopkins, Mark
viewed: 27
title: Parikh's Theorem in Commutative Kleene Algebra
abstract: Parikh's Theorem says that the commutative image of every context free language is the commutative image of some regular set. Pilling has shown that this theorem is essentially a statement about least solutions of polynomial inequalities. We prove the following general theorem of commutative Kleene algebra, of which Parikh's and Pilling's theorems are special cases: Every system of polynomial inequalities $f_i(x_1,\ldots,x_n) \leq x_i$, $1\leq i\leq n$, over a commutative Kleene algebra K has a unique least solution in K^n; moreover, the components of the solution are given by polynomials in the coefficients of the f_i. We also give a closed-form solution in terms of the Jacobian matrix.

url: http://hdl.handle.net/1813/7379
date: 2007-04-23
creator: Lagoze, Carl;French, James C.;Dushay, Naomi
viewed: 34
title: A Characterization Study of NCSTRL Distributed Searching
abstract: NCSTRL, the Networked Computer Science Technical Reference Library, is a federated digital library based on the Dienst architecture. One aspect of this architecture is distributed searching, with digital library queries being dispatched from query routers to globally distributed indexers that process them and return results. We studied user data for a two-month period at five query routers in order to characterize some key performance aspects of distributed searching in an operational digital library. This study uncovered the following characteristics. Query processing at NCSTRL servers involves significant time waiting for responses from indexers. Each indexer's availability and response times appear unique to each query router. Different indexers' availability and response times are not similar from the viewpoint of a single query router. Query router waiting time for indexers is larger than indexer processing time, implying that communication time over the network is significant. We close by examining the breakdown of NCSTRL queries: the number of fielded vs. non-fielded queries, and the complexity of these queries.

url: http://hdl.handle.net/1813/7380
date: 2007-04-23
creator: Birman, Kenneth
viewed: 15
title: A Review of Experiences with Reliable Multicast
abstract: By understanding how real users have employed reliable multicast in real distributed systems, we can develop insight concerning the degree to which this technology has matched expectations. This paper reviews a number of applications with that goal in mind. Our findings point to tradeoffs between the form of reliability used by a system and its scalability and performance. We also find that to reach a broad user community (and a commercially interesting market) the technology must be better integrated with component and object-oriented systems architectures. Looking closely at these architectures, however, we identify some assumptions about failure handling which make reliable multicast difficult to exploit. Indeed, the major failures of reliable multicast are associated with attempts to position it within object oriented systems in ways that focus on transparent recovery from server failures. The broader opportunity appears to involve relatively visible embeddings of these tools into object-oriented architectures enabling knowledgeable users to make tradeoffs. Fault-tolerance through transparent server replication may be better viewed as an unachievable holy grail.

url: http://hdl.handle.net/1813/7381
date: 2007-04-23

creator: von Eicken, Thorsten;Chang, Chi-Chao
viewed: 24
title: Interfacing Java with the Virtual Interface Architecture
abstract: User-level network interfaces (UNIs) have reduced the overheads of communication by exposing the buffers used by the network interface DMA engine to the applications. This removes the kernel from the critical path of message transmission and reception, and it reduces the number of data copies performed on that path. Unfortunately, the fact that UNIs require the application to manage buffers explicitly makes it difficult to provide direct access to a UNI from Java, as the language explicitly prevents programs from controlling the location or layout of objects. This paper describes Javia, a Java interface to the Virtual Interface Architecture (VIA), an emerging UNI standard in the industry. Javia implements a special buffer abstraction that allows Java programs to allocate arrays in pinned memory and use them as communication buffers without copy. The location and lifetime of these arrays are controlled through small modifications to the garbage collector. Simple experiments show that Java programs can achieve round-trip times of 21us for small messages and bandwidths of 95Mbytes/sec for 4Kbyte messages.

url: http://hdl.handle.net/1813/7382
date: 2007-04-23
creator: Keshav, Srinivasan;Wang, Jia
viewed: 22
title: Efficient and Accurate Ethernet Simulation
abstract: The Internet is increasingly being called upon to provide different levels of service to different applications and users. A practical problem in doing so is that although Ethernet is one of the hops for nearly all communication in the Internet, it does not provide any QoS guarantees. A natural question, therefore, is the effect of offered load on Ethernet throughput and delay. In this paper, we present several techniques for accurately and quickly modeling the behavior of a heavily loaded Ethernet link. We first present a distributed approach to exact simulation of Ethernet, which eliminates sophisticated collision detection. Then, we describe an efficient distributed simulation model, called Fast Ethernet Simulation, that empirically models an Ethernet link to quickly and accurately simulate it. By eliminating the implementation of CSMA/CD protocol, our approach reduces computational complexity drastically while still maintaining desirable accuracy. Performance results show that our techniques not only add very little overhead (less than 5 in our tests) to the basic cost of simulating an Ethernet link, but also closely match real-world mesurements. We also present efficient techniques for compressing cumulative distributions using hyperbolic curves and for monitoring the load on a heavily-loaded link.

url: http://hdl.handle.net/1813/7383
date: 2007-04-23
creator: Zhang, Yu;Chen, Zhiyuan;Zhang, Yin;Wang, Jia
viewed: 76
title: Image Disorientation Auto-Recovery
abstract: Automatically detecting and correcting disoriented image frames in a content-related image sequence is a problem that must be addressed in many image and video applications. In this paper, we give a robust feature-based algorithm to efficiently detect and adjust the disorientation of images.

url: http://hdl.handle.net/1813/7384
date: 2007-04-23
creator: Ooi, Wei-Tsang;Wang, Jia
viewed: 22
title: Detecting Static Objects in Busy Scenes

abstract: Detecting static objects in scenes containing significant number of moving objects has several applications in video surveillance. One example is the detection of suspicious packages which is left unattended in an airport terminal or railway station. This paper outlines an approach to automatically detect static objects from a video sequence of a busy scene. Our approach consists of two phase : foreground object extraction and object matching. In the first phase, we find the foreground objects in current video frame, using an image of a background as reference. In the object matching phase, we try to match the objects with objects that appears before in previous frames. Matching is done based on three parameter : shape and position, intensity and edge. Temporary occluded of objects is also handled. We built a system based on our approach. Preliminary experiments shows that our system are able to identify static objects in a busy scene in real time.

url: http://hdl.handle.net/1813/7385
date: 2007-04-23
creator: Keshav, Srinivasan;Qiu, Lili;Zhang, Yin
viewed: 31
title: Optimizing TCP Start-up Performance
abstract: The performance of many networking protocols is dependent on a handful of tuning parameters. However, it is not obvious how to set or adapt these parameters to optimize performance. We believe that this optimization task can benefit from passive monitoring of current network performance. In this paper, we apply this methodology for initializing TCP parameters, such as initial congestion window size and slow start threshold for short connections. We analytically derive the optimal initial parameters, and use simulations to study its effectiveness. Our innovations include: (i) derivation of optimal TCP initial parameters as a function of link characteristics; (ii) abstract a communication path as a virtual link and model cross traffic as perturbation on it; (iii) an efficient architecture for network performance discovery; (iv) a new pacing algorithm that combines leaky bucket flow control with traditional window-based flow control. Our results show this approach leads to significant performance improvement.

url: http://hdl.handle.net/1813/7386
date: 2007-04-23
creator: Kotlyar, Vladimir
viewed: 15
title: Relational Algebraic Techniques for the Synthesis of Sparse MatrixPrograms
abstract: Sparse matrix computations are ubiquitous in computational science. However, the development of high-performance software for sparse matrix computations is a tedious and error-prone task, for two reasons. First, there is no standard way of storing sparse matrices, since a variety of formats are used to avoid storing zeros, and the best choice for the format is dependent on the problem and the architecture. Second, for most algorithms, it takes a lot of code reorganization to produce an efficient sparse program that is tuned to a particular format. We view the problem of supporting effective development of high-performance sparse matrix codes as one of {\em generic programming}. Generic programming is a discipline of designing and implementing software components which can be used when there is a set of {\em related data structures} supporting a common semantics described by an API or protocol, and a set of {\em common algorithms} that can be formulated in terms of this API. When designing a generic programming system one must address the following fundamental questions: -- How do we represent efficient algorithms independently of any particular data-representation scheme? -- How do we provide an interface to a diverse set of data-structures? -- How do we ``knit'' together the representation of the algorithms and the representation for the data to obtain an efficient implementation? This dissertation presents a {\em relational algebraic model} for automatically generating efficient sparse codes starting with dense matrix codes and specification of sparse matrix formats. Our techniques are based on viewing arrays as relations and the execution of DOALL loop

nests and loops with reductions as evaluation of queries over these relations. Storage formats are specified to the compiler through search and enumeration access methods and their costs. Code restructuring is then formulated as the search for the most efficient plan for the query. The main step in this process is the identification of simultaneous enumeration of data structures (relational joins) and the determination of the best implementations of this enumeration. This software architecture not only provides for a clean design of the compiler, but it also exposes additional opportunities for code optimization and has led us to more general transformation algorithms than previously reported in the literature. We present experimental data that demonstrates that the code generated by our compiler achieves performance competitive with that of hand-written codes for important computational kernels.

url: http://hdl.handle.net/1813/7387
date: 2007-04-23
creator: Spivey, Michael;Aaron, Eric
viewed: 66
title: Insight into Theorem Proving via Eye Movements
abstract: We are implementing an automated theorem proving system that will in part attempt to simulate human per-formance on calculational logic. To support this project, we recorded and analyzed people's eye movements while they constructed calculational proofs. Our find-ings confirm some expected behaviors (based on strate-gies and principles taught to students) that previously may have seemed untestable, such as the influence of the form of the current proof step and of syntax in gen-eral on the moment-by-moment computations of the problem solver. The experiment also uncovered other interesting patterns, such as the seemingly inefficient but widely occurring tendency to attend to particular premises despite their not being used in the proof under consideration. Overall, we gained insights into real-time problem solving that directly apply to our automated system and could not have been gained merely by studying written proofs. Our findings also demonstrate that analyses of eye movements can improve our under-standing of the psychology of theorem proving.

url: http://hdl.handle.net/1813/7388
date: 2007-04-23
creator: Naumov, Pavel
viewed: 25
title: Importing Isabelle Formal Mathematics into NuPRL
abstract: Isabelle and NuPRL are two theorem proving environments that are written in different dialects of ML using different formula syntaxes and different logical foundations. In spite of this, they have similar sets of basic theories, representing the same mathematical concepts. This paper presents the design of an automated converter from Isabelle into NuPRL that allows sharing formal knowledge between these two provers. Such sharing eliminates the need for re-proving the same results in different systems and opens door for joint work on large verification projects. The paper starts with an overview of the problem and of the related works. The second part outlines the embedding of Isabelle syntax into NuPRL and technical details of the converter design. In the third section logical soundness of this embedding is shown.

url: http://hdl.handle.net/1813/7389
date: 2007-04-23
creator: Cardie, Claire;Howe, Nicholas
viewed: 27
title: Weighting Unusual Feature Types
abstract: Feature weighting is known empirically to improve classification accuracy for k-nearest neighbor classifiers in tasks with irrelevant features. Many feature weighting algorithms are designed to work with

symbolic features, or numeric features, or both, but cannot be applied to problems with features that do not fit these categories. This paper presents a new k-nearest neighbor feature weighting algorithm that works with any kind of feature for which a distance function can be defined. Applied to an image classification task with unusual set-like features, the technique improves classification accuracy significantly. In tests on standard data sets from the UCI repository, the technique yields improvements comparable to weighting features by information gain.

url: http://hdl.handle.net/1813/7390
date: 2007-04-23
creator: Heng, Wee-Liang
viewed: 16
title: Approximately Optimal Elimination Orderings for Sparse Matrices
abstract: PhD thesis of Wee-Liang Heng

url: http://hdl.handle.net/1813/7391
date: 2007-04-23
creator: Zagorodnov, Dmitrii;Jacobsen, Kjetil;Schneider, Fred B.;Marzullo, Keith;Johansen, Dag
viewed: 83
title: NAP: Practical Fault-Tolerance for Itinerant Computations
abstract: NAP is a protocol for supporting fault-tolerance in intinerant computations. It employs a form of failure detection and recovery, and it generalizes the primary-backup approach to a new compuational model. The guarantees offered by NAP as well as an implementation for NAP in Tacoma are discussed.

url: http://hdl.handle.net/1813/7392
date: 2007-04-23
creator: Glew, Neal
viewed: 34
title: Type Dispatch for Named Hierarhical Types
abstract: Type dispatch constructs are an important feature of many programming languages. Scheme has predicates for testing the runtime type of a value. Java has a class cast expression and a try statement for switching on an exception's class. Crucial to these mechanisms, in typed languages, is type refinement: The static type system will use type dispatch to refine types in successful dispatch branches. Existing work in functional languages has addressed certain kinds of type dispatch, namely, intensional type analysis. However, this work does not extend to languages with subtyping nor to named types. This paper describes a number of type dispatch constructs that share a common theme: class cast and class case constructs in object oriented languages, ML style exceptions, hierarchical extensible sums, and multimethods. I describe a unifying mechanism, {\em tagging}, that abstracts the operation of these constructs, and formalise a small tagging language. After discussing how to implement the tagging language, I present a more primitive language and give a formal translation from the tagging language.

url: http://hdl.handle.net/1813/7393
date: 2007-04-23
creator: Xiao, Zhen;Hayden, Mark
viewed: 33
title: A Multicast Flow Control Protocol
abstract: This paper describes the goals, approach, implementation, and performance of Mflow, a multicast flow control protocol. Our work focuses on the issues that arise from the increase in acknowledgments that occur as the size of the group grows. Mflow makes use of bulk acknowledgments to substantially reduce

the number of acknowledgments per multicast message. It also staggers acknowledgments from different destinations to avoid storms of messages. We demonstrate that staggering can both decrease the number of acknowledgments needed for effective flow control as well as increase the robustness of the protocol to changes in the environment. We analyze both message and computation efficiency of Mflow. The protocol is computationally efficient and performs well in our experiments.

url: http://hdl.handle.net/1813/7394
date: 2007-04-23
creator: Walker, David
viewed: 36
title: A Type System for Expressive Security Policies
abstract: {\em Certified code} is a general mechanism for enforcing security properties. In this paradigm, untrusted agent code carries annotations that allow a host to verify its trustworthiness. Before running the agent, the host checks the annotations and proves that they imply the host's security policy. Despite the flexibility of this scheme, so far, compilers that generate proof-carrying code have focused on simple memory and control-flow safety rather than more general security properties. {\em Security automata} can enforce an expressive collection of security policies including access control policies and resource bounds policies. In this paper, we show how to take specifications in the form of security automata and automatically transform them into signatures for a typed lambda calculus that will enforce the corresponding safety property. Moreover, we describe how to instrument typed source language programs with security checks and typing annotations so that the resulting programs are provably secure and can be mechanically checked. This work provides a foundation for the process of automatically generating secure certified code in a type-theoretic framework.

url: http://hdl.handle.net/1813/7395
date: 2007-04-23
creator: Deianov, Borislav;Toueg, Sam;Aguilera, Marcos Kawazoe
viewed: 23
title: Revisiting the Weakest Failure Detector for Uniform Reliable Broadcast
abstract: Uniform Reliable Broadcast (URB) is a communication primitive that requires that if a process delivers a message, then all correct processes also deliver this message. A recent PODC paper [HR99] uses Knowledge Theory to determine what failure detectors are necessary to implement this primitive in asynchronous systems with process crashes and lossy links that are fair. In this paper, we revisit this problem using a different approach, and provide a result that is simpler, more intuitive, and, in a precise sense, more general.

url: http://hdl.handle.net/1813/7396
date: 2007-04-23
creator: Zhang, Yin
viewed: 30
title: WebScript -- A Scripting Language for the Web
abstract: WebScript is a scripting language for processing Web documents. Designed as an extension to Jacl, the Java implementation of Tcl, WebScript allows programmers to manipulate HTML in the same way as Tcl manipulates text strings and GUI elements. This leads to a completely new way of writing the next generation of Web applications. This paper presents the motivation behind the design and implementation of WebScript, an overview of its major features, as well as some demonstrations of its power.

url: http://hdl.handle.net/1813/7397

date: 2007-04-23
creator: Lagoze, Carl;French, James C.;Dushay, Naomi
viewed: 35
title: Predicting Indexer Performance in a Distributed Digital Library
abstract: Resource discovery in a distributed digital library poses many challenges, one of which is how to choose search engines for query distribution, given a query and a set of search engines. This paper focuses on search engine performance as a criterion for search engine selection and defines two measurements of search engine performance: availability - will the search engine respond within a time limit and response time - how quickly will the search engine respond, given that it responds at all. We predicted both of these performance characteristics with a variety of algorithms, all of which required little computation time and combined past performance data for each search engine into a succinct record. We used operational data from the NCSTRL distributed digital library to make and evaluate predictions, and we found that simple prediction methods performed as well as more complex methods and that prediction accuracy was closely related to data consistency.

url: http://hdl.handle.net/1813/7398
date: 2007-04-23
creator: Keshav, Srinivasan;Zhang, Yin;Qiu, Lili
viewed: 34
title: On Individual and Aggregate TCP Performance
abstract: As the most widely used reliable transport in today's Internet, TCP has been extensively studied in the past decade. However, previous research usually only considers a small or medium number of concurrent TCP connections. The TCP behavior under many competing TCP flows has not been sufficiently explored. In this paper we use extensive simulations to investigate the individual and aggregate TCP performance for large number of concurrent TCP flows. We have made three major contributions. First, we develop an abstract network model that captures the essence of wide-area Internet connections. Second, we study the performance of a single TCP flow with many competing TCP flows by evaluating the best-known analytical model proposed in the literature. Finally, we examine the aggregate TCP behavior exhibited by many concurrent TCP flows, and derive general conclusions about the overall throughput, goodput, and loss probability.

url: http://hdl.handle.net/1813/7399
date: 2007-04-23
creator: Minsky, Yaron;Budiu, Mihai;Xiao, Zhen;Ozkasap, Oznur;Hayden, Mark;Birman, Kenneth P.
viewed: 36
title: Bimodal Multicast (revised)
abstract: There are many methods for making a multicast protocol "reliable". At one end of the spectrum, a reliable multicast protocol might offer atomicity guarantees, such as all-or-nothing delivery, delivery ordering, and perhaps additional properties such as virtually synchronous addressing. At the other are protocols that use local repair to overcome transient packet loss in the network, offering 'best effort' reliability. Yet none of this prior work has treated stability of multicast delivery as a basic reliability property, such as might be needed in an internet radio, TV, or conferencing application. This paper looks at reliability with a new goal: development of a multicast protocol which is reliable in a sense that can be rigorously quantified and includes throughput stability guarantees. We characterize this new protocol as a "bimodal multicast" in reference to its reliability model, which corresponds to a family of bimodal probability distributions. Here, we introduce the protocol, provide a theoretical analysis of its behavior, review experimental results, and discuss some candidate applications. These confirm that bimodal multicast is reliable, scalable, and that the protocol provides remarkably stable delivery throughput.

url: http://hdl.handle.net/1813/7400
date: 2007-04-23
creator: Qiu, Lili
viewed: 29
title: Programming Language Translation
abstract: As programming languages become more and more diversified, there is an increasing demand to translate programs written in one high-level language into another. Such translation can help us more effectively reuse the existing code, especially when automating translation is possible. However due to many subtle distinctions between different languages, usually only a subset of translation can be automated. The first half of the paper describes the details of automating most of the translation from C to C++, as well as the difficulties encountered. The second half of the paper talks about the experience of manually porting Java programs to C++, and identifies some of the issues and challenges in automating this translation process. Through the discussions, it is evident that translation is heavily language specific. Comprehensive knowledge about the languages and their subtle distinctions is essential. On the other hand, designing tools to allow high level specification of translation rules and effectively incorporate human interaction is a generic approach to any language translation problem, which is an interesting research problem to explore.

url: http://hdl.handle.net/1813/7401
date: 2007-04-23
creator: Wang, Jia
viewed: 26
title: A Survey of Web Caching Schemes for the Internet
abstract: The World Wide Web can be considered as a large distributed information system that provides access to shared data objects. As one of the most popular applications currently running on the Internet, the size of World Wide Web is of an exponential growth, which results in network congestion and server overloading. Web caching has been recognized as one of the effective schemes to alleviate the server bottleneck and reduce the network traffic, thereby minimize the user access latencies. In this paper, we first discribe the elements of a Web caching system and its desirable properties. Then, we survey the state-of-art techniques which have been used in Web caching systems. Finally, we discuss the research frontier in Web caching.

url: http://hdl.handle.net/1813/7402
date: 2007-04-23
creator: Birman, Kenneth P.;Xiao, Zhen;Ozkasap, Oznur
viewed: 75
title: Scalability of Two Reliable Multicast Protocols
abstract: Growing demand for multicast commun-ication in large network settings has focused attention on the scalability of reliable multicast protocols. Our paper uses both simulation tools and experiments to compare two scalable protocols, focusing on an aspect not often studied: we emphasize stability of latency distributions as these protocols scale, although also considering overhead and link utilization. These properties are considered in a variety of network topologies and with several levels of packet loss. Our findings confirm that SRM scales poorly under some conditions: to obtain reliability, the protocol incurs overhead linear in group size and throughput fluctuates erratically. We also show that SRM latencies can be very large and that latency distributions are unstable as a function of group size and network topology. Our own protocol, Bimodal Multicast, also exhibits overhead growth, but the rate of growth is slow, and latency distributions and delivery throughput rates are stable.

url: http://hdl.handle.net/1813/7403

date: 2007-04-23
creator: Keshav, Srinivasan;Wang, Jia
viewed: 23
title: Efficient and Accurate Ethernet Simulation (revised)
abstract: The Internet is increasingly being called upon to provide different levels of service to different applications and users. A practical problem in doing so is that although Ethernet is one of the hops for nearly all communication in the Internet, it does not provide any QoS guarantees. A natural question, therefore, is the effect of offered load on Ethernet throughput and delay. In this paper, we present several techniques for accurately and efficiently modeling the behavior of a heavily loaded Ethernet link. We first present a distributed approach to exact simulation of Ethernet. Then, we describe an efficient distributed simulation model, called Fast Ethernet Simulation, that empirically models an Ethernet link to quickly and accurately simulate it. By eliminating the implementation of CSMA/CD protocol, our approach reduces computational complexity drastically while still maintaining desirable accuracy. Performance results show that our techniques not only add very little overhead (less than 5% in our tests) to the basic cost of simulating an Ethernet link, but also closely match real-world measurements. We also present efficient techniques for compressing cumulative distributions using hyperbolic curves and for monitoring the load on a heavily loaded link. Finally, we show applications to illustrate the potential usage of the Fast Ethernet Simulation.

url: http://hdl.handle.net/1813/7404
date: 2007-04-23
creator: Seshadri, Praveen;Mayr, Tobias
viewed: 20
title: Pervasive Query Processing
abstract: We propose a radical departure from the architecture of conventional server-centered database query processing systems. Instead, we propose pervasive query processing on every component of the system: the server, the clients, and the storage components. The demands of modern applications and the current technology trends suggest that it is a significant limitation to require that all query processing is confined to the server. Consequently, we develop an architecture that is based on query processing engines that are integrated on every site of the database system. These software platforms that allow the execution of portable database programs on a variety of underlying physical platforms are called Database Virtual Machines.

url: http://hdl.handle.net/1813/7405
date: 2007-04-23
creator: Kozen, Dexter
viewed: 75
title: Language-Based Security
abstract: Security of mobile code is a major issue in today's global computing environment. When you download a program from an untrusted source, how can you be sure it will not do something undesirable? In this paper I will discuss a particular approach to this problem called language-based security. In this approach, security information is derived from a program written in a high-level language during the compilation process and is included in the compiled object. This extra security information can take the form of a formal proof, a type annotation, or some other form of certificate or annotation. It can be downloaded along with the object code and automatically verified before running the code locally, giving some assurance against certain types of failure or unauthorized activity. The verifier must be trusted, but the compiler, code, and certificate need not be. Java bytecode verification is an example of this approach. I will give an overview of some recent work in this area, including a particular effort in which we are trying to make the production of certificates and the verification as efficient and invisible as possible.

url: http://hdl.handle.net/1813/7406
date: 2007-04-23
creator: Grossman, Dan;Zdancewic, Steve
viewed: 28
title: Principals in Programming Languages: Technical Results
abstract: This is the companion technical report for ``Principals in Programming Languages'' [20]. See that document for a more readable version of these results. In this paper, we describe two variants of the simply typed $\lambda$-calculus extended with a notion of {\em principal}. The results are languages in which intuitive statements like ``the client must call $\mathtt{open}$ to obtain a file handle'' can be phrased and proven formally. The first language is a two-agent calculus with references and recursive types, while the second language explores the possibility of multiple agents with varying amounts of type information. We use these calculi to give syntactic proofs of some type abstraction results that traditionally require semantic arguments.

url: http://hdl.handle.net/1813/7408
date: 2007-04-23
creator: Keshav, Srinivasan;Wang, Jia;Zhang, Yu
viewed: 25
title: The Implication of Network Performance on Service Quality
abstract: As the Internet infrastructure evolves to include Quality of Service (QoS), it is necessary to map application quality requirements to the the network performance specifications in terms of delay and loss rate. While past work has addressed the dependency of audio and video applications on these underlying QoS metrics, little work has been done in the area of Web traffic. In this paper, we use a combination of emulation, simulation, and analysis to quantify the effect of network performance metrics on HTTP request latency and the perceptual quality of an audio application. Although our work is done in the context of a LAN environment, the results generalize to a more general WAN environment. Our contributions are three-fold. First, we combine simulation and emulation techniques in setting up an accurate yet controllable testbed. The use of network simulator Entrapid and its built-in Fast Ethernet Simulation makes our simulation both efficient and accurate. Second, for Web applications, we define a new TCP short connection model that computes the latency of Web retrieval accurately and efficiently given only packet delay and loss rate characteristics apriori. Experiments show that our model significantly improves the accuracy of the best-known TCP short connection model by correctly capturing TCP retransmission behavior. Finally, for Internet telephony, we show that the packet delay variance is the dominant network characteristics which affect the perceptual quality. As a result, the service quality drops dramatically when the Ethernet offered load reaches 80%. This can serve as a guideline for studies towards improving service quality of Internet telephony.

url: http://hdl.handle.net/1813/7409
date: 2007-04-23
creator: Stodghill, Paul;Pingali, Keshav;Kotlyar, Vladimir;Mateev, Nikolay
viewed: 35
title: A Generic Programming System for Sparse Matrix Computations
abstract: Sparse matrices are stored in compressed formats in which zeros are not stored explicitly. Writing high-performance sparse matrix libraries is a difficult and tedious job because there are many compressed formats in use and each of them requires specialized code. In this paper, we argue that (i) compressed formats should be viewed as {\em indexed-sequential access structures} (in the database sense), and (ii) efficient sparse codes exploit such indexing structures wherever possible. This point of view leads naturally to restructuring compiler technology that can be used to synthesize many sparse codes from high-level algorithms and specifications of sparse formats, exploiting indexing structures for efficiency. We show that appropriate

abstractions of the indexing structures of commonly used formats can be provided to such a compiler through the type structure of a language like C++. Finally, we describe experimental results obtained from the {\em Bernoulli Sparse Compiler} which demonstrate that the performance of code generated by this compiler is comparable to the performance of programs in the NIST Sparse BLAS library. One view of this system is that it exploits restructuring compiler technology to perform a novel kind of template instantiation.

url: http://hdl.handle.net/1813/7410
date: 2007-04-23
creator: Lee, Lillian;Ando, Rie
viewed: 35
title: Unsupervised Statistical Segmentation of Japanese Kanji Strings
abstract: Word segmentation is an important issue in Japanese language processing because Japanese is written without space delimiters between words. We propose a simple dictionary-less method to segment Japanese kanji sequences into words based solely on character n-gram counts from an unannotated corpus. The performance was often better than that of rule-based morphological analyzers over a variety of both standard and novel error metrics.

url: http://hdl.handle.net/1813/7411
date: 2007-04-23
creator: Xiao, Zhen;Birman, Kenneth P.,;Van Renesse, Robbert van;Ozkasap, Oznur
viewed: 40
title: Efficient Buffering in Reliable Multicast Protocols
abstract: Reliable multicast protocols provide all-or-none delivery to participants. Traditionally, such protocols suffer from large buffering requirements, as receivers have to buffer messages, and buffer sizes grow with the number of participants. In this paper, we describe an optimization that allows such protocols to reduce the amount of buffering drastically at the cost of a very small probability that all-or-none delivery is violated. We analyze this probability, and simulate an optimized version of an epidemic multicast protocol to validate the effectiveness of the optimization. We find that the buffering requirements are sub-constant, that is, the requirements shrink with group size, while the probability of all-or-none violation can be set to very small values.

url: http://hdl.handle.net/1813/7412
date: 2007-04-23
creator: Schneider, Fred B.;Erlingsson, Ulfar
viewed: 73
title: SASI Enforcement of Security Policies: A Retrospective
abstract: SASI enforces security policies by modifying object code for a target system before that system is executed. The approach has been prototyped for two rather different machine architectures: Intel x86 and Java JVML. Details of these prototypes and some generalizations about the SASI approach are discussed.

url: http://hdl.handle.net/1813/7413
date: 2007-04-23
creator: Schneider, Fred B.
viewed: 16
title: Enforceable Security Policies
abstract: A precise characterization is given for the class of security policies enforceable with mechanisms that work by monitoring system execution, and automata are introduced for specifying exactly that class of security policies. Techniques to enforce security policies specified by such automata are also discussed.

url: http://hdl.handle.net/1813/7414
date: 2007-04-23
creator: Kozen, Dexter
viewed: 19
title: On Hoare Logic, Kleene Algebra, and Types
abstract: We show that propositional Hoare logic is subsumed by the type calculus of typed Kleene algebra augmented with subtypes and typecasting. Assertions are interpreted as typecast operators. Thus Hoare-style reasoning with partial correctness assertions reduces to typechecking in this system.

url: http://hdl.handle.net/1813/7415
date: 2007-04-23
creator: Stodghill, Paul;Nikolay Mateev, Vladimir Kotlyar, Keshav Pingali
viewed: 29
title: A Generic Programming System for Sparse Matrix Computations (REVISED)
abstract: Sparse matrices are stored in compressed formats in which zeros are not stored explicitly. Writing high-performance sparse matrix libraries is a difficult and tedious job because there are many compressed formats in use and each of them requires specialized code. In this paper, we argue that (i) compressed formats should be viewed as {\em indexed-sequential access structures} (in the database sense), and (ii) efficient sparse codes exploit such indexing structures wherever possible. This point of view leads naturally to restructuring compiler technology that can be used to synthesize many sparse codes from high-level algorithms and specifications of sparse formats, exploiting indexing structures for efficiency. We show that appropriate abstractions of the indexing structures of commonly used formats can be provided to such a compiler through the type structure of a language like C++. Finally, we describe experimental results obtained from the {\em Bernoulli Sparse Compiler} which demonstrate that the performance of code generated by this compiler is comparable to the performance of programs in the NIST Sparse BLAS library. One view of this system is that it exploits restructuring compiler technology to perform a novel kind of template instantiation.

url: http://hdl.handle.net/1813/7416
date: 2007-04-23
creator: Huttenlocher, Daniel;Boykov, Yuri
viewed: 87
title: A Bayesian Framework for Model Based Tracking
abstract: We present a Bayesian framework for tracking an object in a sequence of image frames. A maximum a posteriori (MAP) recognition method is used to detect the object in each image frame, and a Kalman filter is used to estimate the true location from these observed locations. There is a natural feedback loop between the recognition method and the Kalman filter. The recognition method requires a prior on object location which is provided by the Kalman filter, and the Kalman filter requires an observed location which is provided by the recognition method. This framework has two desirable properties. First, the threshold for recognition in each frame depends on the system noise of the Kalman filter. This allows the system to identify partially occluded or distorted objects as long as the predicted locations are accurate. But requires a very good match if there is uncertainty as to the object location. Second, the search area for the recognition method is adaptively pruned using the current level of noise in the system, yielding an efficient overall method. Promising experimental results are demonstrated.

url: http://hdl.handle.net/1813/7417
date: 2007-04-23
creator: Glew, Neal

viewed: 67
title: Object Closure Conversion
abstract: An integral part of implementing functional languages is closure conversion-the process of converting code with free variables into closed code and auxiliary data structures. Closure conversion has been extensively studied in this context, but also arises in languages with first-class objects. In fact, one variant of Java's inner classes are an example of objects that need to be closure converted, and the transformation for converting these inner classes into Java Virtual Machine classes is an example of closure conversion. This paper argues that a direct formulation of object closure conversion is interesting and gives further insight into general closure conversion. It presents a formal closure-conversion translation for a second-order object language and proves it correct. The translation and proof generalise to other object-oriented languages, and the paper gives some examples to support this statement. Finally, the paper discusses the well known connection between function closures and single-method objects. This connection is formalised by showing that an encoding of functions into objects, object closure conversion, and various object encodings compose to give various closure-conversion translations for functions.

url: http://hdl.handle.net/1813/7418
date: 2007-04-23
creator: Dolev, Danny;Birman, Ken;Rodeh, Ohad
viewed: 21
title: Optimized Group Rekey for Group Communications Systems
abstract: In this paper we describe an efficient algorithm for the management of group keys. Our algorithm is based on a protocol for secure IP-multicast and is used to manage group-keys in group-communications systems. Unlike prior work, based on centralized key-servers, our solution is completely distributed and fault-tolerant, and its performance is comparable to the centralized solution.

url: http://hdl.handle.net/1813/7419
date: 2007-04-23
creator: Chang, Chi-Chao
viewed: 73
title: Safe and Efficient Cluster Communication in Java using Explicit MemoryManagement
abstract: This thesis presents a framework for using explicit memory management to improve the communication performance of JavaTM cluster applications. The framework allows programmers to explicitly manage Java communication buffers, called jbufs, which are directly accessed by the DMA engines of high-performance network interfaces and by Java programs as primitive-typed ar-rays. The central idea is to remove the hard separation between Java's gar-bage-collected heap and the non-collected memory region in which DMA buffers must normally be allocated. The programmer controls when a jbuf is part of the garbage-collected heap so that the garbage collector can ensure it is safely re-used or de-allocated, and when it is not so it can be used for DMA transfers. Unlike other techniques, jbufs preserve Java's storage- and type-safety and do not depend on a particular garbage collection scheme. The safety, efficiency, and programmability of jbufs are demonstrated throughout this thesis with implementations of an interface to the Virtual In-terface Architecture, of an Active Messages communication layer, and of Java Remote Method Invocation (RMI). The impact on applications is also evalu-ated using an implementation of cluster matrix multiplication as well as a publicly available RMI benchmark suite. The thesis proposes in-place object de-serialization (de-serialization with-out allocation and copying of objects) to further enhance the performance of RMI on homogeneous clusters. This optimization takes advantage of the zero-copy capabilities of network devices to reduce the per-object de-serialization costs to a constant irrespective of object size, which is particularly beneficial for large objects such as arrays. In-place de-serialization is realized using jstreams, an extension of jbufs with object I/O streams. Jstreams use the ex-plicit memory management offered by jbufs to incorporate de-serialized

ob-jects into the receiving Java virtual machine without compromising its integrity, without restricting the usage of those objects, and without making assumptions about the underlying garbage collection scheme. The perform-ance impact of jstreams on Java RMI and the benchmark suite is evaluated.

url: http://hdl.handle.net/1813/7420
date: 2007-04-23
creator: Tiuryn, Jerzy;Kozen, Dexter
viewed: 17
title: On the Completeness of Propositional Hoare Logic
abstract: We investigate the completeness of Hoare Logic on the propositional level. In particular, the expressiveness requirements of Cook's proof are characterized propositionally. We give a completeness result for Propositional Hoare Logic (PHL): all relationally valid rules {b1}p1{c1}, ..., {bn}pn{cn} ---------- {b}p{c} are derivable in PHL, provided the propositional expressiveness conditions are met. Moreover, if the programs pi in the premises are atomic, no expressiveness assumptions are needed.

url: http://hdl.handle.net/1813/7421
date: 2007-04-23
creator: Wang, Jia
viewed: 59
title: A Scalable Efficient Robust Adaptive (SERA) Architecture for the NextGeneration of Web Service
abstract: The World Wide Web can be considered as a large distributed information system that provides access to shared data objects. As one of the most popular applications currently running on the Internet, the World Wide Web is of an exponential growth in size, which results in network congestion and server overloading. Web caching has been recognized as one of the effective schemes to alleviate the service bottleneck and reduce the network traffic, thereby minimize the user access latency. In this paper, we propose a Scalable Efficient Robust Adaptive (SERA) Web caching architecture which accommodates the exponential growth and extreme dynamic environment of the World Wide Web. We developed a piggybacked prefetching/ pre-resolving scheme, which uses user access pattern and network environment information. Cooperative consistency control mechanism is employed to further improve the performance. In order to assist the cache resolution, an efficient cache routing scheme is employed. A loose group membership is maintained among nearby proxy caches to make the entire caching system scalable and fault tolerant.

url: http://hdl.handle.net/1813/7422
date: 2007-04-23
creator: Bergmark, Donna
viewed: 72
title: ITX Programmer's Guide
abstract: ITX is a set of Java packages which allow one to write telephony applications in Java. (Some sample applications are provided with the ITX distribution.) This Guide introduces the reader to the ITX Application Programming Interface (API), starting with an overview. Subsequent sections explain each component of the API in more detail.

url: http://hdl.handle.net/1813/7423
date: 2007-04-23
creator: Naumov, Pavel
viewed: 28
title: Formalization of Isabelle Meta Logic in NuPRL
abstract: NuPRL and Isabelle are two general purpose theorem provers. Both of them are based on a version

of Constructive Higher Order Type Theory. In an earlier work the author has proposed an informal semantics of Isabelle Meta Logic in an extension of NuPRL Type Theory. An automated converter, based on this semantics, has been developed, that translates Isabelle theorem statements into NuPRL. This work presents a formalization of the above semantics in NuPRL. It starts with a deep embedding of Isabelle type and term syntax into NuPRL Constructive Type Theory. Next, two internal NuPRL functions are defined. One of them maps Isabelle types into NuPRL types and the other maps Isabelle terms into elements of appropriate NuPRL types. These two functions provide an interpretation of Isabelle in NuPRL. Finally, interpretations of all Isabelle Meta Logic rules are proven as theorems in some classical extension of NuPRL Type Theory. This formalization is aimed to provide a more secure foundation for the interaction between two systems.

url: http://hdl.handle.net/1813/7424
date: 2007-04-23
creator: Pingali, Keshav;Mateev, Nikolay;Ahmed, Nawaaz
viewed: 24
title: Tiling Imperfectly-nested Loops
abstract: Tiling is one of the more important transformations for enhancing locality of reference in programs. Intuitively, tiling a set of loops achieves the effect of interleaving iterations of these loops. Tiling has been applied only to perfectly-nested loop nests which are loop nests in which all assignment statements are contained in the innermost loop. In practice, most loop nests are imperfectly-nested, so existing techniques have limited utility. In this paper, we propose an approach to tiling imperfectly-nested loop nests. The key idea is to embed the iteration space of every statement in the imperfectly-nested loop nest into a special space called the product space which is tiled to produce the final code. We evaluate the effectiveness of this approach for dense numerical linear algebra benchmarks, relaxation codes, and the tomcatv code from the SPEC benchmarks. No other approach in the literature can tile all these codes automatically.

url: http://hdl.handle.net/1813/7425
date: 2007-04-23
creator: Allen, Stuart;Aaron, Eric
viewed: 90
title: Justifying Calculational Logic by a Conventional Metalinguistic Semantics
abstract: We provide a metalinguistic formalization of calculational logic, an alternative to higher-order logic for escaping the restrictions of first-order logic. We show that conventional semantic techniques can provide an adequate foundation for calculational logic, even its atypical metalinguistic features.

url: http://hdl.handle.net/1813/7426
date: 2007-04-23
creator: Haas, Zygmunt;Zhou, Lidong
viewed: 39
title: Securing Ad Hoc Networks
abstract: Ad hoc networks are a new wireless networking paradigm for mobile hosts. Unlike traditional mobile wireless networks, ad hoc networks do not rely on any fixed infrastructure. Instead, hosts rely on each other to keep the network connected. The military tactical and other security-sensitive operations are still the main applications of ad hoc networks, although there is a trend to adopt ad hoc networks for commercial uses due to their unique properties. One main challenge in design of these networks is their vulnerability to security attacks. In this paper, we study the threats an ad hoc network faces and the security goals to be achieved. We identify the new challenges and opportunities posed by this new networking environment and explore new approaches to secure its communication. In particular, we take advantage of the inherent redundancy in ad hoc networks --- multiple routes between nodes --- to defend routing against denial of

service attacks. We also use replication and new cryptographic schemes, such as threshold cryptography, to build a highly secure and highly available key management service, which forms the core of our security framework.

url: http://hdl.handle.net/1813/7427
date: 2007-04-23
creator: Morrisett, Greg;Walker, David;Smith, Frederick
viewed: 34
title: Alias Types
abstract: Linear type systems allow destructive operations such as object deallocation and imperative updates of functional data structures. These operations and others, such as the ability to reuse memory at different types, are essential in low-level typed languages. However, traditional linear type systems are too restrictive for use in low-level code where it is necessary to exploit pointer aliasing. We present a new typed language that allows functions to specify the shape of the store that they expect and to track the flow of pointers through a computation. Our type system is expressive enough to represent pointer aliasing and yet safely permit destructive operations.

url: http://hdl.handle.net/1813/7428
date: 2007-04-23
creator: Vogels, Werner;Rodeh, Ohad;Van Renesse, Robbert;Kreitz, Christoph;Hickey, Jason;Hayden, Mark;Constable, Robert;Birman, Kenneth P.
viewed: 27
title: The Horus and Ensemble Projects: Accomplishments and Limitations
abstract: The Horus and Ensemble efforts culminated a multi-year Cornell research program in process group communication used for fault-tolerance, security and adaptation. Our intent was to understand the degree to which a single system could offer flexibility and yet maintain high performance, to explore the integration of fault-tolerance with security and real-time mechanisms, and to increase trustworthiness of our solutions by applying formal methods. Here, we summarize the accomplishments of the effort and evaluate the successes and failures of the approach.

url: http://hdl.handle.net/1813/7429
date: 2007-04-23
creator: Seshadri, Praveen;Mayr, Tobias;Gehrke, Johannes;Bonnet, Philippe
viewed: 40
title: Query Processing in a Device Database System
abstract: In the next decade, networks of devices will be widely deployed for measurement, detection and surveillance applications. Millions of sensors and small-scale mobile devices will integrate processors, memory and communication capabilities. Large collections of devices need to be controlled and accessed in an ad-hoc manner. This paper shows that database technology can be adapted to meet the challenges of this new computing environment. In our new concept of a device database system, individual devices are modeled as database objects, which allows us to access collections of devices with declarative queries. We present a semantics for queries over device database systems and novel query processing techniques for evaluating such queries. We describe our implementation of these techniques in the Cornell COUGAR system and present a experimental evaluation that illustrates the performance characteristics of query processing in a device database system.

url: http://hdl.handle.net/1813/7430
date: 2007-04-23

creator: Kleinberg, Jon
viewed: 15
title: The Small-World Phenomenon: An Algorithmic Perspective
abstract: Long a matter of folklore, the ``small-world phenomenon'' --- the principle that we are all linked by short chains of acquaintances --- was inaugurated as an area of experimental study in the social sciences through the pioneering work of Stanley Milgram in the 1960's. This work was among the first to make the phenomenon quantitative, allowing people to speak of the ``six degrees of separation'' between any two people in the United States. Since then, a number of network models have been proposed as frameworks in which to study the problem analytically. One of the most refined of these models was formulated in recent work of Watts and Strogatz; their framework provided compelling evidence that the small-world phenomenon is pervasive in a range of networks arising in nature and technology, and a fundamental ingredient in the evolution of the World Wide Web. But existing models are insufficient to explain the striking algorithmic component of Milgram's original findings: that individuals using local information are collectively very effective at actually constructing short paths between two points in a social network. Although recently proposed network models are rich in short paths, we prove that no decentralized algorithm, operating with local information only, can construct short paths in these networks with non-negligible probability. We then define an infinite family of network models that naturally generalizes the Watts-Strogatz model, and show that for one of these models, there is a decentralized algorithm capable of finding short paths with high probability. More generally, we provide a strong characterization of this family of network models, showing that there is in fact a unique model within the family for which decentralized algorithms are effective.

url: http://hdl.handle.net/1813/7431
date: 2007-04-23
creator: Birman, Kenneth P.
viewed: 17
title: The Next Generation Internet: Unsafe at Any Speed?
abstract: Will the Next Generation Internet provide an appropriate infrastructure for critical applications, such as are emerging in such settings as health care, electric power grid control, air traffic control, banking, and military command and control? This paper suggests that current trends are unlikely to yield the required platform. Drawing lessons from successful critical networking projects of the past, we propose an alternative based on Virtual Overlay Networks (VONs). Support for VONs would not require radical departure from existing router capabilities, because a limited mechanism of the type we propose is already available. Given a simple Overlay Network (ON) capability, we show that tools for building more sophisticated VONs are already widely available.

url: http://hdl.handle.net/1813/7432
date: 2007-04-23
creator: Trachtenberg, Ari;Minsky, Yaron
viewed: 16
title: Efficient Reconciliation of Unordered Databases
abstract: We consider the problem of reconciling two unordered databases whose contents are related. Specifically, we wish to determine the mutual difference of these databases with a minimum communication complexity. This type of problem arises naturally in the context of gossip protocols. We analyze two instances of the reconciliation problem, a client-server model and a more general peer-to-peer model, and provide interactive solutions for both. For the former instance, we also provide a simple one-message reconciliation algorithm, based on elementary symmetric polynomials, which has an almost optimal communication complexity.

url: http://hdl.handle.net/1813/7433
date: 2007-04-23
creator: Kozen, Dexter;Patron, Maria-Cristina
viewed: 14
title: Certification of Compiler Optimizations using Kleene Algebra with Tests
abstract: We use Kleene algebra with tests to verify a wide assortment of common compiler optimizations, including dead code elimination, common subexpression elimination, copy propagation, loop hoisting, induction variable elimination, instruction scheduling, algebraic simplification, loop unrolling, elimination of redundant instructions, array bounds check elimination, and introduction of sentinels. In each of these cases, we give a formal equational proof of the correctness of the optimizing transformation.

url: http://hdl.handle.net/1813/7434
date: 2007-04-23
creator: Reusch, Bernd
viewed: 14
title: On the Generation of Prime Implicants
abstract: NO ABSTRACT SUPPLIED

url: http://hdl.handle.net/1813/7435
date: 2007-04-23
creator: Reusch, Bernd
viewed: 32
title: Two Papers on the Linearity of Finite Automata
abstract: NO ABSTRACT SUPPLIED

url: http://hdl.handle.net/1813/7436
date: 2007-04-23
creator: Constable, Robert L.;Conway, Richard W.
viewed: 16
title: PL/CS - A Disciplined Subset of PL/I
abstract: PL/CS is an instructional dialect of PL/I. It is defined by selection features of PL/I, and then restricting the manner in which those features can be used. The implementation is an error-repairing compiler based on PL/C, in which error-repair is carried to the point where a user is deliberately encouraged to use an abbreviated entry syntax and rely on the compiler to expand this to produce a complete, PL/I-compatible program. PL/CS also includes an "assertion" facility that can be used either as a conventional diagnostic tool, or as the basis of a formal proof of correctness in a logical system provided within the language.

url: http://hdl.handle.net/1813/7437
date: 2007-04-23
creator: Waldstein, R. K.;Salton, Gerard
viewed: 32
title: Term Relevance Weights in On-Line Information Retrieval
abstract: Considerable evidence exists to show that the use of term relevance weights is beneficial in interactive information retrieval. Various term weighting systems are reviewed. An experiment is then described in which information retrieval users are asked to rank query terms in decreasing order of presumed importance prior to actual search and retrieval. The experimental design is examined, and various relevance ranking systems are evaluated, including fully automatic systems based on inverse document frequency parameters, human rankings performed by the user population, and combinations of the two.

url: http://hdl.handle.net/1813/7438
date: 2007-04-23
creator: Ohmoli, Yohichi
viewed: 22
title: A Study of Automatic Indexing for Patent Examination
abstract: NO ABSTRACT SUPPLIED

url: http://hdl.handle.net/1813/7439
date: 2007-04-23
creator: Hartmanis, Juris
viewed: 21
title: On Log-Tape Isomorphisms of Complete Sets
abstract: In this paper we study $\log n$-tape computable reductions between sets and investigate conditions under which $\log n$-tape reductions between sets can be extended to $\log n$-tape computable isomorphisms of these sets. As an application of these results we obtain easy to check necessary and sufficient conditions that sets complete under $\log n$-tape reductions in NL, CSL, P, NP, PTAPE, etc. are $\log n$-tape isomorphic to the previously known complete sets in the respective classes. As a matter of fact, all the "known" complete sets for NL, CSL, P, NP, PTAPE, etc. are now easily seen to be, respectively, $\log n$-tape isomorphic. These results strengthen and extend substantially the previously known results about polynomial time computable reductions and isomorphisms of NP and PTAPE complete sets. Furthermore, we show that any set complete in CSL, PTAPE, etc. must be dense and therefore, for example, cannot be over a single letter alphabet.

url: http://hdl.handle.net/1813/7440
date: 2007-04-23
creator: McGraw, James R.
viewed: 78
title: Language Features for Process Interaction and Access Control
abstract: NO ABSTRACT SUPPLIED

url: http://hdl.handle.net/1813/7441
date: 2007-04-23
creator: Schnabel, Robert B.
viewed: 17
title: Analyzing and Improving Quasi-Newton Methods for Unconstrained Optimization
abstract: This thesis is concerned with analyzing and improving the performance of quasi-Newton methods for finding the minimum of a real valuedd function of a finite number of real variables. Quasi-Newton methods are a successful way of iteratively solving this problem when the Hessian matrix of second partial derivatives of the function cannot be cheaply computed. Instead they keep an approximation to the Hessian matrix at the current point, and update it at each iteration. A recent algorithm of Davidon's has contributed two important new ideas to the formulation of such updates, while improving upon the computational performance of existing algorithms. In this thesis we analyze the work of Davidon, propose some changes to his algorithm and test some of these, and extend much of the existing analysis of quasi-Newton updates for optimization problems to a broader class of updates which includes Davidon's. The two innovations in Davidon's algorithm are the use of a new update class intended to preserve past derivative information in the Hessian approximation, and the selection of the actual update from this class by a method called optimal conditioning. We explain and analyze both of these aspects thoroughly. The use of the new update class seems to be very beneficial, although our analysis suggests several alternative implementations which are

equivalent to Davidon's algorithm on quadratic problems. We extend existing convergence techniques to show that two of these methods enjoy local Q-superlinear convergence under normal assumptions. On the other hand, our theoretical and computational analysis of optimal conditioning indicates that it may not be helpful in most cases, and that further computational testing definitely is required. However, we introduce and test an update which uses optimal conditioning only on some selected iterations, and which seems to show promise. To aid our analysis of Davidon's ideas we introduce the concept of a restricted update class, of which his is an example. We then extend much of the existing analysis of rank-two quasi-Newton updates, including questions of hereditary positive definiteness, mimimum change updates, and performance using perfect line search, to include this broadened update class. This work helps suggest some of our proposed changes to Davidon's algorithm, and is useful in deriving and analyzing quasi-Newton updates for other problems. A basic equivalence shows that our analysis extends to a very general class of rank-two updates. Quasi-Newton methods are currently being applied in a variety of problem areas. We hope that our analysis improves upon their use in unconstrained optimization, and helps make the leading new ideas in the field accessible to other application areas.

url: http://hdl.handle.net/1813/7442
date: 2007-04-23
creator: Welsch, Roy E.;Gay, David M.;Dennis, John E. Jr.
viewed: 35
title: An Adaptive Nonlinear Least-Squares Algorithm
abstract: NL2SOL is a modular program for solving nonlinear least-squares problems that incorporate a number of novel features. It maintains a secant approximation S to the second-order part of the least-squares Hessian and adaptively decides when to use this approximation. S is "sized" before updating, something which is similar to Oren-Luenberger scaling. The step choice algorithm is based on minimizing a local quadratic model of the sum of squares function constrained to an elliptical trust region centered at the current approximate minimizer. This is accomplished using ideas discussed by More', together with a special module for assessing the quality of the step thus computed. These and other ideas behind NL2SOL are discussed and its evolution and current implemetation are also described briefly.

url: http://hdl.handle.net/1813/7443
date: 2007-04-23
creator: Han, Shih-Ping
viewed: 72
title: Variable Metric Methods for Minimizing a Class of Nondifferentiable Functions
abstract: We develop a class of methods for minimizing a nondifferentiable function which is the maximum of a finite number of smooth functions. The methods proceed by solving iteratively qquadratic programming problems to generate search directions. For efficiency the matrices in the quadratic programming problems are suggested to be updated in a variable metric way. By doing so, the methods possess many attractive features of variable metric methods and can be viewed as their natural extension to the nondifferentiable case. To avoid the difficulties of an exact line search, a practical stepsize procedure is also introduced. Under mild asumptions the resulting method converge globally.

url: http://hdl.handle.net/1813/7444
date: 2007-04-23
creator: Gries, David
viewed: 20
title: A Note on Iteration
abstract: NO ABSTRACT SUPPLIED

url: http://hdl.handle.net/1813/7445
date: 2007-04-23
creator: Marwil, Earl S.
viewed: 21
title: Local and Linear Convergence of an Algorithm for Solving A Sparse Minimization Problem
abstract: For an unconstrained minimization problem with a sparse Hessian, a symmetric version of Schubert's update is given which preserves the sparseness structure defined by the Hessian. At each iteration of the algorithm there are two sparse linear systems to be solved. These have the same sparseness structure defined by the Hessian. The differences between succeeding approximations to the Hessian and the Hessian at the solution are related by a careful evaluation of the difference in the Frobenius norm. This relation is used in proving the local and linear convergence of the algorithm.

url: http://hdl.handle.net/1813/7446
date: 2007-04-23
creator: Conway, Richard W.;Bodenstein, M.;Bishop, T.
viewed: 16
title: Static Restriction of the GOTO Statement
abstract: NO ABSTRACT SUPPLIED

url: http://hdl.handle.net/1813/7447
date: 2007-04-23
creator: Chan, Tat-hung
viewed: 16
title: An Algorithm for Checking PL/CV Arithmetic Inferences
abstract: This paper describes the operation and implementation of the arithmetic proof rule for the quantifier free integer arithmetic used in the PL/CV 2 program verification system. The general arithmetic satisfiability problem underlying the rule is shown to be NP complete.

url: http://hdl.handle.net/1813/7448
date: 2007-04-23
creator: Dennis, John E., Jr.
viewed: 18
title: A Brief Introduction to Quasi-Newton Methods
abstract: NO ABSTRACT SUPPLIED

url: http://hdl.handle.net/1813/7449
date: 2007-04-23
creator: Andrews, Gregory R.;McGraw, James R.
viewed: 78
title: Access Control in Parallel Programs
abstract: An important component of a programming language for writing operating systems, or other large parallel systems, is the set of access control facilities. Two principles for access control, expressive power and access validation, are discussed. Then two new language mechanisms are presented: one for expressing the static structure and access rights of parallel systems, the other for controlling dynamic access to shared objects (monitors). The use of the proposed mechanisms is illustrated by message passing and file systems. Finally, the relationship between the mechanisms and access validation is discussed and a solution to the safety problem for the facilities is given. Key Words and Phrases: access control, programming language,

protection, security, processes, monitors, access safety. CR Categories: 4.20, 4.32, 4.35

url: http://hdl.handle.net/1813/7450
date: 2007-04-23
creator: Andrews, Gregory R.
viewed: 21
title: Modula and the Design of a Message Switching Communication System
abstract: This report describes the functions of a message switching communications system and presents an implementation in terms of the Modula programming language. In particular, the report: (1) describes a representative application of the proposed new Department of Defense high order language; (2) presents a design technique for software specification; (3) develops Modula programs for each of the message switching components; and (4) evaluates the utility of Modula as a language for the design of large parallel systems.

url: http://hdl.handle.net/1813/7451
date: 2007-04-23
creator: Andrews, Gregory R.
viewed: 19
title: The Design of Parallel Systems: An Application and Evaluation of Modula
abstract: Modula is a new programming language for implementing dedicated, parallel systems. Following a systematic design technique, this paper illustrates the use of Modula for the design of a message switching communication system. A message switching system poses a number of interesting problems: a high degree of concurrent activity exists, a variety of IO devices need to be controlled, messages can have multiple destinations, and messages can be preempted. The strengths and weaknesses of Modula with respect to these specific problems and its utility as a general purpose language are evaluated. Key Words and Phrases: structured multiprogramming, concurrent systems, Modula, message switching, software design, processes, monitors, modular design. CR Categories: 3.81, 4.2, 4.21, 4.3

url: http://hdl.handle.net/1813/7452
date: 2007-04-23
creator: Salton, Gerard
viewed: 29
title: Mathematics and Information Retrieval
abstract: The development of a given discipline in science and technology often depends on the availability of theories capable of describing the processes which control the field and of modelling the interactions between these processes. The absence of an accepted theory of information retrieval has been blamed for the relative disorder and the lack of technical advances in the area. The main mathematical approaches to information retrieval are examined in this study, including both algebraic and probabilistic models, and the difficulties which impede the formalization of information retrieval processes are described. A number of developments are covered where new theoretical understandings have directly led to the improvement of retrieval techniques and operations.

url: http://hdl.handle.net/1813/7453
date: 2007-04-23
creator: Eland, Nancy
viewed: 77
title: Language Based Protection Mechanisms
abstract: NO ABSTRACT SUPPLIED

url: http://hdl.handle.net/1813/7454
date: 2007-04-23
creator: Wyllie, James C.;Fortune, Steven
viewed: 32
title: Parallelism in Random Access Machines
abstract: A model of computation based on random access machines operating in parallel and sharing a common memory is presented. The computational power of this model is related to that of traditional models. In particular, deterministic parallel RAM's can accept in polynomial time exactly the sets accepted by polynomial tape bounded Turing machines; nondeterministic RAM's can accept in polynomial time exactly the sets accepted by nondeterministic exponential time bounded Turing machines. Similar results hold for other classes. The effect of limiting the size of the common memory is also considered.

url: http://hdl.handle.net/1813/7455
date: 2007-04-23
creator: Marwil, Earl S.
viewed: 19
title: Exploiting Sparsity in Newtown-Like Methods
abstract: The basic problem considered here is to solve sparse systems of nonlinear equations. A system is considered to be sparse when the Jacobian has fewer than ten percent nonzero entries. Algorithms are presented and their convergence properties are analyzed. Schubert's method for solving sparse nonlinear equations is a modification of Broyden's method, a well known quasi-Newton method. The modification preserves the zero-nonzero structure defined by the sparse Jacobian in the sequence of approximate Jacobians. The algorithm is shown to satisfy the Bounded Deterioration Theorem of Broyden, Dennis and More to obtain a simple local convergence result. A more detailed study of the error bound in the Frobenfus norm shows that the method is superlinearly convergent. Schubert's method satisfies a minimum norm property and a Kantorovich analysis is also presented. A symmetric Schubert update is derived using an iterative projection technique of Dennis and Powell. The update is expressed in a closed form at the expense of an additional sparse linear system to be solved at each iteration in the algorithm. These sparse linear systems that occur all have the same structure which means they can be handled using the pre-processing performed when solving the first such system. Again the Frobenfus norm is used to estimate the error in the approximate Jacobian. The algorithm is locally and linearly convergent. The update is applicable to a symmetric nonlinear system, particularly those systems arising from unconstrained minimization problems with a continuous second derivative. Another method of solving sparse nonlinear equations using a matrix factorization is presented. Some theory of sparse linear equations is needed to maintain sparseness in triangular factors of a matrix. An approximate Jacobian is factored and one of the triangular factors is updated with Schubert's updating formula. After a finite number of iterations, a new approximate Jacobian is needed. Algorithms are suggested with local and superlinear convergence properties. The convergence depends on the local continuity of the matrix factorization. Finally, another application of Schubert's method is proposed for problems in which the Jacobian of the nonlinear system can be written as the direct sum of two transformations. One of these is assumed to be easily computed, and the other is assumed to be sparse. An algorithm is sketched and local and superlinear convergence properties are conjectured.

url: http://hdl.handle.net/1813/7456
date: 2007-04-23
creator: Han, Shih-Ping
viewed: 31
title: Superlinear Convergence of a Minimax Method
abstract: To solve a minimax problem Han [1977b] suggested the use of quadratic programs to find search

directions. If the matrices in the quadratic programs are positive definite, the method can be shown convergent globally. In this paper we study that for efficiency the matrices should also be good approximations to a certain convex combination of Hessians on some subspace. Therefore, we suggest Powell's scheme [Powell 1977] for updating these matrices. By doing so, we can avoid computing Hessians. Meanwhile, the matrices maintain positive definiteness and Han's global convergence theorems can apply. Besides, the convergence of the resulting method is superlinear, indeed.

url: http://hdl.handle.net/1813/7457
date: 2007-04-23
creator: Krafft, Dean B.
viewed: 20
title: The Assertion Table System for the PL/CV2 Program Verifier
abstract: A system to implement the block structured storage of PL/CV2 assertions is described. The system allows certain simple logical deductions to be performed automatically. These include deductions involving propositional reasoning, associativity and commutativity of arithmetic operators, and reasoning about equality. The implementation is described at a conceptual level.

url: http://hdl.handle.net/1813/7458
date: 2007-04-23
creator: Hopcroft, John E.;Fortune, Steven;Brassard, Giles
viewed: 15
title: A Note on Cryptography and NP$\cap$ CoNP-P
abstract: Diffie and Hellman [2] propose the use of the exponential function in a finite field for cryptographic purposes. The proposal is based on the conjecture that the inverse function, the logarithm, is not feasibly computable. We show that a proof of this conjecture would have important consequences for theoretical computer science, even under the assumption that P neq NP.

url: http://hdl.handle.net/1813/7459
date: 2007-04-23
creator: Cartwright, Robert
viewed: 18
title: First Order Semantics: A Natural Programming Logic for Recursively Defined Functions
abstract: NO ABSTRACT SUPPLIED

url: http://hdl.handle.net/1813/7460
date: 2007-04-23
creator: Hopcroft, John E.;Fortune, Steven
viewed: 25
title: A Note on Rabin's Nearest-Neighbor Algorithm
abstract: Rabin has proposed a probabilistic algorithm for finding the closest pair of a set of points in Euclidean space. His algorithm is asymtomatically linear whereas the best of the known deterministic algorithms take order $n \log n$ time. We show that at least part of the speed up is due to the model rather than the probabilistic nature of the algorithm.

url: http://hdl.handle.net/1813/7461
date: 2007-04-23
creator: Shubert, Gregory Donald
viewed: 17

title: Solution of Definite Quadratic Programming Problems
abstract: A algorithm for solving the definite quadratic programming problem is presented. An implementation of this algorithm in FORTRAN is discussed. Numerical tests of this algorithm and a similar one not using the positive definiteness property show the former to be more stable. This algorithm is paarticularly suited for numerical methods for solving general nonlinear programming problems or minimax problems.

url: http://hdl.handle.net/1813/7462
date: 2007-04-23
creator: Gries, David
viewed: 33
title: Is Sometimes Ever Better Than Always?
abstract: The "intermittent assertion" method for proving programs correct is explained and compared to the conventional axiomatic method. Simple axiomatic proofs of iterative algorithms that compute recursively defined functions, including Ackermann's function, are given. A critical examination of the two methods leads to the opinion that the axiomatic method is preferable.

url: http://hdl.handle.net/1813/7463
date: 2007-04-23
creator: Schnabel, Robert B.;Dennis, John E., Jr.
viewed: 20
title: Least Change Secant Updates for Quasi-Newton Methods
abstract: In many problems involving the solution of a system of nonlinear equations, it is necessary to keep an approximation to the Jacobian matrix which is updated at each iteration. Computational experience indicates that the best updates are those that minimize some reasonable measure of the change to the current Jacobian approximation subject to the new approximation obeying a secant condition and perhaps some other approximation properties such as symmetry. In this paper we extend the affine case of a theorem of Cheney and Goldstein on proximity maps of convex sets to show that a generalization of the symmetrization technique of Powell always generates least change updates. This generalization has such broad applicability that we obtain an easy unified derivation of all the most successful updates. Furthermore, our techniques apply to interesting new cases such as when the secant condition might be inconsistent with some essential approximation property like sparsity. We also offer advice on how to choose the properties which are to be incorporated into the approximations and how to choose the measure of changes to be minimized.

url: http://hdl.handle.net/1813/7464
date: 2007-04-23
creator: Hartmanis, Juris
viewed: 14
title: On the Succintness of Different Representations of Languages
abstract: The purpose of this paper is to give simple new proofs of some interesting recent results about the relative succintness of different representations of regular, deterministic and unambiguous context-free languages and to derive some new results about how the relative succintness of representations change when the representations contain a formal proof that the languages generated are in the desired subclass of languages.

url: http://hdl.handle.net/1813/7465
date: 2007-04-23
creator: Mahaney, Stephen R.;Immerman, Neil;Hartmanis, Juris
viewed: 32

title: One-Way Log-Tape Reductions
abstract: One-way log-tape (1-L) reductions are mappings defined by log-tape Turing machines whose read head on the input can only move to the right. The 1-L reductions provide a more refined tool for studying the feasible complexity classes than the P-time [2,7] or log-tape [4] reductions. Although the 1-L computations are provably weaker than the feasible classes L, NL, P and NP, the known complete sets for those classes are complete under 1-L reductions. However, using known techniques of counting arguments and recursion theory we show that certain log-tape reductions cannot be 1-L and we construct sets that are complete under log-tape reductions but not under 1-L reductions.

url: http://hdl.handle.net/1813/7466
date: 2007-04-23
creator: Melville, Robert C.
viewed: 18
title: An Improved Simulation Result for Ink Bounded Turing Machines
abstract: A (one tape, deterministic) Turing machine is $f(n)$ ink bounded if the machine changes a symbol of its work tape at most $O(f(n))$ times while processing any input of length n. The main result of our paper is the construction of an "ink efficient" universal machine which, for any $f(n)$ ink bounded machine M and input x, can simulate the processing of M on x or detect that M is looping infinitely on input x. The universal machine requires $O(f(n)^{1+\epsilon})$ ink for this simulation where ϵ is an arbitrarily small positive number. As a corollary, we establish that the class of all $f(n)$ ink bounded computations is properly contained in the class of all $g(n)$ ink bounded computations assuming $\stackrel{inf}{n \rightarrow \infty} \frac{f(n)^{1+\varepsilon}}{g(n)} = 0$ and a technical condition on g.

url: http://hdl.handle.net/1813/7467
date: 2007-04-23
creator: Hartmanis, Juris
viewed: 17
title: Relative Succinctness of Representations of Languages and Separation of Complexity Classes
abstract: In this paper we study the relative succinctness of different representations of polymomial time languages and investigate what can and cannot be formally verified about these representations. We also show that the relative succintness of different representations of languages is directly related to the separation of the corresponding complexity classes; for example, PTIME $\neq$ NPTIME if and only if the relative succintness of representing languages in PTIME by deterministic and nondeterministic clocked polynomial time machines is not recursively bound which happens if and only if the relative succintness of these representations is not linearly bounded.

url: http://hdl.handle.net/1813/7468
date: 2007-04-23
creator: Reitman, Richard P.
viewed: 16
title: Information Flow in Parallel Programs: An Axiomatic Approach
abstract: The information flow problem is concerned with controlling the transmission of information in computer systems. This thesis addresses this problem by developing an axiomatic logic that captures the information flow semantics of a program. Using this technique the scope of information flow analysis is extended from terminating sequential programs to parallel programs in which non-termination, synchronization and deadlock are possible. Once the information flow generated by a program has been determined, it is easy to check whether or not the program satisfies a given security policy. The main contribution of the thesis is an axiomatic proof system for determining the flow of information produced

by sequential or parallel programs. Just as proofs of correctness capture the effect of program execution upon the values in variables, proofs of information flow capture the effect of program execution upon the information in variables. An advantage of this approach is that once a flow proof of a program has been generated, various security policies, such as high water mark or final value, can be verified readily. Although flows in parallel programs need to be determined so that confidentiality in shared systems can be maintained, current information flow techniques are limited to terminating sequential programs. The thesis addresses this problem by capturing the flows generated by programs containing independent processes that synchronize with each other. The practicability of the method is demonstrated by developing the flow semantics for Concurrent Pascal.

url: http://hdl.handle.net/1813/7469
date: 2007-04-23
creator: Demers, Alan J.;Liu, Lishing
viewed: 21
title: An Efficient Algorithm for Testing Losslessness of Joins in Relational Data Bases
abstract: Answering queries in a relational database model often requires the computation of joins of relations. Losslessness of joins is an important property for joins of relations to be semantically meaningful. In this paper we present an $O(n^{3})$ algorithm for testing losslessness of joins in relational databases with functional dependencies, which improves the $O(n^{4})$ result by Aho, Beeri and Ullman.

url: http://hdl.handle.net/1813/7470
date: 2007-04-23
creator: Van Loan, Charles;Golub, Gene H.
viewed: 34
title: Unsymmetric Positive Definite Linear Systems
abstract: Is it necessary to pivot when solving an unsymmetric positive definite linear system $Ax = b?$ Define $T = (A + A^{T})/2$ and $S=(A+AA^{T})/2$. It is shown that pivoting is unnecessary if the quantitity is $\Vert S T^{-1} S \Vert_{2}/ \Vert A \Vert_{2}$ is suitably small with respect to the working machine precision.

url: http://hdl.handle.net/1813/7471
date: 2007-04-23
creator: Van Loan, Charles
viewed: 37
title: A Note on the Evaluation of Matrix Polynomials
abstract: The problem of evaluating a polynomial p(x) in a matrix A arises in many applications, e.g. the Taylor approximation of e^{A}. The $O(\sqrt{q}n^{3})$ algorithm of Paterson and Stockmeyer has the drawback that it requires $O(\sqrt{q}n^{2})$ storage, where q is the degree of p and n is the dimension of A. An algorithm which greatly reduces this storage requirement without undue loss of speed is presented.

url: http://hdl.handle.net/1813/7472
date: 2007-04-23
creator: Van Loan, Charles;Nash, Stephen;Golub, Gene H.
viewed: 33
title: A Hessenberg-Schur Method for the Problem AX + XB = C
abstract: One of the most effective methods for solving the matrix equation AX + XB = C is the Bartels-Stewart algorithm. Key to this technique is the orthogonal reduction of A and B to triangular form using the QR algorithm for eigenvalues. A new method is proposed which differs from the Bartels-Stewart algorithm in that A is only reduced to Hessenberg form. The resulting algorithm is between 30 and 70 percent faster

depending upon the dimensions of the matrices A and B. The stability of the new method is demonstrated through a roundoff error analysis and supported by numerical tests. Fianlly, it is shown how the techniques described can be applied and generalized to other matrix equation problems.

url: http://hdl.handle.net/1813/7473
date: 2007-04-23
creator: Fortune, Steven
viewed: 25
title: A Note on the Sparse Complete Sets
abstract: Hartmanis and Berman have conjectured that all NP-complete sets are polynomial time isomorphic. A consequence of the conjecture is that there are no sparse NP-complete sets. We show that the existence of an NP-complete set whose complement is sparse implies P = NP. We also show that if there is a polynomial time reduction with sparse range to a PTAPE-complete set, then P=PTAPE. Keywords: reduction, polynomial time, nondeterministic polynomial time, complete sets, sparsity.

url: http://hdl.handle.net/1813/7474
date: 2007-04-23
creator: Steensgaard-Madsen, Jorgen
viewed: 14
title: Classes and Objects - A Dynamic Approach
abstract: Data encapsulation, abstract data types and classes are terms associated with a concept not fully clarified or accepted. This paper presents a class concept that differs slightly from previous definitions by the associated dynamics. This allows us to interpret nested and recursive classes as well as class parameters. We will distinguish between types and classes and permit types as parameters in a way that allows simple implementation. A number of examples will be given to illustrate the class concept itself and its application to access control problems for concurrent programs. Synchronization primitives will be viewed as classes and the need for explicit high-level constructs like monitors is questioned. Keywords: Programming language, encapsulation, abstract data type, class, object, synchronization, monitor.

url: http://hdl.handle.net/1813/7475
date: 2007-04-23
creator: Conway, Richard W.
viewed: 24
title: A Survey of Graduate Programs in Computer Science
abstract: NO ABSTRACT SUPPLIED

url: http://hdl.handle.net/1813/7476
date: 2007-04-23
creator: Oppen, Derek;Cartwright, Robert
viewed: 26
title: The Logic of Aliasing
abstract: We give a new version of Hoare's logic which correctly handles programs with aliased variables. The central proof rules of the logic (procedure call and assignment) are proved sound and complete.

url: http://hdl.handle.net/1813/7477
date: 2007-04-23
creator: Andrews, Gregory R.
viewed: 29

title: Synchronizing Resources
abstract: A new proposal for synchronization and communication in parallel programs is presented. The proposal, called synchronization resources, combines and extends aspects of procedures, coroutines, monitors, communicating sequential processes, and distributed processes. It provides a single notation for parallel programming with or without shared variables and is suited for either shared or distributed memory architectures. The essential new concepts are operations, input statements, multiple processes and resources. The proposal is illustrated by solving a variety of parallel programming problems. Key Words and Phrases: parallel programming, processes, synchronization, process communication, monitors, distributed processing, programming languages, operating systems, data bases. CR Categories: 4.20, 4.22, 4.32, 4.35

url: http://hdl.handle.net/1813/7478
date: 2007-04-23
creator: Reitman, Richard P.;Andrews, Gregory R.
viewed: 36
title: An Axiomatic Approach to Information Flow in Parallel Programs
abstract: This paper presents a new, axiomatic approach to information flow in sequential and parallel programs. Flow axioms that capture the information flow semantics of a variety of statements are given and used to construct program flow proofs. The method is illustrated by a variety of examples. The applications of flow proofs to certifying information flow policies and solving the confinement problem are considered. It is also shown that flow axioms and correctness axioms can be combined to form an even more powerful proof system. Keywords and Phrases: information flow, information security, security certification, parallel programs, axiomatic logic, proof rules.

url: http://hdl.handle.net/1813/7479
date: 2007-04-23
creator: Gries, David;Melville, Robert C.
viewed: 15
title: Sorting and Searching Using Controlled Density Arrays
abstract: Algorithms like insertion sort run slowly because of costly shifting of array elements when a value is inserted or deleted. The amount of shifting, however, can be reduced by leaving gaps - unused array locations into which new values can be inserted - at regular intervals in the array. The proper arrangement of gaps is maintained by periodic adjustment. We demonstrate this technique with a stable comparison sort algorithm with expected time $O(N \log N)$, worst case time $O(N \sqrt{N})$, and space requirements 2N. We conjecture that, by using an interpolation search, the expected time can be reduced to $O(N \log \log N)$. By comparison, Quicksort takes expected time $O(N \log N)$, worst case time $O(N^{2})$ and space $N + \log N$. Second, we show that for any fixed $d \geq 2$ a table management algorithm can be constructed that can process a sequence of N instructions chosen from among INSERT, DELETE, SEARCH, and, MIN in worst case time $O(N^{1+1/d})$. Experiments with a version of the algorithms using $d=2$ show a marked improvement over balanced tree schemes for N as large as several thousand.

url: http://hdl.handle.net/1813/7480
date: 2007-04-23
creator: Salton, Gerard
viewed: 25
title: Suggestions for a Uniform Representation of Query and Record Content in Data Base and Document Retrieval
abstract: A standard approach is introduced for the representation of information content in data base and document retrieval environments. The use of composite concept vectors representing individual information

items leads to a uniform system in different retrieval situations for the identification of answers in response to incoming information requests.

url: http://hdl.handle.net/1813/7481
date: 2007-04-23
creator: Bergmark, D.;Salton, Gerard
viewed: 24
title: A Citation Study of the Computer Science Literature
abstract: The bibliographic references and citations which exist between documents in a given collection environment can be used to study the history and scope of particular subject areas and to assess the importance of individual authors, documents, and journals. A clustering study of the computer science literature is described using bibliographic citations as a clustering criterion, and conclusions are drawn regarding the scope of computer science, and the characteristics of individual documents in the area.

url: http://hdl.handle.net/1813/7482
date: 2007-04-23
creator: Bernstein, A. J.;Schneider, Fred B.
viewed: 25
title: Mechanisms for Specifying Scheduling Policies
abstract: Extensions to concurrent programming languages are presented which allow control of scheduling policies previously defined by the run-time support system. It is shown that the use of these mechanisms simplifies the solutions of concurrent programming problems. In addition, the proposed extensions allow easy identification of those aspects of a program concerned with performance, thereby making programs easier to read and understand. Keywords: concurrent pascal, monitors, communicating sequential processes, operating systems, scheduling algorithms.

url: http://hdl.handle.net/1813/7483
date: 2007-04-23
creator: Archer, James E., Jr.
viewed: 27
title: A File System Extension to Micro-PL/CS
abstract: Micro-PL/CS is a version of PL/CS developed for interactive use with a dedicated microprocessor. A file system extension is proposed to give PL/CS a simple, but extremely powerful file system capability. The system allows for the creation and manipulation of files for sequential, random, or keyed access (or any combination) in an unrestricted manner. Essential to the capability is a set of built-in functions and pseudo-variables which allow file manipulation without syntactic complication.

url: http://hdl.handle.net/1813/7484
date: 2007-04-23
creator: Archer, James E. Jr.
viewed: 42
title: Implementation of an Unrestricted File Organization for Micro-PL/CS
abstract: Micro PL/CS is a version of PL/CS developed for a single-user, interactive environment. A file system extension makes PL/CS self-sufficient for standalone file processing and secondary storage management. The basis of the file system extension is the Unrestricted File Organization which provides a free mixture of sequential, indexed and random file operations. The structure, operation, and system-interfaced procedures of the UFO are presented and explained. The Micro-PL/CS file extension implementation is then sketched in terms of the UFO primitives.

url: http://hdl.handle.net/1813/7485
date: 2007-04-23
creator: Salton, Gerard
viewed: 23
title: A Progress Report on Automatic Information Retrieval
abstract: This study is a state-of-the-art report of work in automatic information retrieval. Various enhancements of operational on-line retrieval systems are described such as the utilization of special front-end devices providing compatibility among different search services, the introduction of fast back-end search devices, and the use of local clustering and query reformulation operations designed to improve retrieval output. Certain new algorithms for fast text matching and for optimum term weighting are also mentioned, as are advances in the construction of theoretical retrieval models.

url: http://hdl.handle.net/1813/7486
date: 2007-04-23
creator: Steensgaard-Madsen, Jorgen
viewed: 14
title: Comments on a Draft Pascal Standard
abstract: NO ABSTRACT SUPPLIED

url: http://hdl.handle.net/1813/7487
date: 2007-04-23
creator: Teitelbaum, Tim
viewed: 14
title: The Cornell Program Synthesizer: A Microcomputer Implementationof PL/CS
abstract: NO ABSTRACT SUPPLIED

url: http://hdl.handle.net/1813/7488
date: 2007-04-23
creator: Breidbart, Seth
viewed: 20
title: APL and the Grzegorczyk Hierarchy
abstract: We show in this paper that the set of "traditional" APL 1-liners (using arithmetic functions only) compute precisely the set of functions in the class E4 of Grzegorczyk hierarchy (the class immediately above the elementary functions). We also show that if we extend the set of 1-liners to include either the "execute" operator, or 1 line programs with gotos, then any partial recursive function can be computed.

url: http://hdl.handle.net/1813/7489
date: 2007-04-23
creator: Bernstein, A. J.;Schneider, Fred B.
viewed: 14
title: On Restrictions to Ensure Reproducible Behavior in Concurrent Programs
abstract: One of the major difficulties encountered when dealing with concurrent programs is that reproducible behavior may not be assumed. As a result, it is difficult to validate and debug such systems. In this paper, structural restrictions are presented that ensure that reproducible behavior will occur in concurrent programs. The application of this to system design is discussed. Keywords: time dependent behavior, concurrency, synchronization, monitors, Concurrent Pascal.

url: http://hdl.handle.net/1813/7490
date: 2007-04-23
creator: Steensgaard-Madsen, Jorgen
viewed: 17
title: Representation of Almost Constant Vectors
abstract: An example in a recent report on the programming language Russell has illustrated difficulties related to user defined storage management. Here is demonstrated how the dynamic approach to encapsulation earlier proposed by the author provides means to solve the particular storage management problem. The method used is, however, easily generalized to other similar cases. In addition to the example a number of notational conveniences are introduced. One that allows abbreviated references to components of record-like structures is called controlled coercion. Another allows a function-like use of classes. Keywords: Classes, abstract data types, storage management, programming languages.

url: http://hdl.handle.net/1813/7491
date: 2007-04-23
creator: Van Loan, Charles
viewed: 22
title: Computer Science and the Liberal Arts Student
abstract: The computer science education of nontechnical liberal arts students is a matter of increasing concern. In this paper it is argued that computer scientists should promote and teach their subject more in line with the traditional aims of liberal education when dealing with students of this type. A framework for doing this is presented which involves a broad view of "computer literacy" based upon what other authors have written about "scientific literacy." The structure of a computer science appreciation course is outlined which embodies the ideas of liberal education described. The importance of historical perspective is emphasized. Key Words and Phrases: Computer literacy, liberal arts student, liberal education, history of computation, scientific literacy.

url: http://hdl.handle.net/1813/7492
date: 2007-04-23
creator: Van Loan, Charles;Paige, Chris
viewed: 99
title: A Hamiltonian-Schur Decomposition
abstract:

url: http://hdl.handle.net/1813/7493
date: 2007-04-23
creator: Gaulle, Al
viewed: 28
title: Upson's Familiar Quotations
abstract: This report is a compilation of several hundred examples of context free language and very irregular expressions. Contributions were submitted over the last five years by numerous computer science graduate students who collected these now immortal words in classes and seminars. We wish to express our gratitude to the faculty, guest lecturers, and students who provided the bulk of this work.

url: http://hdl.handle.net/1813/7494
date: 2007-04-23
creator: Levin, Gary Marc;Gries, David
viewed: 15

title: A Procedure Call Proof Rule (With a Simple Explanation)
abstract: NO ABSTRACT SUPPLIED

url: http://hdl.handle.net/1813/7495
date: 2007-04-23
creator: Leivant, Daniel
viewed: 14
title: On the Proof Theory of the Modal Logic G
abstract: NO ABSTRACT SUPPLIED

url: http://hdl.handle.net/1813/7496
date: 2007-04-23
creator: Teitelbaum, Tim
viewed: 16
title: The Cornell Program Synthesizer: A Tutorial Introduction
abstract: This tutorial introduces a novice student to the basic facilities of the Cornell Program Synthesizer for developing programs written in the PL/CS dialect of PL/I. No knowledge of programming is assumed or required. It is assumed that you possess a Synthesizer diskette and have access to a TERAK microcomputer.

url: http://hdl.handle.net/1813/7497
date: 2007-04-23
creator: McGuire, Marguerite Elaine
viewed: 21
title: Efficiency Considerations In Implementing Dijkstra's Guarded Command Constructs
abstract: The guarded command alternative and iterative constructs proposed by E. W. Dijkstra subsume the conventional alternative and iterative constructs. The extra flexibility of these guarded command constructs enables the programmer to express his ideas more directly and clearly. Moreover, Dijkstra has developed a calculus for the derivation of correct programs that utilizes these guarded command constructs. This thesis addresses the problem of efficiently implementing these guarded command constructs. Several new optimizations that are particularly well suited to the guarded command constructs are described. The most useful is the elimination of redundant boolean expressions. This optimization provides a means of implementing the guarded command alternative statement with efficiency comparable to the IF-THEN-ELSE statement. The main contribution of this thesis is a detailed description of an algorithm for eliminating redundant boolean expressions. The algorithm itself is presented in a program written in a PASCAL supplemented with the guarded command constructs. The basis method involves considering individual execution paths through the guarded command construct and applying rules of inference to recognize and avoid evaluation of many boolean expressions. It is shown that the number of execution paths through a guarded command construct remains small enough to make this method practical.

url: http://hdl.handle.net/1813/7498
date: 2007-04-23
creator: Walker, Homer F.;Dennis, John E. Jr.
viewed: 41
title: Local Convergence Theorems for Quasi-Newton Methods
abstract: This paper presents generalizations of the two results which have been useful for analyzing methods of the form $x_{k+1} = x_{k} - B_{k}^{-1}F(x_{k})$. The bounded deterioration theorem of Broyden-Dennis-More is generalized to show that if \{B_{k}\} or \{B_{k}^{-1}\} is of bounded deterioration as a sequence

of approximants to some B_{*} or B_{*}^{-1} then the iteration above has the same local convergence properties and arbitrarily nearly the same linear rate as would be achieved by the stationary iteration function which uses $B_{k} = B_{*}$. The characterization theorem for superlinear convergence given by Dennis-More is then generalized to give conditions under which the rates are the same. In the case when $B_{*} = F'(x_{*})$, these results reduce to those already known.

url: http://hdl.handle.net/1813/7499
date: 2007-04-23
creator: Walker, Homer F.;Dennis, John E. Jr.
viewed: 33
title: Convergence Theorems for Least Change Secant Update Methods
abstract: The purpose of this paper is to present a convergence analysis of the least change secant methods in which part of the derivative matrix being approximated is computed by other means. The theorems and proofs given here can be viewed as generalizations of those given by Broyden-Dennis-More and by Dennis-More. The analysis is done in the orthogonal projection setting of Dennis-Schnabel and many readers might feel that it is easier to understand. The theorems here readily imply local and q-superlinear convergence of all the standard methods in addition to proving these results for the first time for the sparse symmetric method of Marwil and Toint and the nonlinear least squares method of Dennis-Gay-Welsch.

url: http://hdl.handle.net/1813/7500
date: 2007-04-23
creator: Melville, Robert C.
viewed: 13
title: A Time-Space Tradeoff for In-Place Array Permutation
abstract: NO ABSTRACT SUPPLIED

url: http://hdl.handle.net/1813/7501
date: 2007-04-23
creator: Hopcroft, John E.;Furst, Merrick;Dietz, Paul F.
viewed: 31
title: A Linear Time Algorithm for the Generalized Consecutive Retrieval Problem
abstract: THe Generalized Consecutive Retrieval Problem (GCRP) is to find a directed tree on n records in which each of k subsets forms a directed path. The problem arises in organizing information for efficient retrieval. A linear time algorithm for the GCRP is given. Further generalization leads to problems that are complete for NP.

url: http://hdl.handle.net/1813/7502
date: 2007-04-23
creator: Wyllie, James C.
viewed: 38
title: The Complexity of Parallel Computations
abstract: Recent advances in microelectronics have brought closer to feasibility the construction of computers containing thousands (or more) of processing elements. This thesis addresses the question of effective utilization of such processing power. We study the computational complexity of synchronous paarallel computations using a model of computation based on random access machines operating in parallel and sharing a common memory, the P-RAM. Two main areas within the field of parallel computational complexity are investigated. First, we explore the power of the P-RAM model viewed as an abstract computing device. Later, we study techniques for developing efficient algorithms for parallel computers. We are able

to give concise characterizations of the power of deterministic and nondeterministic P-RAMS in terms of the more widely known space and time complexity classes for multi-tape Turing machines. Roughly speaking, time-bounded deterministic P-RAMS are equivalent in power to (can accept the same sets as) space-bounded Turing machines, where the time and space bounds differ by at most a polynomial. In the context of comparing models of computation, we consider such polynomial differences in resources to be insignificant. Adding the feature of nondeterminism to the time-bounded P-RAM changes its power to that of a nondeterministic Turing machine with an exponentially higher running time. The later sections of the thesis examine algorithm design techniques for parallel computers. We first develop efficient procedures for some common operations on linked lists and arrays. Given this background, we introduce three techniques that permit the design of parallel algorithms that are efficient in terms of both their time and processor requirements. We illustrate the use of these techniques by presenting time and processor efficient algorithms for three problems, in each case improving upon the best previously known parallel resource bounds. We show how to compute minimum string edit distances, using the technique of pairwise function composition. We describe an algorithm for the off-line MIN that organizes its computation in the form of a complete binary tree. Finally, we present an algorithm for undirected graph connectivity that relies on redundancy in its representation of the input graph.

url: http://hdl.handle.net/1813/7503
date: 2007-04-23
creator: Bates, Joseph Louis
viewed: 89
title: A Logic For Correct Program Development
abstract:

url: http://hdl.handle.net/1813/7504
date: 2007-04-23
creator: Leivant, Daniel
viewed: 27
title: On Easily Infinite Sets and On a Statement of R. Lipton
abstract: For a complexity measure κ, a set is κ-infinite if it contains a κ-decidable infinite subset. For a time-based κ, we prove that there is a recursive S s.t. both S and its complements, $\bar{S}$, are infinite but not κ-infinite. Lipton [6] states that the existence of a recursive set S s.t. neither S nor $\bar{S}$ os polynomially infinite is not a purely logical consequence of $\prod^{0}_{2}$ theorems of Peano's Arithmetic PA. His proof uses a construction of an algorithm within a non-standard model of of Arithmetic, in which the existence of infinite descending chains in such models is overlooked. We give a proof of a stronger statement to the effect that the existence of a recursive set S s.t. neither S nor $\bar{S}$ is linearly infinite is not a tautological consequence of all true $\prod^{0}_{2}$ assertions. We comment on other aspects of [6], and show $(\S 2)$ that a tautological consequence of true $\prod^{0}_{2}$ assertions may not be equivalent (in PA, say) to a $\prod^{0}_{2}$ sentence. The three sections of this paper use techniques of Recursion Theory, Proof Theory and Model Theory, respectively.

url: http://hdl.handle.net/1813/7505
date: 2007-04-23
creator: Schneider, Fred B.
viewed: 26
title: Synchronization in Distributed Programs
abstract: A technique for solving synchronization problems in distributed programs is described. Use of this technique in environments in which processes may fail is discussed. The technique can be used to solve

synchronization problems directly, to implement new synchronization mechanisms (which are presumably well suited for use in distributed programs), and to construct distributed versions of existing synchronization mechanisms. Use of the technique is illustrated with implementations of distributed semaphores and a conditional message passing facility.

url: http://hdl.handle.net/1813/7506
date: 2007-04-23
creator: Schneider, Fred B.
viewed: 14
title: Ensuring Consistency in a Distributed Database System by Use of Distributed Semaphores
abstract: Solutions to the database consistency problem in distributed databases are developed. It is shown how any solution to the consistency problem for a centralized database system that involves locking can be adapted for use in distributed systems. This is done, constructively, in two steps. First, it is shown how locking can be implemented in terms of semaphores. Then, a semaphore implementation that is suitable for use in distributed systems is developed.

url: http://hdl.handle.net/1813/7507
date: 2007-04-23
creator: Majster, Mila E.
viewed: 23
title: Efficient On-Line Construction and Correction of Position Trees
abstract: This paper presents an on-line algorithm for the construction of position trees, i.e. an algorithm which constructs the position tree for a given string while reading the string from left to right. In addition, an on-line correction algorithm is presented which - upon a change in the string - can be used to construct the new position tree. Moreover, special attention is paid to computers with small memory. Compactification of the trees and transport costs between main and secondary storage are discussed.

url: http://hdl.handle.net/1813/7508
date: 2007-04-23
creator: Majster, Mila E.
viewed: 28
title: A Unified View of Semantics
abstract: NO ABSTRACT SUPPLIED

url: http://hdl.handle.net/1813/7509
date: 2007-04-23
creator: Archer, James E., Jr.
viewed: 30
title: Ada/CS - An Instructional Subset of the Programming Language Ada
abstract: NO ABSTRACT SUPPLIED

url: http://hdl.handle.net/1813/7510
date: 2007-04-23
creator: Pagano, Marcello;Luk, Franklin T.
viewed: 71
title: Quadratic Programming with M-Matrices
abstract: In this paper, we study the problem of quadratic programming with M-matrices. We describe (1) an effective algorithm for the case where the variables are subject to a lower bound constraint, and (2) an

analogous algorithm for the case where the variables are subject to lower and upper bounds constraints. We demonstrate the special monotone behavior of the iterate and gradient vectors. The result on the gradient vector is new. It leads us to consider a simple updating procedure which preserves the monotonicity of both vectors. The procedure uses the fact that an M-matrix has a non-negative inverse. Two new algorithms are then constructed by incorporating this updating procedure into the two given algorithms. We give numerical examples which show that the new methods can be more efficient than the original ones.

url: http://hdl.handle.net/1813/7511
date: 2007-04-23
creator: Shore, Andrew I.;Archer, James E., Jr.
viewed: 19
title: A Program Development System Execution Supervisor
abstract: The Cornell Program Development System is an experimental vehicle to explore the applicability of highly cooperative tactics to a contemporary development environment. The CPDS provides significant facilities for modifying and immediately executing programs. The execution supervisor and the internal user program representation it uses to implement these facilities are described.

url: http://hdl.handle.net/1813/7512
date: 2007-04-23
creator: Silver, Leonard S.;Shore, Andrew I.;Conway, Richard W.;Archer, James E., Jr.
viewed: 99
title: The System Architecture for CORE: A Tolerant Program Development Environment
abstract: CORE is a program development environment intended primarily to explore a highly tolerant useer interface. In some respects the internal architecture is also novel. It permits a highly interactive and supportive user interface to be implemented with processing routines which are essentially oblivious to any user interaction.

url: http://hdl.handle.net/1813/7513
date: 2007-04-23
creator: Leivant, Daniel
viewed: 101
title: On Linear Natural Deduction
abstract: NO ABSTRACT SUPPLIED

url: http://hdl.handle.net/1813/7514
date: 2007-04-23
creator: Levin, Gary Marc
viewed: 119
title: A Proof Technique for Communicating Sequential Processes(With an Example)
abstract: We present proof rules for an extension of the Communicating Sequential Processes proposed by Hoare. The send and receive statements are treated symmetrically, simplifying the rules and allowing send to appear in guards. An example is given to explain the use of the technique. This is an outline of a substantial part of a PhD thesis that is expected to be completed in June 1980.

url: http://hdl.handle.net/1813/7515
date: 2007-04-23
creator: Gries, David
viewed: 134

title: Cand and Cor Before and Then or Else in Ada
abstract: NO ABSTRACT SUPPLIED

url: http://hdl.handle.net/1813/7516
date: 2007-04-23
creator: Meiling, Erik
viewed: 108
title: On the Modelling Power of Petri Nets
abstract: The behavior of a Petri net is expressed as a formal language. Certain families of Petri net languages are characterized by propositions similar to the classical pumping theorems. The results are used to give examples of behaviors that cannot be expressed by languages in these families.

url: http://hdl.handle.net/1813/7517
date: 2007-04-24
creator: Lowe, Brian;Steinhart, Gail
viewed: 138
title: Data Curation and Distribution in Support of Cornell University's Upper Susquehanna Agricultural Ecology Program
abstract: Paper presented at DigCCurr2007, an international symposium on Digital Curation. Held April 18-20, 2007 at the University of North Carolina, Chapel Hill NC.Effective documentation, curation, and provision of access to scientific data are essential to derive the full benefit of research data, both for participants in specific research projects and for the entire scientific community. Academic research libraries are positioned to be important partners in such endeavors, although success will depend in part on expanding and changing the customary roles of, and relationships between, researchers and libraries. Cornell University's Albert R. Mann Library is collaborating with the Upper Susquehanna Agricultural Ecology Program at Cornell to document and distribute the group's research data. In addition to collecting data and developing numeric and spatial models, the research group has access to approximately thirty years worth of observational data for their research sites, which are of significant value to environmental scientists. The approach includes identifying and using discipline-specific metadata standards in order to facilitate participation in discipline-specific data and metadata sharing initiatives, at the discretion of individual researchers. Training is provided for project collaborators in the use of existing metadata creation tools to create documentation for their datasets. ?Pre-publication? data and metadata are stored in a database accessible only by project members, to facilitate early sharing and collaboration within the group. Complete, documented data sets and complete metadata records will then be deposited in Cornell's DSpace installation. As a test case, the historic data sets are being formatted and documented for deposit in DSpace. A public web portal provides information about the project and participants, as well as a future means of access to project datasets.National Science Foundation grant number 0437603 to Janet McCue and Barbara Lust

url: http://hdl.handle.net/1813/7518
date: 2007-04-25
creator: Arnone, Augustus
viewed: 53
title: Textural Ambiguity In The Piano Music Of Johannes Brahms
abstract: This dissertation examines textural ambiguity in the piano music of Johannes Brahms and contextualizes this aspect of his compositional style with discussions of nineteenth-century performance practice, and changes in piano building during Brahms?s life. Recent analyses of Brahms?s music have emphasized several types of ambiguity encountered, including metrical, harmonic, and formal ambiguity. This dissertation focuses on Brahms?s use of textural ambiguity: specifically, his frequent obscuring of

thematic lines, obscuring the identity of individual lines in polyphonic works, and fluctuating hierarchies among individual voices. The question of balance and melodic clarity has been a primary concern for scholars concerned with historically-informed performance of Brahms?s music. However, many of these scholars have misinterpreted Brahms?s piano-writing, and misconstrued historical evidence as to Brahms?s preferences regarding instrument. This dissertation proposes new ways of understanding the relationship between Brahms?s music and changes in piano building based on analysis of his textures, and a consideration of late-ninteenth-century treatises on performance and composition.

url: http://hdl.handle.net/1813/7519
date: 2007-04-26
creator: Magri, Antoni
viewed: 79
title: Fate and Transport Modeling of Pesticides Applied to Turf
abstract: This research centers on modeling fate and transport processes affecting pesticides applied to turfgrass systems. Interest in predicting pesticide fate and transport from these systems stems from observations of pesticide residues in urban surface and groundwaters, and the need for information with which to assess human health and ecological risks of using these pesticides, total maximum daily load and other water quality management studies. The main processes that affect pesticide fate and transport in turf systems are reviewed, and general magnitudes of each process are reported. Dissipation rates for turf systems are compared to half-life values for aerobic decay in soil, photolysis and field dissipation. From this analysis, microbial decay appears to be a major factor in pesticide dissipation. Decay rates specific for turf are developed based on dissipation rates from these systems. The hypothesis that the use of soil-based decay rates leads to overestimation of pesticide runoff, volatilization and leaching losses from turfgrass systems is tested by means of long term simulations involving diverse turf, climatic and management conditions. Results indicate significant differences in estimations based on soil and turf decay rates as a result of differences in estimating the pesticide's persistence in the turf foliage and thatch. However, care should be taken when modeling pesticides that are weakly sorbed to organic matter. The research also includes the development of a volatilization model that is based on splitting pesticides into surface and retained deposits and allowing volatilization to occur from the surface deposits only. This model replicated daily volatilization fluxes better than models previously developed for turf, and was incorporated into the Turf Pesticide Model (TPM), which was designed to predict pesticide runoff, leaching, volatilization and decay on a daily basis using relatively few input parameters. Uncalibrated tests of TPM against data from diverse field studies indicated that the model explained 75% of the observed variation in drainage, 63% for pesticide leaching, 65% for runoff volumes, 64% for pesticide loss in runoff, and 62% for pesticide volatilization. TPM can provide information for risk, TMDL, environmental and water quality studies centered on evaluating the impacts of pesticides applied to turf.

url: http://hdl.handle.net/1813/7520
date: 2007-04-26
creator: Haug, Matthew Christian
viewed: 53
title: A Defense of Non-reductive Physicalism
abstract: I develop a novel formulation of, and argument for, non-reductive physicalism - roughly, the view that mental properties are natural properties that are realized by, but not identical to, neural and other low-level physical properties. Non-reductive physicalism has long been the dominant view in the philosophy of mind but has recently been challenged from two main directions. The first type of attack, the causal exclusion problem, points out an apparent inconsistency in non-reductive physicalism. The second type of attack focuses on the multiple realizability of mental properties: questioning either its prevalence or its

efficacy in blocking reduction.
In response to the exclusion problem, I first argue that one of the claims used to formulate the problem, the completeness of physics, has two parts and that there is no single domain of physical entities that is the smallest domain of which both parts are true. The conflation of these two parts has made it appear that non-reductive physicalism is inconsistent. I then show how to use the two completeness claims as part of an argument for a form of physicalism that need not be reductive.
In response to the second type of attack, I provide a novel basis for the irreducibility of mental properties. I argue that irreducibility is ultimately grounded in relations between mechanisms, of which multiple realizability is merely one facet. The other facet, multiple determinativity - in which a single physical property realizes several different kinds of high-level properties - is equally effective at blocking property reduction. Thus, even if the doubts about the multiple realizability of mental properties (and its efficacy in blocking reduction) were sound, this would not undermine non-reductive physicalism. Another virtue of this framework is that it provides an adequate metaphysical basis for some of non-reductive physicalism's explanatory claims - e.g., that high-level explanations are sometimes deeper and theoretically more fecund than low-level physical explanations.Andrew W. Mellon Foundation, National Science Foundation

url: http://hdl.handle.net/1813/7521
date: 2007-04-26
creator: Collins, Joycelyn

title: Unveiling Christian Motifs in Select Writers of Harlem Renaissance Literature
abstract: Prior to the early 1900s, much of the artistic expression of African American writers and artists was strongly steeped in a Christian tradition. With the Harlem Renaissance (roughly 1917-1934), the paradigm shifted to some degree.
An examination of several books and articles written during and about the Harlem Renaissance revealed that very few emphasized religion as a major theme of influence on Renaissance artists. This would suggest that African American intelligentsia in the first three decades of the twentieth century were free of the strong ties to church and Christianity that had been a lifeline to so many for so long. However, this writer suggests that, as part of an African American community deeply rooted in Christianity, writers and artists of the Harlem Renaissance period must have had some roots in and expression of that same experience.
The major focus of this research, therefore, is to discover and document the extent to which Christianity influenced the Harlem Renaissance. The research is intended to answer the following questions concerning the relationship of Christianity to the Harlem Renaissance:
1. What was the historical and religious context of the Harlem Renaissance?
2. To what extent did Christianity influence the writers and artists of the Harlem Renaissance?
3. Did the tone of their artistry change greatly from the previous century? If so, what were the catalysts?
4. Three notable pre-twentieth-century African American writers apparently had been able to come to terms with Christianity. Were the Renaissance artists able to do it? Why or why not?
5. What made their views different?
6. What personal experiences did the Renaissance artists have with Christianity?
7. How was this Christian influence manifested in the literature? Methods used to accomplish this discovery will include library research covering historical studies of Christianity and literature in the African American community from the 1700s into the 1930s, autobiographical and biographical research of the Harlem Renaissance artists, and an analysis of selected works, concentrating on the poetry. The study will include a look at Christianity in the African American community at large, as well as other factors. Intellectual and literary pursuits during the early decades of the twentieth century were paralleled by growth and diversity in the African American church. It is the consciousness that gave impetus to both these movements that this

writer will explore. This portion of the paper will address the views of important early twentieth century figures as well as factors that influenced the urban religious landscape. The next portion of the paper will highlight the individual Christian background and experiences of some of the artists with whose works the Renaissance is most closely identified. This study will address the artists? own perspectives, as told in their autobiographies and biographies. This study will include an overview of the works of select writers of the Harlem Renaissance period and provide an analysis of works relevant to this thesis. The discussion will focus on the underlying expression of certain themes derived from Christian Scripture, including the following:
God?s relation to humans?Jesus as Savior, deliverer, judge, source of hope
Theme of equality (one God, one blood, one Spirit; no respect of persons)
Celebration of African beauty/self as created by God and made in His image
Christianity interwoven in the fabric of everyday life.
This portion of the paper also will address the works of some artists who, rather than embracing Christianity, may have used it in their works as a point of departure, highlighting its challenges and shortcomings.

url: http://hdl.handle.net/1813/7522
date: 2007-04-26
creator: Bode, Jason S
viewed: 60
title: Isoperimetric Constants and Self-Avoiding Walks and Polygons on Hyperbolic Coxeter Groups
abstract: Kenneth Brown, Laurent Saloff-Coste, David HendersonWe study isoperimetric constants of and self-avoiding walks (SAWs) and self-avoiding polygons (SAPs) on Cayley graphs of hyperbolic Coxeter groups. These graphs are tilings of the hyperbolic plane. We calculate the isoperimetric constants of most rank three hyperbolic Coxeter groups and give an estimate for the remainder. We prove that for all but a few classes of these groups there are exponentially fewer k-step SAPs than there are k-step SAWs. We prove that this is also true of any nontrivial free product. Additionally we show that there are exponentially more k-step SAWs on a free group F_n (resp. a ?free? Coxeter group T_d) than on any strict subgroup of F_n (resp. T_d).

url: http://hdl.handle.net/1813/7523
date: 2007-04-27
creator: Dudley, Russell David
viewed: 57
title: A Boroscopic Quantitative Imaging Technique For Sheet Flow Measurements
abstract: A boroscopic imaging system is developed to measure sediment velocities within a highly concentrated sheet layer in open channel flows. A detailed literature review is presented to investigate previous attempts at sheet layer measurements, followed by a set of experiments to determine clean water flow characteristics in the open channel flume located in the DeFrees Hydraulics Laboratory. Experiments are carried out in the same flume under sediment-laden, sheet flow conditions to determine the steadiness of the flow as well as to verify velocities in the suspended sediment transport region with existing theories.
Sediment velocities are captured in the highly concentrated sediment sheet for the same flow conditions using the new boroscopic imaging system. The boroscope is a minimally intrusive lens with a diameter that is only an order of magnitude larger than the natural sand being studied. Minimum Quadratic Difference techniques, along with several filtering techniques, are utilized to determine particle displacements. A rigorous investigation into calibrations is included in order to convert pixel displacements into physical velocities. Three separate metrics are investigated, all involving light intensity values. These metrics are examined from calibrations performed under fixed, moving and in-situ experimental conditions. The limitation of each calibration as well as a discussion of the effectiveness of the calibration techniques is included.
Physical velocities within the sheet layer are determined using the in-situ variance of intensity calibration. A complete streamwise velocity profile spanning from the non-moving bed to the free stream is included

which combines velocity data collected from both the boroscopic imaging technique as well as an acoustic Doppler velocimeter. The joint profile seems fairly continuous but more attention needs to be focused on the velocities located along the interface of the sheet flow and suspended regions as well as possible reasons for differences between these experimental results and results published previously.
Finally, future development is discussed including the further investigation into calibration techniques, the possibility of measuring sediment concentrations as well as water velocities and other possible uses for the boroscopic quantitative imaging technique.

url: http://hdl.handle.net/1813/7524
date: 2007-04-27
creator: Schusler, Tania
viewed: 118
title: Youth-adult Partnerships Creating Positive Environmental Change
abstract: When youth create positive environmental change in their communities they typically act with adult guidance. The role of adults, however, is largely absent in literature around youth participation in environmental action. This research explored through phenomenological interviews with 33 practitioners (e.g., teachers, extension educators, community organizers) facilitating youth environmental action in formal and non-formal educational settings across the U.S.: (a) ways practitioners involved youth in environmental action, (b) purposes and goals motivating practitioners to engage youth in environmental action, and (c) methods practitioners used to facilitate youth environmental action. The study sought insight into successful and challenging experiences. It also inquired about the meaning of these experiences for participating youth through group interviews with 46 youth in 9 programs. Practice accounts included multiple forms of action among five types: physical improvements, community education, inquiry, advocacy, and contributions to community development. Practitioners described purposes integrating multiple individual, environmental, and community development goals. Most placed higher value in developing youth as citizens and change agents than in promoting environmental improvements. Evident in practitioners' narratives was a tension between encouraging youth autonomy while maintaining authority. Practitioners experienced and managed this 'autonomy-authority duality' differently but all described characteristics of youth-adult partnerships. Nine practice themes emerged: creating safe spaces; providing structure; building relationships; bridging differences; setting rigorous expectations; providing opportunities for meaningful contribution; supporting youth; expanding horizons; and connecting youth with community. Youth reported learning in physical (e.g., fitness), intellectual (e.g., technological skills), psychological (e.g., initiative), and social (e.g., teamwork) domains. Parallel themes with youth development literature suggest environmental action is a valuable context for positive youth development. The interplay of science education and community action evident in practitioner and youth interviews suggests the merit of a theoretical framework where environmental action occurs at the intersection of inquiry-based science education and youth civic engagement. Participation in environmental action enhanced some youths' capabilities in 'practical inquiry' and influenced some youths' perceptions of themselves from passive to active citizens. Environmental action concurrently involves youth in civic and scientific processes through which they can develop the critical dispositions and skills characteristic of both endeavors.Cornell University Agricultural Experiment Station federal formula funds, Project No. NYC-147459, received from the Cooperative State Research, Education and Extension Service, U.S. Department of Agriculture

url: http://hdl.handle.net/1813/7525
date: 2007-04-27
creator: Gutmann, Anne
viewed: 63
title: Constrained Optimization in Human Running

abstract: Walking humans spontaneously select different speed, frequency, and step length combinations depending on which of these three parameters is specified. This behavior can be explained by constrained optimization of cost of transport (metabolic cost/distance) where cost of transport is seen as the main component of an underlying objective function that is minimized within the limitations of specified constraints. It is then of interest to ask whether or not such results are specific to walking only or indicate a more general feature of locomotion control. The current study examines running gait selection within the framework of constrained optimization by comparing self-selected running gaits to the gaits predicted by constrained optimization of a cost surface constructed from cost data available in the literature. Normalizing speed and frequency values in the behavioral data by preferred speed and frequency reduced inter-subject variability and made group behavioral trends more visible. Although actual behavior did not coincide exactly with running cost optimization, self-selected gait and predictions from the general human cost surface did agree to within the 95% confidence interval and the minimal cost + 0.005 mLO2/kg/m region. This was similar to the level of agreement between actual and predicted behavior observed in walking. Thus, there seems to be substantial evidence to suggest that 1) Selection of gait parameters in running can largely be predicted using constrained optimization and 2) General cost surfaces can be constructed using metabolic data from one group that will roughly predict the behavior of other groups.NSF

url: http://hdl.handle.net/1813/7526
date: 2007-04-30
creator: Chan, Benjamin
viewed: 22
title: Coexistence of Contact Processes
abstract: Neuhauser (1992) considered the competition between two contact processes and showed that on $\Z^2$ coexistence is not possible if the death rates are equal and the particles use the same dispersal neighborhood. In this thesis we consider two variations of the competition model. In the first model a species with a long range dispersal kernel competes with a superior competitor with nearest neighbor dispersal. We show that the two species can coexist when we introduce blocks of deaths due to “forest fires”. In the second model particles with long range dispersals compete in an environment with two distinct seasons. Birth rate for each species is piecewise constant and periodic. We show that there is coexistence when the two species have distinct growing seasons.

url: http://hdl.handle.net/1813/7527
date: 2007-04-30
creator: Hulyalkar, Asmita
viewed: 90
title: National Subjects, International Selves: Feminist Self-fashioning in Meiji Japan and Nineteenth Century Colonial India
abstract: ?National Subjects, International Selves: Feminist Self-fashioning in Meiji Japan and Colonial India,? is a historical and literary-critical inquiry into the complex relationships that Asian women in the 19C forged across the North-South divide. I argue that when such women overstepped the bounds of nation to embrace a larger sisterhood, they placed themselves in an anomalous position with regard to the nation-state?as citizen-subjects and as feminists. In particular, I examine the work of Japanese feminist and educator Tsuda Umeko (1864-1929) in conjunction with that of the Indian feminist Pandita Ramabai (1858-1922) for both of whom an engagement with the task of female education and social reform at home became possible through the emotional and material support provided by their American counterparts. Reading Ramabai?s The High-caste Hindu Woman (1888) together with Japanese Girls and Women (1891) co-authored by Tsuda and her American friend Alice Bacon I focus on the logic of the triadic encounter between Tsuda, Ramabai and the American women who espoused their cause. I analyse these two texts in terms of the key paradox underlying

the Japanese understanding of their own Asianness: while they sought to identify with the ?civilised? West the Japanese at the same time could not but recognize cultural affinities with India and thereby ?Asia.? In the dissertation, my historical-semantic survey of the emergence of ?Asia? in the Japanese imaginary in this period is offset by an examination of 19C constructions of ?ideal? womanhood that sought to locate woman within the nation. Here I describe Tsuda?s uncomfortable relation to her country and its language because of her early life in America; I suggest that Tsuda?s commitment to the cause of international sisterhood had the paradoxical effect of making her acquiesce to the Meiji?s state?s project for a modern ?Japanese? woman. Finally, my examination of Tsuda?s voluminous correspondence with her American mother as framed in ?ba Minako?s biography and translation of these letters seeks to draw attention to the fact that both ?Asian? and ?Japanese? continued to be reinscribed in this period, most effectively through discourses extolling the so-called uniqueness of the Japanese language.

url: http://hdl.handle.net/1813/7528
date: 2007-04-30
creator: Yang, Jun
viewed: 85
title: Role of Selected Fruits and Phytochemicals in Cancer Prevention: Mechanisms of Action
abstract: Epidemiological studies have shown that high consumption of fruits and vegetables is associated with reduced risk of cancer. Phytochemicals, mainly phenolics and flavonoids, have been suggested to be responsible for these health benefits. However, the molecular mechanisms of the anticancer effects of fruits and vegetables are not fully understood.
Fourteen grape varieties were analyzed for the profiles of total phenolics, total flavonoids, and trans-resveratrol. Phytochemicals in those grapes have potent antioxidant and antiproliferative activities. In addition, thirteen grape varieties and fourteen common phytochemicals were evaluated for their ability to induce mammalian phase II detoxification enzyme ? quinone reductase. Grape phytochemicals had strong activity in quinone reductase induction and potent antiproliferative activities toward Hepa1c1c7 cells. These results support the hypothesis that phytochemicals prevent cancer by acting as free radical scavengers and/or inducers of phase II detoxifying enzymes in the initiation stage, and/or as cell proliferation suppressors in the promotion/progression stages.
Combinations of selected fruits and phytochemicals were studied for their antioxidant activity, antiproliferative activity, and induction of quinone reductase. The combination of apple extracts and quercetin 3-b-D-glucoside (Q3G) exhibited more potent antiproliferative activity when compared to the apple extracts and Q3G alone. The combination of grape extracts and quercetin, genistein, and resveratrol showed higher induction activity of quinone reductase than grape extracts and phytochemicals alone.
In conclusion, we have demonstrated that the additive and synergistic effects of phytochemicals in fruits are responsible for their potent antioxidant activity, antiproliferative activity, and phase II detoxifying enzyme induction activity, and that the health benefit of a diet rich in fruits is attributed to the complex mixture of phytochemicals and their interactions present in those foods.

url: http://hdl.handle.net/1813/7529
date: 2007-04-30
creator: Schalekamp, Frans
viewed: 62
title: Some Results in Universal and A Priori Optimization
abstract: In this thesis, some combinatorial problems are studied in the light of the a priori and universal optimization framework, as introduced for the Traveling Salesman Problem by Jaillet, and by Bartholdi & Platzman, respectively. In both the a priori, as well as the universal framework, there is an underlying optimization problem, and (advance) knowledge of the potential instances that can arise. The goal is to

find a "master solution" of a special form, that in turn fully specifies the solution to any potential instance of the optimization problem that arises. In the case of the traveling salesman problem, the master solution is a tour on the complete set of all customers in the potential instances. This master tour now specifies the solution for each instance as follows: the customers in the instance will be visited in the same order as the master solution.
The results of this thesis include an optimization algorithm for the a priori and universal Traveling Salesman Problem on tree metrics, an $O(\log n)$-approximation algorithm for the a priori Traveling Salesman Problem, with no restrictions on the metric space and no knowledge about the probability distribution on the potential instances, an approximation algorithm for a priori and universal $1\,|\,pmtn, r_j\,|\,\sum C_j$, and a nearly optimal algorithm for AdWords.
We also study the real life problem of creating Nearly Isogenic Lines (NILs). The solution that we propose can be seen as an a priori solution, since the solution that we propose is nonadaptive. Finally, in addition to dealing with a priori and universal optimization, we also give a Fully Polynomial Time Approximation Scheme (FPTAS) for a certain Stochastic Dynamic Programs, with an application in option pricing.

url: http://hdl.handle.net/1813/7530
date: 2007-04-30
creator: Lott, Gus III
viewed: 144
title: Hybridizing Cellular and Behavioral Neurobiology with Modern Engineering Tools: Microelectronics, Microfabricated Devices, and Software Solutions for Physiology
abstract: Trained as an electrical engineer and physicist, I have learned the language of the modern neurobiologist and analyzed the state of experimental metrology (measurement tools) and laboratory based undergraduate education in the field (Neurobiology & Behavior). As a result of this examination, I develop solutions that offer a new kind of resolution and accessibility to physiological preparations from the sub-cellular to organismal level. My goal is to create an instrumentation toolset that trivializes the solutions to many of the current questions in neurophysiology and enable the experimenter to access higher resolution and new kinds of data about a system. My goal is to allow for new kinds of questions to be asked and answered. This represents the essence of mission of biophysics: Bringing the tools and methods of modern physics to revolutionize studies of biological systems.
I present three distinct projects which illustrate my findings. These projects bring the majority of modern electrical engineering tools and methods to focus on physiological questions in neural systems. The first project illustrates how a time critical microcontroller driven data acquisition and instrumentation system revolutionizes behavioral analysis in model organisms. The second projects brings the tools of the worlds foremost biophysical nanotechnology center (Cornell?s Nanobiotechnology Center, NBTC) to the design of a new kind of polymer substrate microelectrode structure capable of implantation and extracellular recording from sub-millimeter processes in intact animals. The third project describes a software data acquisition and analysis program capable of acquiring data and analyzing events in a variety of useful ways.
These projects should be viewed as responses to questions about the method, itself, of making observations and analysis in neurophysiological research and education environments. These projects describe tools that are currently being applied at a variety of institutions including several affiliates of Cornell to produce dramatic results. It is my goal to bring the experimental mind of yesterday?s behavioral and cellular neurobiologist into the realm of today?s biophysical engineering tools.

url: http://hdl.handle.net/1813/7531
date: 2007-04-30
creator: Dabora, Ron
viewed: 68

title: An Information-Theoretic Study of Cooperation in Networks
abstract: This thesis presents a study of cooperation in networks using the tools of information theory.
We first review the basic network models, with an emphasis on the relay channel, as this is the most basic configuration of cooperative communication. We focus on the estimate-and-forward (EAF) relaying strategy, which is a scheme that does not require the relay to decode the source messages. We investigate EAF with assignments of the auxiliary random variable that satisfy the feasibility constraint and present an alternative characterization of the classic EAF result of [Cover & El-Gamal, 1979] without a feasibility constraint, thus simplifying the description of the rate.
Next, we combine the relay channel with the broadcast channel. This combination is used to study communication over the general discrete memoryless broadcast channel (BC) with partially cooperating receivers. In our setup, the receivers are able to exchange messages over noiseless conference links of finite capacities, prior to decoding the messages sent from the transmitter. We first find the capacity region of the physically degraded BC with cooperating receivers. Then, we derive an achievable rate region for the general BC with three independent messages - two private messages and a common message, where the receivers hold a K-cycle conference. Additionally, we consider a special case of the general setup, the case of the general BC with just a single message. For this case we obtain explicit rate expressions. We also identify two scenarios in which these explicit rate expressions achieve capacity.
We then consider the discrete, memoryless, multiple-relay channel and derive an explicit achievable rate expression based on the EAF scheme. This expression is amenable to numerical evaluation. We demonstrate the benefits of this result via a discrete memoryless multiple-relay channel example, in which it is superior to multi-relay decode-and-forward. Finally, we consider the Gaussian relay channel with coded modulation at the transmitter and an orthogonal relay-destination link of finite capacity. Here we show that an EAF strategy implementing a three-level quantization outperforms the Gaussian quantization commonly used to evaluate the rates that the EAF scheme achieves in this scenario.

url: http://hdl.handle.net/1813/7532
date: 2007-05-01
creator: Chan, Lauren Michele
viewed: 52
title: Life history and genetic diversity in desert reptiles and amphibians
abstract: Kelly R. Zamudio, Harry W. Greene, Monica A. GeberThe overarching goal of my dissertation research is to understand the link between organismal biology and patterns of population genetic structure across temporal and spatial scales. I focus on three vertebrate species that inhabit the deserts of the southwestern United States and that have habitat requirements and life history traits likely to promote population genetic differentiation.
Chapter one examines genetic structure in a lizard endemic to sand dune patches within a shinnery oak dominated landscape in eastern New Mexico. I used mitochondrial DNA and microsatellite markers to examine the effects of historical and contemporary processes on genetic structure across the geographic range of Sceloporus arenicolus. I found three main genetic clusters based on mitochondrial data with significant population differentiation within each group at microsatellite loci. These data suggest that specialization on and colonization of the shinnery oak ? sand dune landscape may be relatively recent and that the distribution of suitable habitat at fine scales may be less important to population connectivity than the persistence of larger networks of suitable habitat patches.
Chapters two through five address the maintenance and distribution of genetic diversity within and among breeding ponds for two syntopic anurans in Arizona and New Mexico. I examined the consequences of reproductive skew and larval mortality on the persistence of genetic diversity across generations and among breeding aggregations of the Great Plains Toad (Bufo cognatus) and Couch?s Spadefoot Toad (Scaphiopus couchii). Reproductive skew results in reduced genetic diversity in some, but not all, populations of both

species, with a greater effect in larger ponds of B. cognatus. Larval mortality influences genetic diversity only when mortality rates are extremely high or when the larval duration is prolonged. I found high effective population sizes and only weak genetic differentiation at large geographic distances in contrast to expectations based on within pond patterns, desert landscapes, and the scale of genetic structure found in other amphibians. In these desert environments, amphibians are remarkably well-connected by gene flow despite a pronounced effect of within pond processes on the maintenance of genetic diversity.National Science Foundation, Budweiser Conservation Scholarship, American Museum of Natural History, American Society of Ichthyologists and Herpetologists, Edna Bailey Sussman Internship, Sigma-Xi, Liu Memorial Award, Orenstein Fund, Cornell University Department of Ecology and Evolutionary Biology, Upstate Herpetological Society, Summer Institute of Statistical Genetics, Cornell University Graduate School

url: http://hdl.handle.net/1813/7533
date: 2007-05-01
creator: Lawler, Erin
viewed: 61
title: EFFICACY OF A CONTINUOUS PASSIVE MOVEMENT CHAIR SEAT ON TORSO MOVEMENT, BACK COMFORT, AND TASK PERFORMANCE
abstract: It has been shown that prolonged sitting and maintaining rigid postures can induce and exacerbate back pain. Postural fixity can have painful and debilitating implications including spinal shrinkage, increased intervertebral disc pressure and edema in the legs. Incorporating movement within a chair?s seat in the form of continuous passive movement (CPM) has been shown to assuage these physiological effects. However, apart from physiological studies, measuring effects of task performance, back pain, personal comfort, motion sickness, and the extent of torso movement are sparse. Experiment 1 measured the affect of CPM built within a chair's seat pan on these factors by comparing static and CPM conditions among 36 participants, half of whom had pre-existing back pain. Participants performed 3 work related tasks separated by 2 relaxation tasks, during two one-hour sitting conditions: one static and one CPM. The seat pan was set at a constant speed setting #4 throughout the CPM condition. Torso and seat pan movement were recorded using nano-accelerometers; a general comfort rating scale (GCRS) and a body map instrument were used to measure body discomfort over 6 collection times throughout the testing session; speed and error rate were used to measure typing, writing, and mousing performance; and a post-test questionnaire measured psychological and personal comfort, including measures of motion sickness.
Results showed that CPM did not statistically significantly affect participant performance or back pain (p>.05). There were statistically significant differences between personal comfort measures relating to postural stability (p<.000), postural instability (p<.003), limitations in writing and typing (p<.001), feelings of nausea (p<.023), and dizziness (p<.024) between the static and CPM conditions. Feelings were worse in the CPM condition for all variables. There were no statistically significant differences in questionnaire responses between those with and without back pain (p>.05) for either condition. Results further showed that participant?s torsos moved more while sitting in the CPM condition [F(3.334, 106.687)=17.285, p=.000] and while performing active versus passive tasks [F(1, 32)=26.531, p=.000]. Looking at open-ended comments specific to the chair?s CPM, there were more comments in disfavor (n=28) than in favor of the motion (n=14), and, when asked to reflect on the sitting experience, participants commented more negatively (n=46) than positively (n=28). Overall, people without pre-existing back pain commented more negatively on the chair?s motion (n=25) than those with back pain (n=18).
The first experiment maintained a constant speed setting #4 within the seat pan, restricting participants from manipulating the speed controls according to their personal preferences. A second experiment complemented this experiment by giving participants control over the speed setting to test preferences for specific speeds of chair seat pan movement according to particular task demands. This second experiment tested 12 participants with pre-existing back pain. Participants experienced similar protocol as the first experiment, except

participants were allowed to manipulate the chair?s speed and the nano-accelerometers were not used.
Results showed that people preferred having no motion during performance tasks (writing, typing, and using the mouse) and a moderate to low speed for passive, relaxation tasks (movies). Subjective responses were similar to Experiment 1. Overall, there were more negative (n=20) than positive comments (n=11) when asked to reflect on the sitting experience. These comments were almost exclusively related to the movement of the chair?s seat pan.
Results for Experiments 1 and 2 suggest that CPM may be best applied intermittently, allowing users to vary the speed settings according to task demands and comfort level. This has broad application to work places where traditional work breaks, such as walking, stretching, and standing, may be difficult to execute, or for individuals who are sedentary for long durations, such as truck drivers or wheelchair bound individuals.

url: http://hdl.handle.net/1813/7539
date: 2007-05-02
creator: Feder, Lisa
viewed: 55
title: Learning Culture Through a Musical Practice with Manding Jalis in New York
abstract: LEARNING CULTURE THROUGH A MUSICAL PRACTICE WITH MANDING JALIS IN NEW YORK
Lisa Karen Feder,
Ph.D. Cornell University 2007

This study depicts the music and culture of Manding jalis in New York through the perspective of non-African New Yorkers who interact with them. The non-Africans, the author included, move through the cross-cultural learning process as they attend live jali musical performances and learn to play and perform this music themselves. Jali refers to a person born into a particular caste and specific family lineage in the Manding region of West Africa. In Western literature, jalis are described as musicians, singers, oral-historians, advisers, diplomats, ceremony participants, teachers, and bards, among other things (Hale 1998; Charry 2000; Hoffman 2000). This dissertation depicts jalis who play the balafon, the kora, and the guitar in New York. Up to date, there is almost no literature on the topic.
The author applies Gregory Bateson?s notion of cultural ?ethos,? construed as schismogenic balances of tension and resolution, to both musical and non-musical social aspects of culture (Bateson 1972). Meter and rhythm create tensions and resolutions in people?s minds and bodies, giving them a common frame of reference. Simultaneously, participation in music exposes our cultural proclivities. This makes it an ideal place to begin the cross-cultural learning process. From the live music scenes, we then explore how music students learn to produce cross-rhythms and looping layered melodies as well as more subtle nuances in ?feeling,? or groove. Students learn how to learn, think, and play the music according to the Manding jali?s perspective. We apply these musical lessons as we become increasingly involved in the culture, at large.
This study uses an alternative methodology of a reflective practice (Sch?n 1987) in which the author is the primary participant. She moves from a music student, an organizer of balafon workshops to a friend, a patron, an agent, a marraine, and ultimately, a jatigi in jali society. The analysis is interlaced with antidotes of interpersonal experiences between Manding jalis, the author, and other participants. In conclusion we see how non-Manding and Manding music and culture cross-influence one another as they interrelate in the multi-cultural music scene in New York.

url: http://hdl.handle.net/1813/7540
date: 2007-05-02
creator: Theisen, Eric
viewed: 24

title: TRANSIENT BEHAVIOR OF THE PLANAR-FLOW MELT SPINNING PROCESS WITH CAPILLARY DYNAMICS
abstract: Paul H. Steen, Timothy J. Healey, Nicholas J. Zabaras, Steven J. Weinstein.Planar-flow melt spinning (PFMS) is a single-stage rapid manufacturing technique for producing thin metal sheets or ribbons. During the processing molten metal flows through a nozzle onto a moving substrate where a puddle is formed. This study focuses on the time dependent behavior of the process and looks at the puddle dynamics during the cast. Understanding how the issues of heat transfer, fluid flow and contacting dynamics influence the quality of the cast ribbon are the primary focus of the study. The commercial acceptance of PFMS requires ribbons to be cast with good quality (e.g. uniform thickness).
There are a large range scales that are relevant to the ribbon product. Thickness variations occur on the macro-scale over the length of the cast (50 m). There is a steady decrease in ribbon thickness over the length of the cast. There is also a periodic variation on the length scale of the wheel circumference (2-3 m). Steady mass, momentum and energy balances are used to understand these long length-scale thickness variations.
There are also thickness variations that occur on smaller scales, cm to mm. A periodic thickness variation across the width of the ribbon is a common defect observed in our casting, referred to as the cross-wave defect. The molten metal puddle is subject to capillary vibrations. We find that these oscillations correspond to the cross-wave defect.
Motivated by the physics of the cross-wave defect, a more generalized problem of the vibrations of coupled capillary surface is identified. The motions of the puddle are similar to the classical problem of the vibration modes of a `plucked' sphere. In considering the possible modes of vibration for a droplet confined between two plates, we find a novel vibration mode where the center-of-mass oscillates. This model is extended to account for a droplet confined within a tube, with two sections of the droplet extending from each end. Restricting to quasi-steady interface shapes, we find a translational vibration mode which can occur with lower frequency than the traditional Rayleigh modes. The vibration frequencies are compared to experimental values.Eastman Kodak Graduate Research Fellowship, NSF DMI-0500311, -0500408.

url: http://hdl.handle.net/1813/7542
date: 2007-05-02
creator: Yildiz, Mehmet Ercan
viewed: 60
title: Practical Coding Algorithms for Consensus Problems with Zero Asymptotic Rate
abstract: We consider the average consensus algorithm under the rate constraint communication network. Average consensus algorithms are protocols to compute the average value of all sensor measurements via near neighbors communications. The main motivation for our work is the observation that consensus algorithms offer the perfect example of a network communication problem where there is an increasing correlation between the data exchanged, as the algorithm iterates. Henceforth, it is possible to utilize previously exchanged data and current side information to reduce the demands of quantization bit rate for a certain precision. We analyze the case of a network with a topology built as that of a random geometric graph and with links that are assumed to be reliable at a constant bit rate. We explore the conditions on the quantization noise which lead to a consensus value whose mean squared distance from the initial average is bounded. We propose two main practical schemes and show that they achieve bounded convergence with zero rate asymptotically. We further investigate the problem under regular grid network assumption and observe that computational complexity of the schemes reduce significantly and global knowledge of the network connectivity assumption can be relaxed. Thus, we conclude that the proposed schemes become scalable under dense networks.

url: http://hdl.handle.net/1813/7545
date: 2007-05-02
creator: Mitchell, Marc

viewed: 94
title: X-PINCH PLASMA DYNAMICS STUDIED WITH HIGH TEMPORAL RESOLUTION DIAGNOSTICS
abstract: The X-pinch plasma produces extreme material conditions that make it interesting both as a high-energy-density plasma and an x-ray source for imaging. These extreme conditions include high densities (near solid density, 10^23 ions/cm^-3 for Mo), high temperatures (above 2.5 keV for Mo), high energy densities (up to 10^12 J/cm^3), high x-ray power densities (up to 10^22 W/cm^3), small source sizes (which can be less than 1 micron in diameter), and short time scales for the x-ray radiation (less than 100 ps). These extreme conditions are difficult to produce in a laboratory setting and even harder to study. The X-pinch plasma is produced by driving a high current (100-500 kA, 100 ns FWHM pulse for our experiment) through two or more wires that cross at a point forming an "X." A magnetically driven z-pinch forms near the cross point allowing the X-pinch to reliably reproduce the conditions given above. As such, we present a range of experiments designed to study the conditions produced in the X-pinch plasma. Until recently many of the diagnostics used to study the X-pinch have not had the resolution (spatial or temporal) necessary to determine the actual size or duration of the X-pinch x-ray source. We present experimental results showing the temporal extent of the x-ray radiation produced by an X pinch using an x-ray streak camera with better than 10 ps resolution. We also present experiments designed to study the temporal and spatial relationship of the two different radiation sources (thermal and energetic-electron-generated) observed from an X pinch using a filtered diode array. In addition, we studied the plasma dynamics using both a multi-channel 150 ps, 532 nm (Nd:YAG) laser backlighting system and x-ray radiography (using an X pinch as an x-ray source). We correlate the observed plasma parameters (implosion and explosion rate, neck diameter, axial jet propagation speed, and coronal plasma axial modulation wavelength along the X-pinch legs) to wire material.

url: http://hdl.handle.net/1813/7546
date: 2007-05-02
creator: Edwards, Jennifer
viewed: 57
title: Proper Orthogonal Decomposition and Tomographic Analysis of Combustion Systems for Control Applications
abstract: Control of combustion systems is of considerable importance to the improvement of system performance and is currently an active field of research. An understanding of combustion system dynamics is crucial to the development of effective control systems. Combustion dynamics and control combine the different aspects of combustion research such as theoretical analysis of the governing equations and phenomena, computational simulation, modeling, and measurement using advanced sensors.
Investigation of the use of proper orthogonal decomposition to analyze combustion product fields and their associated dynamics is presented. Proper orthogonal decomposition is applied to CO2 number density and vorticity magnitude data from reacting rectangular jet simulations. The resulting eigenfunctions are used to develop physical insight of the vortex formations and dynamics of these jets and their related mixing and spreading characteristics. It is seen that different vortex structures are captured in the eigenfunctions and that CO2 and vorticity eigenfunctions are very similar indicating that vortex-driven mixing dominates in these jets. Using subsets of eigenfunctions with high information content, CO2 and vorticity magnitude distributions can be represented with relatively few eigenfunctions.
Results of research to develop and apply multiple line-of-sight absorption and emission tomography for the study of combustion and as a sensor for monitoring and control of combustion systems are reported. Absorption tomography can provide data on the state of macro-mixing in combustion systems that can influence system performance, e.g. efficiency, radiation signature, and pollutant emissions. The development of an IR laser absorption facility for rapid scanning tomography and the performance of the tomographic reconstruction technique, Adaptive Finite Domain Direct Inversion, are discussed. The development of a

sensor system for use in a practical combustion device is also addressed. Computational simulation of a combustor sector rig provided operating state conditions such as excited state population and temperature distributions. Emission tomography measurements were simulated using numerical line-of-sight integration of simulated excited state number densities of water for two emission transitions. Tomographic reconstruction was performed using Tomographic Reconstruction via a Karhunen-Loeve Basis to evaluate nine line-of sight measurement configurations and an optimal measurement configuration was selected. Operating state identification for control applications was investigated using the TRKB reconstructions.Office of Naval Research, Dr. Gabriel Roy (scientific officer), ONR grant # N00014-99-1-0447 //
Pratt and Whitney, Dr. Jeffrey Cohen and Dr. Arash Ateshkadi

url: http://hdl.handle.net/1813/7547
date: 2007-05-02
creator: Ullrich, Johanna Merici
viewed: 82
title: Practical Applications of Phosphate Analysis in Household and Abandoned Settlement Archaeology: Case Studies from Ireland and New York State
abstract: Dr. Sherene Baugher, Dr. Thomas VolmanTesting for phosphates at archaeological sites has helped to guide the placement of archaeological excavation units in the past. Phosphate testing can assist archaeologists by pinpointing areas of elevated human activity. The technique, however, has only been used minimally in archaeological practice. Phosphate testing is not common due to the high laboratory cost of performing phosphate tests, and the relative ambiguity of results obtained from field-testing for phosphates. Archaeology would benefit greatly from a less expensive, more accurate method of phosphate testing. By slightly changing the standard field test for phosphate analysis it is possible to improve results. A revised method for phosphate testing also allows archaeologists to test sites to obtain the location of middens and other features, to identify land-use patterns, to locate new sites, and even discern chronology of a site, within a reasonable budget. Two case study analyses were performed to show how phosphate testing can be used in conjunction with archaeology. They were located at the Achill Archaeology Field School project site in County Mayo, Republic of Ireland, and at the Cornell University project site at Robert Treman State Park, New York State, United States of America.

url: http://hdl.handle.net/1813/7548
date: 2007-05-02
creator: Stewart, Derek
viewed: 101
title: Magnetism in Coaxial Palladium Nanowires
abstract: While bulk palladium is non-magnetic, several recent studies have shown that magnetism can occur in hcp Pd films, fcc twinned Pd nanoparticles, and Pd atomic strands. These studies show that small changes in Pd atomic configurations can induce magnetic properties. In this work, we examine coaxial palladium nanowires in an effort to determine the most stable configurations and their magnetic properties. Relaxed nanowire structures are found using density functional calculations in the plane wave basis. In several metallic systems such as gold, coaxial nanowires have proven to be the lowest energy configuration for ultrathin (< 1 nm) nanowires. We consider magnetism in these structures as a function of diameter and coaxial configuration. These results are also compared to fcc and hcp Pd nanowires of comparable diameters. We find that the (6,0) coaxial nanowire provides the most stable structure and exhibits a magnetic moment of 0.278 uB/atom.

url: http://hdl.handle.net/1813/7549
date: 2007-05-03

creator: Singh, Mayank
viewed: 86
title: ANALYZING THE EFFECT OF CROSS FLOW VELOCITY, UNIFORM TRANS MEMBRANE PRESSURE AND PH ON PERMEATE FLUX, RETENTATE COMPOSITION AND ENERGY CONSUMPTION DURING CROSS FLOW MICROFILTRATION OF SKIM MILK
abstract: Pasteurized skim milk at pH 6.50 and 6.00 was microfiltered at 50oC using 0.2-mm membranes. A factorial design of three cross flow velocities (CFV) of 5.3, 5.8, 6.3 ms-1 and three uniform trans membrane pressures (UTMP) of 68.9, 103.4, 137.9 kPa was utilized. High CFV combined with high TMP required the shortest time (up to 40%) to achieve a concentration factor (CF) of 8-10x. Starting flux was 20 to 50% higher at pH 6.50 when compared to pH 6.00 due to solubilization of micellar calcium and severe fouling at lower pH. Higher flux was always obtained by using the combination of high CFV and high UTMP, which results in high shear and 33% reduction in gel layer (CG) with back transport of rejected molecules into the retentate stream due to better (almost double) mass transfer coefficient (kc). Higher CFV also reduced whey protein retention by 33%. Cross flow microfiltration (CFM) at lower pH (6.00) reduced calcium retention and lowered calcium to true protein ratio by 50% at 10x, compared to 8x retentate at pH 6.50, though 10x retentate had 20% higher casein concentration. Higher UTMP helped maintain high flux and thus shorten the run time up to a CF of 6-7x, but resulted in severe fouling and a steep decline in flux and increased whey protein retention as the process was continued to higher concentrations (8-10x). Overall energy consumption was always lower due to shorter CFM process when skim milk was microfiltered to 8x at higher CFV and higher UTMP.

url: http://hdl.handle.net/1813/7550
date: 2007-05-03
creator: Tabucchi, Taronne H. P.
viewed: 84
title: Modeling Post-Earthquake Restoration of the Los Angeles Water Supply System
abstract: Special Committee: Rachel A. Davidson, Thomas D. O'Rourke, Linda K. NozickThe purpose of this thesis is to develop a discrete event simulation model of post-earthquake restoration for the Los Angeles Department of Water and Power (LADWP) water supply system. Discrete event simulation, a new approach to modeling post-disaster lifeline restoration, offers many benefits for restoration modeling compared to alternative methods. The water supply system and restoration process are represented in great detail with few simplifications. The utility company's decision variables (e.g., number of repair crews, repair prioritization rules) are included explicitly, allowing exploration of their effects on the speed of the restoration. Restoration times are estimated separately for each region within the service area, and uncertainty in the process is modeled explicitly.
With a service area of more than 1,200 km2 and 12,000 km of pipelines, the LADWP water supply system is the largest municipal system in the United States. Extensive review of the LADWP water organization, water supply system, and post-earthquake restoration process was conducted. This review provided the basis for the restoration model. Crews, tasks, and the different phases in the restoration process came directly from discussions with LADWP personnel and the water organization's emergency response plans.
For a particular earthquake, the restoration model takes as input information about damage to the system and the resulting hydraulic flow, both of which are provided by the Graphical Iterative Response Analysis for Flow Following Earthquakes (GIRAFFE) model that was developed for the LADWP system (Shi 2006, Wang 2006). Throughout the restoration simulation, the model interacts with GIRAFFE periodically in order to receive updates of the system functionality at specific times as the restoration process proceeds and damage is repaired.
The restoration model provides several different types of output including system and subregion restoration curves; spatial distribution of restoration; material usage; crew usage; average time each customer is without water; and time to restore the system and subregions to 90%, 98%, and 100%. It can also include damage

uncertainty by combining the output from runs for multiple realizations of damage associated with a single earthquake. The model can be used to help estimate economic and societal losses due to water supply system outages, and to evaluate the effectiveness of possible restoration improvement strategies.
Ten simulations of the restoration model were run using real damage data from the 1994 Northridge earthquake as input, and the results were compared to the actual restoration that took place following Northridge. The average spatial distribution of restoration roughly matches what occurred in 1994. As in real life, the areas experiencing longer outages in the model are mainly in the north of the system service area or around the San Fernando Valley. The system restoration curves did not match exactly, as the range of outputs from all 10 runs of the restoration model shows that the restoration occurs too quickly, especially during the first day after the earthquake. Possible future model modifications that may improve the calibration are discussed.
This work was supported by the Earthquake Engineering Research Centers Program of the National Science Foundation through the Multidisciplinary Center for Earthquake Engineering Research under NSF Award Number EEC-9701471

url: http://hdl.handle.net/1813/7551
date: 2007-05-03
creator: Fuller-Rowell, Thomas
viewed: 84
title: Multi-site Action Research
abstract: Classical action research within single organizations has become a well established and differentiated approach since its inception more than six decades ago. Although new larger scale varieties of action research are beginning to develop, there is still a clear need to expand the scope of action research practice (Greenwood, 2002). Building on previous work, this paper develops multi-site action research (MAR) as a conceptually distinct variant of action research implementation with promising potential to fill the gap between the classical and coalition type varieties of action research. MAR is defined as involving the concurrent implementation of multiple distinct single-site action research processes, with a similar focus, and some level of coordination across sites. From a review of three relevant multi-site initiatives, a conceptual framework for the potential benefits of MAR is derived, and a model of the MAR implementation process is presented and discussed.

url: http://hdl.handle.net/1813/7552
date: 2007-05-03
creator: Daley, Lisa
viewed: 93
title: The significance of heavy-chain antibodies to camelid immunity
abstract: Camelids produce IgG isotypes that do not conform to the rules governing conventional antibody structures. Typically, immunoglobulins combine homodimeric heavy and light chains to produce characteristic tetrameric structures. Unlike IgG1, the camelid IgG2 and IgG3 isotypes do not incorporate light chains into their structures. These unusual antibodies, generally referred to as heavy-chain antibodies (HCAbs), comprise approximately 50% of serum IgGs, compatible with a significant role in camelid immunity. Hitherto, the effector functions of camelid HCAbs remain largely undefined primarily due to the dearth of available isotype-specific reagents. As it was our objective to investigate camelid HCAbs, we produced and characterized monoclonal antibodies that discern among the IgG isotypes produced by both llamas and alpacas. These reagents were employed in affinity chromatography, serologic analyses, virus neutralization assays, flow cytometry, and immunohistochemistry to differentiate between the B cell sub-populations that synthesize conventional and heavy-chain IgGs, determine whether expression of the different IgG isotypes was regulated differently, and to investigate the clinical and physiological relevance of HCAbs.
Our investigations led to the discovery of a novel IgG3 protein, and the production of immunological reagents that discern among two conventional IgG1, IgG2 and the two IgG3 HCAbs. We have documented that the B

cell sub-populations developed within similar lymphoid compartments during gestation. At birth, HCAbs obtained through colostrum contributed to the passive transfer of immunity that is critical in protecting the newborn until maturity of its immune system. Throughout life, the B cell sub-populations continued to occupy similar compartments, although, B cells that locate within splenic marginal zones expressed one sub-isotype of IgG1 exclusively. Also, follicular B cells within adult, ileal Peyer's patches expressed only the novel IgG3. In response to pathogen infections, camelid B cells elicited IgG2 to helminths and IgG3 to viral infections: IgG1 expression was ubiquitous. Anti-viral IgG2 were induced only by hyperimmunization. While IgG3 proved to be as potent as IgG1 in neutralizing activities, anti-viral IgG2 was ineffective. The data presented here document for the first time a dichotomy in the effector functions of camelid IgG2 and IgG3 HCAbs.

url: http://hdl.handle.net/1813/7553
date: 2007-05-03
creator: Lin, Hao
viewed: 124
title: NOVEL SILICON AND CARBON NANOTUBE ELECTRONIC DEVICES: TECHNOLOGY, STRUCTURE AND PROPERTIES
abstract: Originating in an effort to advance electronics into nanometer scale regime and towards higher integration, several novel electronic devices are described here for computation and data storage applications. These include super-self-aligned separately-gated double-gate transistors, a cross-coupled bipolar injection memory (xFET) and top/back-gate carbon nanotube transistors. Hybrid integration of silicon and carbon nanotube electronics are demonstrated for the first time to show a viable direction for future electronics to extend technology reach for new scientific and engineering fields.
The Super-self-aligned separately-gated double-gate field-effect transistor (FET), featuring strained silicon channel, thick source-drain region and buried-interconnected gate, have been made for both polarities n- and p-type using a novel approach that helps advance silicon CMOS technology to nanometer scale. All these features help alleviate the power consumption issues for future nanoscale CMOS transistor where performance degrades due to short channel effects and the loss of device threshold voltage control.
A novel non-volatile memory device?xFET?is developed with several charge injection mechanisms to allow a variety of operational capabilities and provide significantly faster programming/erasing speed. Nanoseconds programming time has been achieved through hot electron injection. In a crossed nFET/pFET configuration, the new device features a four-terminal bipolar structure with a top floating gate used as the charge storage node. The silicon-on-insulator (SOI) technology in the device development ensures excellent CMOS compatibility.
With techniques borrowed from silicon ULSI technology, carbon nanotube field-effect transistor (CNFET) with either back-gate or self-aligned top-gate structure has been developed to improve device performance and integration. For back-gate CNFET, combined analysis of device?s transient and transfer characteristics in contrasting environment (in air or in vacuum) show distinct ambient effects on the device carrier transport properties. High frequency pulse measurement is employed to produce intrinsic device transport properties through elimination of hysteresis and 1/f noise.
Integration of carbon nanotubes transistor on top of nMOS transistors can provide compact circuit components. One example?a logic NOT gate is demonstrated in a monolithic integration of p-CNFET on top of nMOSFET. This integration scheme is an example that combine different technologies to make new applications possible on a robust silicon technology platform.Center for Nanoscale System
National Science Foundation

url: http://hdl.handle.net/1813/7554
date: 2007-05-03

creator: Crampton, Lora Anne
viewed: 86
title: BIOLOGICAL CONTROL OF THE TARNISHED PLANT BUG, LYGUS LINEOLARIS (HEMIPTERA: MIRIDAE), BY PERISTENUS SPP. (HYMENOPTERA: BRACONIDAE), IN NEW YORK APPLE ORCHARDS
abstract: Lygus lineolaris is a pest of many economically important crops. While the species comprising the Peristenus pallipes complex are native parasitoids of L. lineolaris, they do not provide adequate biological control of L. lineolaris. As a result, the European parasitoid, Peristenus digoneutis, was introduced in forage alfalfa. Peristenus digoneutis successfully dispersed from forage alfalfa to strawberries, suggesting that P. digoneutis may disperse into other high value crops. In apples, L. lineolaris feeding causes puncture wounds, scabs or cat facing on the fruit.
The success of a classical biological control introduction is dependent on both monetary and ecological costs and benefits. The dispersal and persistence of P. digoneutis into multiple crops is necessary for monetary benefit. Furthermore, if pesticides disrupt classical biological control no monetary gain can be made. In addition, an ecological cost of classical biological control is displacement of native species. The objectives of this study are to-1) establish the presence of the introduced parasitoid, Peristenus digoneutis, in New York apple orchards, 2) evaluate changes in rates of parasitism of L. lineolaris by native and introduced Peristenus spp. since the initial dispersal of P. digoneutis into western New York, 3) determine how four pesticide regimes- standard, reduced risk, organic and abandoned orchards- affect Peristenus spp. parasitism.
During this two year study L. lineolaris were collected from New York apple orchards treated with standard, reduced risk, organic insecticides. This is the first record of P. digoneutis parasitizing L. lineolaris in apple orchards. When compared to rates of parasitism collected from strawberries in 1999 there is an increase in the total L. lineolaris parasitism by Peristenus spp. in western New York. Additionally, there was a reduced rate of parasitism by native parasitoids in the P. pallipes complex, suggesting that P. digoneutis may be competitively displacing natives. Insecticide treatment had a significant effect on rates of Peristenus spp. parasitism. When compared to standard insecticide regimens there was significantly higher parasitism in reduced risk when compared with standard orchards. Conversely, there was significantly less parasitism in organic orchards when compared to standard orchards.USDA-ARS cooperative agreement 58-1926-0-039

url: http://hdl.handle.net/1813/7555
date: 2007-05-03
creator: Price, Joshua A.
viewed: 79
title: The Effects of Higher Admission Standards: An Analysis of Intercollegiate Athletics
abstract: The objective of this study is to examine the effects of increasing admissions standards on college enrollment and graduation rates among minority student-athletes. Intercollegiate athletics has traditionally provided increased access to college for minorities, especially African-Americans. In 1996, the National Collegiate Athletic Association enacted a policy that increased the minimum required high school GPA and combined SAT or ACT score for all entering student-athletes at Division I schools. Division II schools were unaffected by the policy, providing a plausible set of control schools with which to compare the impact. Although the target goal of the policy was increasing graduation rates of Division I schools, the current study provides evidence that graduation rates did not significantly increase among Division I schools. Furthermore, as a result of the increased standards for Division I schools, more student-athletes attended Division II schools and the schools experienced a subsequent increase in graduation rates. One possible explanation for this effect is that student-athletes of marginal academic quality may have ?matched? better with Division II schools and thus increased their likelihood of graduation.

url: http://hdl.handle.net/1813/7556

date: 2007-05-03
creator: Browder, William
viewed: 127
title: The segmentation of nonsolid pulmonary nodules in CT images
abstract: Nonsolid nodules are a common radiographical finding in high resolution CT images of the lung. A main factor in determining a nodules malignancy status is the change in the nodule size over time. A method for automatically segmenting a nonsolid nodule from CT images is presented in this thesis. Precise image segmentation is a prerequisite for determining the volumetric growth rate from multiple image scans and the corresponding nodule malignancy status.
There has been limited previous work on a segmentation technique for nonsolid nodules. The methods that have been proposed have lacked clinical validation with a radiologist ground truth and often include smaller datasets. The method in this thesis directly compares radiologist ground truth with our automated method and examines the consistency of growth measurement for further validation.
The segmentation method consists of three stages; bilateral noise reduction, a probability based voxel classifier and geometric vessel removal. Parameter optimization and validation of the segmentation algorithm is facilitated with a dataset of 20 nonsolid nodule images in which a radiologist has established ground truth by outlining the boundary of the nodule in each image that it is visible. The optimal parameters were determined using the overlap metric and a training/testing methodology. The automated method achieved an average overlap of 0.43 with the radiologist ground truth.
An experiment was conducted to determine whether the radiologist manual boundaries or the automated segmentations were more consistent at measuring the volumetric growth between three time scans of the same nodule. Results were determined for two different growth models (exponential and linear) on a dataset of 25 nonsolid nodules. The growth variation of the automated method was found to be 1.87 compared to the radiologist growth variation of 3.00. This suggests that, if the assumption of consistent nodule growth holds for nonsolid nodules, then the automated method provides a more precise growth rate estimate than the radiologist markings.

url: http://hdl.handle.net/1813/7557
date: 2007-05-03
creator: Wang, Hongye
viewed: 90
title: ON THE COMPUTATION AND APPLICATION OF MULTI-PERIOD SECURITY-CONSTRAINED OPTIMAL POWER FLOW FOR REAL-TIME ELECTRICITY MARKET OPERATIONS
abstract: This work concerns the formulation and solution of a multi-period security-constrained optimal power flow problem for real-time electricity market operations. The solution of the proposed problem is intended to be part of the core pricing procedure for electricity trading in open markets where real energy, reactive energy, voltages support, and other system resources and services can all be traded in discrete bids and offers. Traditionally, real-time dispatching operations only involve solving single-period security-constrained optimal power flow problems. This work demonstrates the need for solving multi-period security-constrained optimal power flows. The nonsmoothness of the offer/bid-driven optimal power flow problem is studied. Three techniques, namely, a trust-region based augmented Lagrangian method, a step-controlled primal-dual interior point method, and a modified constrained cost variables method, are developed for reliable and efficient computation of large-scale nonsmooth optimal power flows. Numerical studies show that these techniques are reliable and better than some existing ones. To reduce the computational complexity, two decomposition techniques are proposed and studied. In the first one, the auxiliary problem principle method is extended to handle inequality constraints created from generator ramping limits. In the second one, binding time-coupling and contingency-coupling constraints are estimated, ranked, and filtered before the computation is decomposed and parallelized using standard block matrix computation techniques. According to experimental

results, the most promising way of solving large-scale multi-period security-constrained optimal power flow problems in real time is to combine the second decomposition method with the modified constrained cost variables method. The optimal power flow formulation and relevant computation techniques proposed in this work balance the needs for: (1) deterministic convergence, (2) accurate computation of nodal prices, (3) support of both smooth and nonsmooth costings of a variety of resources and services, such as real energy, reactive energy, voltage support, etc., (4) full active and reactive power flow modeling of large-scale systems, and (5) satisfactory worst-case performance that meets the real-time dispatching requirement.

url: http://hdl.handle.net/1813/7558
date: 2007-05-03
creator: Zuluaga Duque, Andrea Paola
viewed: 89
title: MOLECULAR ASSESSMENT OF BTH TREATMENT IN PETUNIA, POTATO AND TOMATO
abstract: Induced resistance by chemicals such as benzothiadiazole BTH (Syngenta Inc) mimics the biological activation of Systemic Acquired Resistance (SAR) by necrogenic pathogens, taking the place of salicylic acid (SA) in the SAR signal pathway, inducing the same molecular markers and range of resistance. Previous work in our laboratory found that BTH activates resistance against late blight caused by P. infestans, on petunias and tomatoes while it did not activate resistance against the same pathogen on potatoes, suggesting that the spectra of resistance activated by BTH are very crop and pathogen specific. My goal was to understand the molecular mechanism by which BTH mimics the SAR response and further understanding why BTH works in some plants and not others. To address this question I used microarray technology to identify the genes expressed in response to BTH in petunias, tomatoes and potatoes. I selected three candidate genes (cysteine protease, acidic chitinase and PR1-a) to characterize further by silencing using Virus Induced Gene Silencing (VIGS). My hypothesis was that silencing of these genes will reduce the resistance response in plants observed after BTH treatment against P. infestans. However, silencing of cysteine protease, PR1-a or acidic chitinase II individually did not reduce the effect of BTH on plants. The lack of phenotype after silencing PR1-a supports previous conclusions from our lab that partial resistance to P. infestans in tomato is not dependent of the SA pathway.

url: http://hdl.handle.net/1813/7559
date: 2007-05-04
creator: Weng, Xinghe
viewed: 89
title: THE INTESTINAL-CELL MONOLAYER OF THE DOG (CANIS FAMILIARIS) AND MALPIGHIAN TUBULES OF AEDES AEGYPTI: POWERFUL IN VITRO MODELS FOR STUDYING EPITHELIAL TRANSPORT
abstract: Homeostasis of the internal environment of vertebrates and invertebrates is maintained by a collection of organs involving the gastrointestinal system, the renal system and the pulmonary system, whose surfaces facing the external world are covered by a layer of highly polarized epithelial cells as the barrier and sites for substance exchange between body and the external world. As most studies on epithelial transport are done in animal cell- or tissue-models, this dissertation is set to address questions on two in vitro epithelial models: monolayers of cultured epithelial cells and Malpighian tubules of insects.
In the field of epithelial transport across mammalian small intestines, most of the cell monolayers that have been used in the past are abnormal: they are either derived from cancerous cells or poorly differentiated compared to normal tissues. By strictly controlling cultural conditions, we successfully developed an epithelial cell culture derived from normal dog jejune with full differentiation, which can form cell monolayers with remarkable resemblance to the normal small intestinal epithelia in morphology, expression of the junctional proteins and membrane transporter, and electrophysiological properties. Furthermore, different channels

can be induced when the cell monolayer is treated with different hormones and agents, suggesting its wide application in basic and applied research studies.
Malpighian tubule of the yellow fever mosquitoes Aedes aegypti has been the epithelial transport model in our lab for more than twenty years. The V-type H+ ATPase is thought to provide driving force for transepithelial electrolyte and fluid secretion in Malpighian tubules. Here we immunohisochemcially localized the proton pumps to the apical membranes of the mitochondria-rich principal cells of the Malpighian tubules, and measured enzymatic activities of the V-type H+ ATPase as 50~60% of the total ATPase activities. In comparison the activities of the Na+/K+ ATPase were almost undetectable.
To understand the functions of Malpighian tubules, we also modeled the tubule into equivalent electrical circuits. However in our previous studies, the model was incomplete, as contribution of gap junction resistance between Malpighian tubule cells to the circuit has never been revealed. In this dissertation, we accurately measured the electrical resistance of gap junctions in a single cell by circuit analysis and rectified the values of all the electrical elements in our previous model. The equivalent electrical circuit has for the first time become complete. The results also show that gap junctions in Aedes Malpighian tubules are impermeable to the fluorescent dye Lucifer yellow CH, sensitive to the metabolic inhibitor dinitrophenol, while not so sensitive to elevated intracellular [Ca2+].

url: http://hdl.handle.net/1813/7560
date: 2007-05-04
creator: Lackey, Jamicia
viewed: 95
title: Renegotiating Resistance: African Diaspora Film and the Discourse of Third Cinema
abstract: Emerging out of the context of the tricontinental revolution of the 1950s and 1960s, Third Cinema refers to a host of film practices from Latin America, Africa and Asia with the political intent of the decolonization of culture. For contemporary filmmakers and critics, however, the discourse of Third Cinema cannot be easily applied to contemporary times and contexts. In this thesis, I attempt to reconcile the discourse of Third Cinema with contemporary African diaspora film practices in a renegotiation of cinematic resistance.
Proceeding from Gilles Deleuze's theory that the evolution of cinema from classical to modern materialized out of the historic rupture produced by World War II, my thesis locates another rupture in the dissonance between Third Cinema and contemporary African diasporic filmmaking. The lingering effects of neo-colonialism and the process of globalization have rendered older categories to describe the world inadequate, and filmmakers all over the world are actively engaged in decentering the grand narratives of Western and Third Cinemas. Because this deconstructive process is most often associated with the diasporic condition by postcolonial theorists, I argue that a "diasporic turn" has occurred within cinema that shapes contemporary film narratives and aesthetics. Although my use of the term "diaspora" is conceptual rather than geographical, in my thesis the African diaspora, historically constructed through the process of forced and voluntary migration, operates as a unit of analysis for exploring the "diasporic turn." Through the analysis of three films from the African diaspora, my thesis not only explores the postcolonial and diasporic issues with which the discourse of Third Cinema must reconcile in order to have contemporary relevance, but it also gestures towards a new discursive framework for characterizing contemporary African diasporic film practices.

url: http://hdl.handle.net/1813/7561
date: 2007-05-04
creator: Schaller, Susanna
viewed: 109
title: BIDDING ON URBANITY WITH BUSINESS IMPROVEMENT DISTRICTS:
abstract: BIDDING ON URBANITY WITH BUSINESS IMPROVEMENT DISTRICTS: RE-MAKING

URBAN PLACES IN WASHINGTON, DC
Susanna Francesca Schaller, Ph.D.
Cornell University 2007
"The livable city," one that offers street-level, neighborhood life, cultural and ethnic diversity as well as a broad choice of entertainment venues and businesses, has become the catch-all phrase to encapsulate the vision of city life employed to attract a class of potential urbanites who are viewed as key to maintaining and bolstering the tax-bases of fiscally strapped city governments (Florida 2002, Kearns and Philo 1993). Harnessing this competitive advantage that cities have over their suburban neighbors requires cleaning up commercial spaces and marketing images free of deterioration (Florida 2002, Philo and Kearns 1993, Holcomb 1993). Business improvement districts (BID) have become a tool to secure perceptions of safety and attractiveness for new residents, businesses, and tourists and to stimulate reinvestment in urban retail and residential development. BIDs have become key actors in planning for and managing these efforts.
BIDs privilege the rights of commercial property owners in the governance of local districts and draw artificial boundaries between the residential and commercial life of neighborhoods. Thus, their uniform application, particularly, in ethnically and economically diverse urban neighborhoods, masks struggles over neighborhood boundaries, identities, property values and rents. The following questions guide this dissertation:
What interest-alignments underlie the wide-spread institution of place-making economic development strategies such as BIDs?
o For whom and by whom are these urban places produced?
o Whose visions of place are incorporated and whose are left out?
In order to address a specific lacuna in the literature on BIDs, this dissertation examines the BID establishment process that unfolded in one of the most ethnically and economically diverse areas in Washington, DC. In order to understand local level interest alignments that support the formation of BIDs in the context of larger economic and political processes affecting urban governance, the research is designed as a nested case study based in the extended case method, elaborated by Burawoy (1991). This design places the neighborhood case study area within the context of a shift toward entrepreneurial city governance in DC, keeping in mind the historical layering of territorial struggles that shape DC?s geographic, social and political landscape (Harvey 2005).

url: http://hdl.handle.net/1813/7562
date: 2007-05-04
creator: Shirakawa, Akiko
viewed: 85
title: TOPICS IN THEORETICAL ASTROPHYSICS: PRECESSION OF WARPED DISKS, OSCILLATIONS OF PRESUPERNOVA STARS, AND THERMAL EVOLUTION AND NUCLEOSYNTHESIS OF YOUNG NEUTRON STARS
abstract: This thesis consists of three parts. In the first part, we study the magnetically driven precession of warped disks. An accretion disk around a rotating magnetized star is subjected to the magnetic torques that induce warping and precession of the disk. We study the global hydrodynamical warping/precession modes of the disk under the combined influences of the magnetic torques, relativistic frame dragging, and the classical precession due to oblateness of the neutron star. We apply our analysis to two types of accreting systems: low-mass X-ray binaries (LMXBs) and accreting X-ray pulsars. We argue that some features of low-frequency quasi-periodic oscillations (QPOs) in LMXBs and milli-Hertz QPOs in accreting X-ray pulsars can be explained by the magnetically driven precession of warped disks. The second part is related to the hydrodynamically-driven mechanism for asymmetric supernova explosions / neutron star kicks. We explore the possibility that the gravity modes in the core of a presupernova star may be amplified in the silicon burning shell to produce the global asymmetric perturbations that lead to an asymmetric supernova explosion. By performing a linear analysis of the oscillations in the cores of presupernova stars, we estimate

the growth/damping rates of the modes. We find that most of the modes are damping modes with a few exceptions. We also find that, even for a growing mode, the timescale of mode growth is much longer than the remaining time before the core collapse. We conclude that the gravity modes in a presupernova core cannot provide the global asymmetric perturbations that lead to an asymmetric supernova explosion. In the last part, we attempt to predict the innate chemical composition of a neutron star atmosphere. There has been great progress in X-ray observations and now thermal radiation from neutron stars is being studied in detail. There has also been significant progress in modeling thermal spectra from neutron stars. However, the unknown chemical composition of the neutron star surface is assumed in these models. Our goal is to predict the chemical composition of a neutron star atmosphere by evolving its thermal structure and the chemical composition from the earliest possible time. We study necessary steps to achieve this goal. We study models for a static atmosphere of a young neutron star, cooling of the bulk of a young neutron star, the nuclear statistical equilibrium abundances, nucleosynthesis, and the possible role of diffusion.

url: http://hdl.handle.net/1813/7570
date: 2007-05-04
creator: Moore, Francis
viewed: 128
title: Electrical Stimulation for Pain Suppression: Mathematical and Physical Models
abstract: Master of Engineering thesisFinite element models of increasing complexity were generated in the ANSYS finite element modeling program to determine the electric field and current properties in the body as a result of the transcutaneous electric nerve stimulation (TENS) device. The initial models consist of one-, two-, and three-layer structures, and the final model was a 7,415 node two-dimensional model of the human arm. To validate the ANSYS calculations, one-, two-, and three-layer phantom models were developed using agar, deionized (DI) water, and sodium chloride in varying concentrations. A summing amplifier was built to combine multiple stimulating waveforms at different frequencies from two function generators at two frequencies F1 and F2. Current measurements from the phantom models were compared to ANSYS calculations on corresponding finite element models. The ANSYS program was validated for modeling of single-layer models. Multiple layers of gels of different resistivity exhibited ion leaching problems which made them unsuitable as phantom models. It is necessary, therefore, to develop and validate an alternative phantom model for modeling electric field and current properties of multi-layer systems.
A technique was developed for transforming cross-sectional images of body parts into mesh diagrams suitable use in ANSYS. Body images from ?The Visible Human Project? were taken and processed such that eight different tissue types and their location could be identified. Electrical properties were determined for muscle, skin, fat, cortical and cancellous bone, blood, connective tissue, and nervous tissue for use in the ANSYS simulation models. A cross-section of a male arm was processed and analyzed.Dr. Dan Aneshansley

url: http://hdl.handle.net/1813/7571
date: 2007-05-04
creator: Fehrman, Rosemarie
viewed: 106
title: Increasing Evapotranspiration Trends Over the Mississippi River Basin
abstract: Recent research suggests that the evapotranspiration rate (ET) over much of North America has increased over the past 50 years; however there is not a consensus on why the rate is increasing. Most of these studies have focused on annual trends starting around 1950. This study considers (1) whether or not published ET rates would be affected by the addition of the 1940s to the dataset, (2) changes in monthly stream flow and precipitation patterns that could affect the rate of ET and whether there are months driving these annual trends, and (3) whether there are certain areas in the watershed driving this trend. This study considers the hydrological cycle for the Mississippi River Basin from 1940-1999 to show that ET rates have

increased. However, when considering trends starting in the 1940s, the trends are not nearly as strong as the trends of the 50 years period 1950-1999 with an increase of 0.29 mm/yr rather than 0.88 mm/yr. Monthly analyses showed that summer months, when potential ET is the highest, have a persistent increasing trend in precipitation, which probably contributes most significantly to overall increasing ET. The most dramatic and longest term shifts appear in July, where, for the period of 1940-1999, there is an increase of 0.30 mm/yr, July accounts for nearly 100% ET increases. However, this drops to 15% for the period of 1950-1999. These results reinforce the studies showing an accelerated hydrologic cycle over North America and, surprisingly, that much of the ET increase can be attributed to increases in July. Also it can be seen that the areas of the Great Plains and Rocky Mountains are the areas driving this increase, especially the Arkansas, Red, and White River valleys.

url: http://hdl.handle.net/1813/7572
date: 2007-05-04
creator: Troidl, Jacob
viewed: 117
title: A Storm Water Management Model to Predict Runoff and Streamflow in the Pennichuck Brook Watershed
abstract: Due to continuing property development in the area much of the Pennichuck Brook Watershed has transformed from wooded areas and farmland into residential and commercial districts with a large amount of impervious area. The result has been increased runoff and pollutant loadings to the chain pond water supply system operated by Pennichuck Water Works. The new EPA Storm Water Management Model (SWMM) Version 5.0.006a was used to assess the condition of this watershed. Utilizing the aquifer sub-model the SWMM model was calibrated to the Pennichuck Brook Watershed. Due to the large volume of precipitation percolating into the ground, the aquifer component was necessary to determine groundwater flow to surface waters. Stream gaging stations were set up and streamflows were measured to develop stage discharge curves for each of the nine gaging stations throughout the watershed. Water level data loggers were installed at these sites where stream levels were recorded from September 29, 2005 through May 4, 2006. These levels were converted into continuous streamflow records that were subsequently used in model calibration and validation procedures. Problems encountered in this project included heterogeneities in the aquifers and heterogeneities in the precipitation neither of which were modeled due to lack of sufficient data. Additionally, there were several gaps in the streamflow records as a result of wildlife interference and datalogger batteries failing. The calibrated SWMM model provides a reasonably accurate model for predicting runoff and streamflow in this watershed. The coefficients of determination were 0.50 and 0.86 for the model calibration and validation, respectively. On average the model predicted lower streamflow rates and volumes than were observed in the field most likely due to inter-watershed groundwater flow.

url: http://hdl.handle.net/1813/7573
date: 2007-05-08
creator: Westbrooks, Elaine;Webb, Frances;Steinhart, Gail;Paulson, Joy;Lowe, Brian;Corson-Rikert, Jon;Lust, Barbara;McCue, Janet
viewed: 133
title: SGER: Planning Information Infrastructure Through a New Library-Research Partnership [final report]
abstract: document contains most significant sections of a final report to NSF submitted 2007-01-21.The purpose of this Small Grant for Exploratory Research was to explore the issues surrounding a new type of collaboration between scientists and research libraries to support the preservation, discovery, and sharing of primary research data. With recent advances in computing and telecommunications technology, the stage is set for a major shift in the way science is conducted. Researchers and funding agencies are recognizing

that data can be valuable for purposes beyond the studies in which they were originally collected, and some agencies are requiring data sharing plans as prerequisites for funding support. There is, however, a lack of established infrastructure to support the services necessary for handling research data. This grant investigated the premise that research libraries might serve as natural partners in addressing the data management needs of the communities they serve.This material is based upon work supported by the National Science Foundation, Grant No. 0437603. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.

url: http://hdl.handle.net/1813/7574
date: 2007-05-10
creator: Banush, David
viewed: 109
title: Stepping Out: The Expanding Role of Catalogers in Academic Libraries and Academic Institutions
abstract: The stereotype of the cataloger as an isolated, back-room practitioner has persisted among many in the profession, despite years of evidence to the contrary. This paper examines some roles that catalog librarians have long played within their institutions and outside of technical services. The example of the various roles catalogers have assumed at Cornell University Library is used to illustrate some of the possible ways catalogers contribute to the research and teaching missions of the institution that extend beyond their traditional roles. The paper also touches briefly on possible future opportunities for catalogers to participate in the intellectual community of the university

url: http://hdl.handle.net/1813/7576
date: 2007-05-11
creator: Hillmann, Diane I.
viewed: 891
title: Structures and Standards for Our Bibliographic Future
abstract: Presentation given May 9, 2007 at the Chicago hearing of the Library of Congress Working Group on the Future of Bibliographic Control.

url: http://hdl.handle.net/1813/7577
date: 2007-05-14
creator: de Groote, Philippe
viewed: 60
title: Towards a Montagovian Account of Dynamics
abstract:

url: http://hdl.handle.net/1813/7578
date: 2007-05-14
creator: Frana, Ilaria
viewed: 89
title: The de re Analysis of Concealed Questions: A Unified Approach to Definite and Indefinite Concealed Questions
abstract:

url: http://hdl.handle.net/1813/7579
date: 2007-05-14
creator: Heim, Irene
viewed: 98

title: Little
abstract:

url: http://hdl.handle.net/1813/7580
date: 2007-05-14
creator: Higginbotham, James
viewed: 122
title: The Anaphoric Theory of Tense
abstract:

url: http://hdl.handle.net/1813/7581
date: 2007-05-14
creator: Ippolito, Michela
viewed: 66
title: Remarks on only
abstract:

url: http://hdl.handle.net/1813/7582
date: 2007-05-14
creator: Keshet, Ezra
viewed: 87
title: Scalar Implicatures with Alternative Semantics
abstract:

url: http://hdl.handle.net/1813/7583
date: 2007-05-14
creator: Magri, Giorgio
viewed: 60
title: The Blindness Hypothesis and Individual Level Predicates
abstract:

url: http://hdl.handle.net/1813/7584
date: 2007-05-14
creator: Malamud, Sophia A.
viewed: 61
title: (Non)maximality and Distributivity: A Decision Theory Approach
abstract:

url: http://hdl.handle.net/1813/7585
date: 2007-05-14
creator: Nakanishi, Kimiko
viewed: 84
title: Even, only, and Negative Polarity in Japanese
abstract:

url: http://hdl.handle.net/1813/7586
date: 2007-05-14
creator: Ogihara, Toshiyuki

viewed: 58
title: Attitudes without Monsters: A Japanese Perspective
abstract:

url: http://hdl.handle.net/1813/7587
date: 2007-05-14
creator: Oshima, David Y.
viewed: 89
title: Motion Deixis, Indexicality, and Presupposition
abstract:

url: http://hdl.handle.net/1813/7588
date: 2007-05-14
creator: Rett, Jessica
viewed: 57
title: How many Maximizes in the Balkan Sprachbund
abstract:

url: http://hdl.handle.net/1813/7589
date: 2007-05-14
creator: Romero, Maribel
viewed: 87
title: On Concealed Questions
abstract:

url: http://hdl.handle.net/1813/7590
date: 2007-05-14
creator: Rothschild, Daniel
viewed: 53
title: Non-Monotonic NPI-Licensing, Definite Descriptions, and Grammaticalized Implicatures
abstract:

url: http://hdl.handle.net/1813/7591
date: 2007-05-14
creator: Schwager, Magdalena
viewed: 65
title: Conditionalized Imperatives
abstract:

url: http://hdl.handle.net/1813/7592
date: 2007-05-14
creator: Schwarz, Florian
viewed: 133
title: On needing Propositions and looking for Properties
abstract:

url: http://hdl.handle.net/1813/7593
date: 2007-05-14

creator: Tanaka, Takuro
viewed: 143
title: Lexical Decomposition and Comparative Structures for Japanese Determiners
abstract:

url: http://hdl.handle.net/1813/7594
date: 2007-05-14
creator: Wagner, Michael
viewed: 154
title: Givenness and Locality
abstract:

url: http://hdl.handle.net/1813/7595
date: 2007-05-14
creator: Werner, Tom
viewed: 145
title: An Analysis of Existential Anankastics: How to Get There from Here
abstract:

url: http://hdl.handle.net/1813/7596
date: 2007-05-14
creator: Winter, Yoad
viewed: 171
title: Closure and Telicity across Categories
abstract:

url: http://hdl.handle.net/1813/7597
date: 2007-05-15
creator: Patel, Jay
viewed: 114
title: The Effects of Emotion on False Memory Production
abstract: This study seeks to investigate the effects of emotion on false memory production. 114 undergraduate college students participated in the study. Subjects were given an emotion induction task that induced positive, negative, or neutral moods by rating person descriptive words taken from the Dumas norms. Each subject was then asked to listen to lists of study words taken from the Deese-Roediger-McDermott paradigm and was then given an immediate recognition memory test. One week later, subjects were given a delayed recognition memory test to measure the degree of forgetting. Results indicate that on the immediate test, although there were no differences observed across emotion conditions for true memory, participants in the negative emotion condition were more prone to produce false memories than those in the positive or neutral conditions. In addition, there was no main effect of emotion for the immediate test, but there was one for the delayed memory test. It was found that acceptance rates of both targets and critical distractors decreased for participants in the negative emotion condition relative to positive and neutral conditions. It was also found that one could inoculate the effects of forgetting on a delayed memory test by giving subjects a prior memory test.

url: http://hdl.handle.net/1813/7598
date: 2007-05-15
creator: Howarth, Robert W.

viewed: 153
title: Hearing on Non-point Source Pollution: The Impacts of Agriculture on Water Quality
abstract: Congressional testimony by Robert W. Howarth, before the U.S. House of Representatives subcommittee on Water Resources & the Environment - The Impact of Agriculture on Water Quality. April 19, 2007.

url: http://hdl.handle.net/1813/7599
date: 2007-05-15
creator: Porter, Mary Jane;Woodbury, Peter
viewed: 143
title: Progress Report: Understanding Sources and Sinks of Nutrients and Sediment in the Upper Susquehanna River Basin
abstract: Principal investigators:
Robert Howarth, Lead Principal Investigator, Ecology and Evolutionary Biology; Alice Pell, Animal Science; Johannes Lehmann, Crop and Soil Sciences; Roxanne Marino, Ecology and Evolutionary BiologyDuring recent decades, the amount of nitrogen flowing into surface waters and estuaries in the northeastern USA has increased 10-fold or more. In estuaries such as the Chesapeake Bay, such large increases in nitrogen are severely damaging populations of aquatic plants and animals, and also increasing harmful and toxic algal blooms. Most of the coastal waters of the USA are seriously degraded. At the global and national scale, agriculture is the major source of nitrogen pollution. However, atmospheric deposition is also a major source in many regions, and it contributes 25 percent to 50 percent of the nitrogen inputs to Chesapeake Bay.
The Susquehanna River is the largest river east of the Mississippi in the USA, the largest tributary of Chesapeake Bay, and the single largest source of nutrients to the main stem of the Bay. Therefore, better understanding of the sources and sinks of nutrients and sediment in the Susquehanna River watershed will support better management of nutrients and water quality in the Chesapeake Bay. Research is needed urgently to identify the most important targets for nutrient reductions and the most cost-effective solutions.Funded by: United States Department of Agriculture, Cooperative State Research, Education, and Extension Service award number 2005-34244-15740.

url: http://hdl.handle.net/1813/7600
date: 2007-05-15
creator: Dougherty, Colleen L.
viewed: 115
title: Road Salt Loading in the Fall Creek Watershed
abstract: This project models the rising chloride concentrations in the Fall Creek watershed located near Ithaca, New York. Base-line salinization levels for freshwater in the northeastern United States have been increasing over the past several year and road salt has been identified as a possible primary source (Kaushal et al., 2005). Investigation is required to determine what detriment this may be causing to freshwater sources and environments. Data shows current concentrations in Fall Creek watershed to be 18.8 ppm as of 2003 (Bouldin, unpublished). By modeling Fall Creek watershed as a continuously stirred tank reactor (CSTR), it is possible to predict the increasing trends in salt concentrations in the watershed matching the data that was previously collected beginning in the 1970s. Based on data collected regarding quantities of salt purchased by local municipalities surrounding the watershed and inputs from wet atmospheric deposition, the model shows that the watershed system will reach steady state in approximately the year 2550 at a concentration of 35.4 ppm. Based on current conditions the salt concentration in the watershed could reach 30 ppm over the next hundred years. Harmful salt concentrations can range anywhere from 30 to 250 ppm as a conservative estimate, although accurate information in this area seems difficult to obtain. Though current concentrations in the watershed are below this range, continued monitoring of the area is important in order to supply data

that could be used to make informed decisions regarding local salt spreading policies and management techniques.

url: http://hdl.handle.net/1813/7601
date: 2007-05-15
creator: Sankey, Jack
viewed: 97
title: Microwave-Frequency Characterization of Spin Transfer and Individual Nanomagnets
abstract: This dissertation explores the interactions between spin-polarized currents and individual nanoscale magnets, focusing on the microwave-frequency magnetization dynamics these currents can excite. Our devices consist of two magnetic films (2-40 nm) separated by a nonmagnetic spacer (5-10 nm Cu or 1.25 nm MgO), patterned into a "nanopillar" of elliptical cross-section ~100 nm in diameter. One magnetic layer (a thicker or exchange-biased "fixed" layer) polarizes electron currents that then apply a spin transfer torque to the other "free" layer. We have developed several high-frequency techniques in which we excite magnetic dynamics with spin-polarized currents and detect the corresponding magnetoresistance oscillations R(t). By applying a direct current I, we can excite both small-angle and new types of large-angle spontaneous magnetic precession of the free layer, inducing a microwave voltage V(t) = IR(t) across the junction that we measure with a spectrum analyzer. By studying the linewidths of the corresponding spectral peaks as a function of bias and temperature, we find the oscillation coherence time (related to the inverse linewidth) is limited by thermal fluctuations: deflections along the precession trajectory for T < 100 K, and thermally-activated mode hopping for T > 100 K. We have also developed a new form of ferromagnetic resonance (FMR) in which we use microwave-frequency spin currents to excite dynamics, and a resonant (DC) mixing voltage to measure the response. With this technique we can directly probe the magnetic damping in both layers, identify the dynamical modes observed in the DC-driven experiment, observe phase locking with these modes, and even probe the physical form of the spin transfer torque. For metallic devices we find the torque is always confined to the plane of the layers' magnetizations, while for (MgO) tunnel junctions we find a new component of the torque perpendicular to this plane, appearing at higher bias voltages. This new FMR technique should be able to probe much smaller devices still, enabling new fundamental studies of even smaller magnetic samples, someday approaching the molecular limit.DARPA through Motorola, the Office of Naval Research, the Army Research Office, NSF (DMR-0605742),
NSF/NSEC program through the Cornell Center for Nanoscale Systems, NSF support through use of the Cornell Nanofabrication Facility/NNIN and the Cornell Center for Materials Research facilities.

url: http://hdl.handle.net/1813/7602
date: 2007-05-15
creator: Pandey, Manoj
viewed: 128
title: ANALYSIS OF ENTRAINMENT AND CLAMPING LOSS IN AN OPTICALLY ACTUATED MEMS
abstract: This thesis presents a study of thin, planar, radio frequency MEMS resonators that are shown to self-oscillate in the absence of external forcing, when illuminated by a DC laser of sufficient amplitude. Entrainment or frequency locking is achieved in these devices when an external forcing strong enough and close in frequency to that of the unforced oscillations is applied. The forcing can be accomplished either parametrically, by modulating the laser beam incident on the oscillator, or nonparametrically, using inertial driving. The system exhibits both 2:1 and 1:1 resonances, as well as quasiperiodic motions and hysteresis. Dynamics of a three dimensional system of coupled thermo-mechanical model for the forced disc resonator is studied, using a perturbation scheme. Perturbation results show that the model agrees well with experiments and explain how and where transitions into and out of entrainment occur. Simpler canonical models showing

similar behavior are also studied. Next a method to improve Quality factor (Q) of these devices is studied. Q is a measure of damping and models the total losses in a dynamical system. As MEMS vibrates, a fraction of its vibration energy is transmitted to the substrate upon which the MEMS are fabricated. A large component of this energy is carried away as surface acoustic waves (SAW). This energy is either scattered or dissipated into the relatively infinite expanse of the substrate and termed as anchor loss in the system. A design that improves the Q of dome shaped oscillators by up to 4 by reflecting surface wave energy back to the MEMS is demonstrated. Wave reflection occurs at trenches fabricated in a circle around the MEMS. The trench creates a ?mesa? that provides partial mechanical isolation to the MEMS. Finite element analysis (FEA) is used to model these losses with infinite elements acting as quiet boundary for the truncated substrate domain. These boundaries absorb most of the outgoing energy and model the relatively infinite expanse of the substrate. The results predicted by the model agree well with the experiments and are also able to predict the experimentally observed improvement due to the presence of a mesa.CCMR, Theoretical and Applied Mechanics, Cornell University

url: http://hdl.handle.net/1813/7603
date: 2007-05-17
creator: Xie, Yi
viewed: 141
title: SHORT-RANGE WAKEFIELD CALCULATIONS FOR THE ION CLEARING ELECTRODES IN THE CORNELL ENERGY RECOVERY LINAC
abstract: The presence of trapped ions in the Cornell Energy Recovery Linac (ERL) can lead to beam halo, particle loss, optical errors, or transverse and longitudinal instabilities. DC clearing electrodes that create a sufficient voltage to draw ions out of the beam potential are considered to be the most easily applicable measure to cure these effects. However, due to the short length of electron bunches in the ERL running modes, the power dissipated by the clearing electrodes can significantly damage these. I have calculated the short-range wakefields of different types of clearing electrodes and concluded that a tapered electrode design can be used.

url: http://hdl.handle.net/1813/7604
date: 2007-05-20
creator: Hillmann, Diane I.
viewed: 44
title: Is There a Future for Cataloging?
abstract: Published in regular Technicalities column: “View from a Parallel Universe”

url: http://hdl.handle.net/1813/7605
date: 2007-05-20
creator: Hillmann, Diane I.
viewed: 23
title: The Metadata Layer: Rich Chocolate Value in a Vanilla World
abstract: Published in regular Technicalities column: “View from a Parallel Universe”

url: http://hdl.handle.net/1813/7606
date: 2007-05-20
creator: Hillmann, Diane I.
viewed: 32
title: RDA for Who?
abstract: Article concerning the flawed development process for Resource Description and Access (RDA).

url: http://hdl.handle.net/1813/7607
date: 2007-05-20
creator: Hillmann, Diane I.
viewed: 43
title: Ringing Changes
abstract: Published in regular Technicalities column: "View from a Parallel Universe"

url: http://hdl.handle.net/1813/7608
date: 2007-05-20
creator: Hillmann, Diane I.
viewed: 79
title: March of the Librarians
abstract: Published in regular Technicalities column: "View from a Parallel Universe"

url: http://hdl.handle.net/1813/7609
date: 2007-05-20
creator: Hillmann, Diane I.
viewed: 105
title: Back to the Future
abstract: Published in regular Technicalities column: "View from a Parallel Universe"

url: http://hdl.handle.net/1813/7610
date: 2007-05-20
creator: Hillmann, Diane I.
viewed: 123
title: Falling From the Metadata Edge
abstract: Published in regular Technicalities column: "View from a Parallel Universe"

url: http://hdl.handle.net/1813/7611
date: 2007-05-20
creator: Hillmann, Diane I.
viewed: 166
title: Great Leaps Forward
abstract: Published in regular Technicalities column: "View from a Parallel Universe"

url: http://hdl.handle.net/1813/7612
date: 2007-05-21
creator: Solis, Jessica
viewed: 94
title: The Effects of Ethnicity on Adolescent Resilience against Depression
abstract: Adolescents (N=6,504) from the National Longitudinal Study of Adolescent Health participated in a study exploring racial differences in access to resources against depression. Significant results indicated Black adolescents? advantage on perceived adult and family support, perceived intelligence, self-esteem, active coping skills, and college expectations; Hispanics were advantaged in maternal relationships. White adolescents? resources were parents? education, two biological parent households, two parent households, perceived peer support, and survival expectations. Hispanic and Black adolescents were more likely to be on welfare with the former also suffering through unemployment and the latter living with a single mother.

Whites were most likely to live with a single father. Future research should investigate the interactions? potency and apply it to treatment of adolescent depression.

url: http://hdl.handle.net/1813/7613
date: 2007-05-21
creator: Rush, Kimberly
viewed: 61
title: Spontaneous Generation of Alternative Explanations
abstract: Cornell University College of Human Ecology
Human Development

url: http://hdl.handle.net/1813/7614
date: 2007-05-22
creator: Stanisz, Janine
viewed: 142
title: Juvenile Offenders' Risky Decision-Making Behavior
abstract: We examined the choices of 52 adolescents (18 years of age); 26 were enrolled in an alternative to incarceration program and 26 were university undergraduates. Respondents were presented with a gambling task and were shown two spinners, one offering a sure gain (or loss), the second offering a gamble (probabilities of the gamble included ?, 1/3 and ?; magnitudes of the gamble included low, medium and high monetary amounts). Participants received 18 trials, nine framed as gains and nine framed as losses (each gain condition was analogous to a loss condition) and individuals were asked to report their confidence after each scenario. In the gain frame, respondents began with nothing and were offered a choice between a sure gain and a gamble offering the possibility of winning larger amounts or winning nothing. For the loss frame, individuals were given an endowment and could lose an amount for sure or take a chance and risk losing nothing or risk losing everything. In each corresponding gain and loss pair, the net sum that could be won was kept equal. In addition, respondents completed surveys on sensation seeking, behavioral inhibition and behavioral activation.
Data analysis was conducted both without and with the confidence ratings. In both regressions, delinquents scored significantly higher on sensation seeking in the gain frame, but not in the loss frame. In the first ANOVA, magnitude was a significant effect as was the interaction between magnitude and the population of the participant. Delinquents were more likely to choose the gamble regardless of the magnitude, while undergraduates picked the sure option at higher magnitudes. Also, a three way interaction was found between framing, probability and magnitude. The second ANOVA, replicated these findings and probability became a significant effect. Such results highlight the potential benefit of programs that work to enhance decision-making processes in order to prevent initial crime or potential recidivism.

url: http://hdl.handle.net/1813/7615
date: 2007-05-23
creator: Kunnumkal, Sumit
viewed: 88
title: Approximate Dynamic Programming and Stochastic Approximation Methods for Inventory Control and Revenue Management
abstract: In this thesis, we develop approximate dynamic programming and stochastic approximation methods for problems in inventory control and revenue management. A unifying feature of the methods we develop is that they exploit the underlying problem structure. By doing so, we are able to establish certain theoretical properties of our methods, make them more computationally efficient and obtain a faster rate of convergence.

In the stochastic approximation framework, we develop an algorithm for the monotone estimation problem that uses a projection operator with respect to the max norm onto the order simplex. We show the almost sure convergence of this algorithm and present applications to the Q-learning algorithm and the newsvendor problem with censored demands. Next, we consider a number of inventory control problems for which the so-called base-stock policies are known to be optimal. We propose stochastic approximation methods to compute the optimal base-stock levels. Existing methods in the literature have only local convergence guarantees. In contrast, we show that the iterates of our methods converge to base-stock levels that are globally optimal. Finally, we consider the revenue management problem of optimally allocating seats on a single flight leg to demands from multiple fare classes that arrive sequentially. We propose a stochastic approximation algorithm to compute the optimal protection levels. The novel aspect of our method is that it works with the nonsmooth version of the problem where capacity can only be allocated in integer quantities. We show that the iterates of our algorithm converge to the globally optimal protection levels.
In the approximate dynamic programming framework, we use a Lagrangian relaxation strategy to make the inventory control decisions in a distribution system consisting of multiple retailers that face random demand and a warehouse that supplies the retailers. Our method is based on relaxing the constraints that ensure the nonnegativity of the shipments to the retailers by associating Lagrange multipliers to them. We show that our method naturally provides a lower bound on the optimal objective value. Furthermore, a good set of Lagrange multipliers can be obtained by solving a convex optimization problem.

url: http://hdl.handle.net/1813/7616
date: 2007-05-23
creator: Vollmer, Laura
viewed: 96
title: Developmental Changes in Infants' Knowledge of the Instrumental Value of Babbling
abstract: The present study sought to discover the age at which infants realize that their vocalizations may be used to elicit social responses from others, and to examine whether infants? knowledge of the consequences of their babbling is related to their primary caregivers? natural levels of responsiveness. Participants were 27 caregiver-infant dyads from the Ithaca, NY area. Infants were 2 and 5 months of age. Infants participated in an unstructured play session with their caregivers, followed by a still-face interaction with an unfamiliar experimenter who initially engaged the infants, and then became quiet and assumed a neutral expression. Five-month-olds exhibited a significant increase in the quantity of non-cry vocalizations from the first interaction period to the still-face, thus demonstrating that they have learned that their vocalizations have an effect on others. Two-month-olds did not show a significant change in the quantity of vocalizations. No significant relationship was found between caregiver responsiveness and infants' vocal behavior across the still face.

url: http://hdl.handle.net/1813/7617
date: 2007-05-23
creator: Neuendorf, Cynthia Lauren
viewed: 126
title: Development of Coping in Low- and Mid-Income Youth
abstract: The environment of poverty has been implicated as a major risk factor for later childhood adjustment and achievement. The present study examined the effect of exposure to poverty at age 8 on coping at age 13 using measures of coping and family income-to-needs ratio. Additionally, temperament at age 8 was examined as a potential moderator of the relationship between poverty and adolescent coping. The study hypothesized that exposure to poverty at age 8 would predict adolescent?s use of disengagement coping strategies (e.g., avoidance, distraction, or inaction). Temperament was predicted to moderate the relationship between poverty and disengagement coping strategies. Results of regression analyses indicated that exposure to poverty at age

8 predicted adolescent inaction in response to stress. Furthermore, the relationship between poverty status at age 8 and distraction at age 13 was moderated by temperament (age 8).

url: http://hdl.handle.net/1813/7618
date: 2007-05-24
creator: Valerian, Ignatescu
viewed: 92
title: Engineering Surface Morphology at the Atomic Level with Applications in Electronic Materials
abstract: The silicon (111) and (001) surfaces have wide technological importance. Control of the morphologies of these surfaces at the atomic level is vital for such applications as layer-by-layer growth or assembly of nano-scale devices. We have developed techniques to create large areas with no or widely spaced atomic steps on patterned silicon surfaces by high temperature annealing in ultra-high vacuum (UHV).
At annealing temperatures high enough to promote surface premelting, large liquid-like structures form and are preserved during quenching on regions with low step-density since these areas have no efficient sinks to absorb diffusing atoms. Based on the surface morphologies observed by atomic force microscopy, we suggest a sequence of events for the evolution of the silicon surface, from the onset of surface premelting up to the bulk melting temperature. Large dendritic islands observed on the more slowly cooled down Si(111) samples are attributed to the persistence of surface melted structures and to non-equilibrium "condensation" of the excess adatoms from the (1x1) ? (7x7) phase transition. The effect of UHV high temperature annealing on the Si(111) surface is an initial increase in the measured surface roughness due to Ostwald ripening followed by a surface smoothing to become atomically flat. The boundaries of etched craters or mesas initially develop profiles upon annealing that conform to the predictions of continuum theory of surface transport. As an application, we built MOS capacitors on three types of Si(111) surfaces viz. atomically flat surfaces, normal (stepped) surfaces cleaned in UHV by high-temperature annealing and normal, RCA cleaned wafer surfaces. The leakage current through the oxide was measured for all three cases. Our results show that the smoother the surface before oxidation, the smaller the leakage current. In another application Si(111) substrates with regular arrays of atomic steps were used to induce azimuthal alignment of crystals in thin pentacene films. Pentacene films deposited on heated samples, at a low deposition rate, show significant azimuthal alignment of the pentacene crystals relative to the atomic steps, with the (110) pentacene planes being parallel to the atomic steps.Cornell Center for Materials Research (CCMR) grant number DMR-0079992 National Science Foundation (NSF) grant number DMR-0109641

url: http://hdl.handle.net/1813/7619
date: 2007-05-25
creator: Santos, Paulo
viewed: 89
title: Risk, Growth and Social networks
abstract: This dissertation is an empirical investigation on the microeconomics of growth, focusing on the role of shocks and on the formation of credit networks. It uses original data, collected in Southern Ethiopia, an environment where nonlinear wealth dynamics that are at the root of persistent poverty were previously identified. The first chapter briefly places this work in the wider context of the development economics literature. The second chapter explores the causal mechanisms behind the nonlinearities identified in earlier work. It focus on the role that not only climatic shocks but also ability play in shaping different accumulation patterns. It is found that herders of low ability are expected to converge to a unique dynamic equilibrium at a small herd size, while those with higher ability exhibit multiple stable dynamic wealth equilibria. The third chapter of this dissertation validates a new approach to the collection of data on social relations that starts with a random sample of individuals and then randomly samples from the prospective relationships among sample respondents. Using original data from southern Ethiopia it is shown that this method yields estimates of the

structure of social relations that are statistically indistinguishable from those generated by tracing respondents' local networks. Through the use of Monte Carlo simulation, it is also shown that introducing this second level of sampling improves the accuracy of the inference on the determinants of network formation. The last chapter explores the effect of herd dynamics on the formation of credit networks. It finds that the threshold at which wealth dynamics bifurcate serves as a focal point at which credit transfers are concentrated and that asset loans respond to recipients' losses as long as the recipients are not "too poor". These results suggest that, when shocks can have long term effects, asset transfers may aim to insure the permanent component of income generation, rather than the transitory component, as it is commonly assumed. The chapter also shows that the persistently poor are less likely to be known within their communities and less likely to receive transfers in response to shocks.Portuguese Fulbright Commission, Fundacao Calouste Gulbenkian, Fundacao Luso-Americana para o Desenvolvimento, Fundacao para a Ciencia e Tecnologia, Social Science Research Council's Program in Applied Economics on Risk and Development (through a grant from the John D. and Catherine T. MacArthur Foundation), The Pew Charitable Trusts (through the Christian Scholars Program of the University of Notre Dame), the Graduate School of Cornell University, the United States Agency for International Development (USAID), through grants DAN-1328-G-00-0046-00 and PCE-G-98-00036-00 to the Pastoral Risk Management (PARIMA) project of the Global Livestock CRSP.

url: http://hdl.handle.net/1813/7620
date: 2007-05-29
creator: Brown, Helen-Ann;Mongelia, Patricia
viewed: 117
title: Millennials Find Treasure in the Library!
abstract: With the characteristics of the millenials, those born from 1982 to 1994, in mind, the staff of the Weill Cornell Medical Library set out to create an engaging orientation in the form of a treasure hunt for our incoming freshman medical students to get to know the layout of the library, meet library staff, and use some medical resources.

url: http://hdl.handle.net/1813/7621
date: 2007-05-30
creator: Foley, Eric
viewed: 131
title: ETHNOPOLITICAL DEMOGRAPHICS, IDENTITIES AND THE UTILITY OF LINGUSTIC DISTANCE IN MEASURING DIMENSIONS OF COLLECTIVE GROUP CHANGE
abstract: Ethnic distance is a theoretical concept that is prevalent within political science and political economy as a metric in calculating group heterogeneity but has been difficult to apply in terms of making actual empirical measurements. Ethnic distance can be considered in two related ways. The first can be conceived as the relative variation within and between specific ethnic populations in social or geographic space and supervenes on the individual in the costs of identifying ethnic in-group members from out-group members. The most widely used metric in the literature is language which is made more complex in that there are multiple level differentiating linguistic forms and criteria for measurement. I suggest the development of a measure of linguistic distance that uses the Levenshtein algorithm to produce a numeric value of pronunciation distance by calculating the number of changes that is needed to transform one linguistic string into another. As this value is numeric it can be applied to statistical measures measuring linguistic heterogeneity at the population level and is sensitive enough to detect dialectical differences and can be applied to experimental work on the ethnic identification or location of individuals within a particular language community.

url: http://hdl.handle.net/1813/7622
date: 2007-05-30

creator: Francis, Paul;Ballani, Hitesh
viewed: 87
title: CONMan: A Step towards Network Manageability
abstract: Networks are hard to manage and in spite of all the so called holistic management packages, things are getting worse. Further, there is a general lack of research on fundamentals and an increasing reliance on temporary "bandaids". We argue that the difficulty of network management can partly be attributed to a fundamental flaw in the existing architecture: protocols expose all their internal details and hence, the complexity of the ever-evolving data plane encumbers the management plane. Guided by this observation, in this paper we explore an alternative approach and propose Complexity Oblivious Network Management (CONMan), a network architecture in which the management interface of data-plane protocols includes minimal protocol-specific information. This restricts the operational complexity of protocols to their implementation and allows the management plane to achieve high level policies in a structured fashion. Apart from building the CONMan interface of a few protocols and a management tool that can achieve high-level configuration goals based on this interface, our preliminary experience with applying this tool to real world VPN configuration indicates the architecture?s potential to alleviate the difficulty of network management.

url: http://hdl.handle.net/1813/7623
date: 2007-05-31
creator: Butler, Marcia
viewed: 89
title: Reflections of a Military Medium: Ritual and Magic in Eleventh and Twelfth Century Chinese Military Manuals
abstract: REFLECTIONS OF A MILITARY MEDIUM: RITUAL AND MAGIC IN ELEVENTH AND TWELFTH CENTURY CHINESE MILITARY MANUALS
Marcia Butler, Ph. D.
Cornell University 2007
This dissertation considers ritual documented in comprehensive military manuals--a genre that fully emerged during Song dynasty China (960-1279 AD)--and its role in Song cultural and intellectual history. These manuals represent the earliest documentation of such rituals, and include prayer texts, instructions for sacrifice, moral admonitions, war initiation and conclusion rites, reading the ether, and sorcery techniques. The Song military system provides a good case study for determining specific beliefs and how those spread because of the nature and function of the system; its social composition, collective potential, inherently violent motivation, mobility, and organization. The study makes the case that rituals in these manuals, which many scholars have dismissed as irrelevant to the Song military project, were an integral part of Song warfare. Such rituals reveal syncretic systems of thought and belief practiced during the Song. Using 'magic' and occult rituals, the study explores the production of social collectivities within the Song military and shows how specific rituals produced various sorts of power. Among the latter, the universal force of yin, not yang (as might be expected), was the domain for production of power. I augment the prescriptive texts of the manuals with descriptive sources--encyclopedia, official histories, battle diaries and anecdotal accounts--to determine actual performances, both within the military and at court. These rituals provided sites of contention and comprised an arena for discourse between the groups that made up the military and the imperial court. With respect to the latter, the study investigates the dynamic of the supposed separation between the civil (wen) and the martial (wu), commonly attributed to the Song, and finds that the separation was not as definitive or unambiguous as is commonly portrayed. Finally, detailed analysis of various rituals shows that they were based on visual representations (xiang) that figured largely in competing Song cosmological schema. As these representations detached from their originating text, they were ritually transformed and then incorporated as cultural and supernatural emblems that mimicked natural forces and became themselves objects for

manipulation and sources for the production of power.

url: http://hdl.handle.net/1813/7624
date: 2007-05-31
creator: Alexander, Kjirsten
viewed: 125
title: Profit Priorities and Cost Distribution: Sociocultural and ecological impacts of Chilean forest management
abstract: Questions: What does the government prioritize when facing conflicting social, environmental and economic demands? What are the impacts and how can these demands be balanced in a responsible, progressive and humanitarian way?
This research uses a political ecology framework to discuss the sociocultural, economic and environmental implications of Chilean forest management practices. This is a critical analysis of the Chilean government?s priorities, which currently promote an extractive export economy at high social and environmental costs. Despite a growing economy, the wealth disparity in the country is vast and continues to expand. I argue that the government must reorient its focus away from GDP and toward more valuable measures of the country?s health. Public funds need to be redistributed to benefit the people in the country and the country?s natural treasures rather than subsidizing private industry to attract wealthy foreign investors. This shift in priorities must be implemented in strong, creative policy that supports simultaneous economic growth, environmental preservation, and social justice.
This project is based on personal experiences, interviews and observations from when I lived in Chile during the spring of 2006, as well as on secondary sources that provide scientific and statistical evidence. I describe the history of the forest plantation development, the government?s role in creating the industry that exists today, and current statistics that show the scope and significance of the industry. Different sources present conflicting evidence depending on their interests, demonstrating the complexity of the controversies around the social and ecological impacts of the forest plantations. Various avenues for change are possible: policy restructuring, market control methods, improved ecological management, and social and environmental activism promoting government and citizen awareness and responsibility. Government leaders are integral to promoting human rights and environmental preservation and it is their responsibility to prioritize these goals at least as much as private investment.

url: http://hdl.handle.net/1813/7625
date: 2007-06-01
creator: Akgun, Taner
viewed: 106
title: Precession of Neutron Stars
abstract: We model long term variations detected in the period residuals of pulsar PSR B1828-11 in terms of precession of an asymmetric rigid body. We consider two contributions: the geometric effect, due to variation of the pulsar beam orientation with respect to the observer with precession phase; and the spindown contribution, due to dependence of the spindown torque on the angle between the rotation and magnetic axes. We use the data to probe various properties of the star, most notably its shape. We find that a wide range of models are able to explain the variations in terms of precession. We offer an explanation for the observed variations in the pulse shape in terms of a compound beam structure.
Neutron stars will be deformed by their magnetic fields, which can explain long term variations in their period residuals. Magnetic stresses in normal conductors are insufficient (by a factor of about a thousand) to account for the deformation inferred for PSR B1828-11. However, magnetic stresses in type II superconductors (which form in neutron stars) can produce the necessary deformation.
We determine the form of axisymmetric toroidal magnetic fields in completely fluid, non-rotating, type II

superconducting neutron stars, consistent with magnetohydrostatic equilibrium and boundary conditions. Using Lagrangian perturbation theory we determine stellar deformations for various models of neutron stars with type II superconducting and normal regions. We find that the star becomes prolate and can be sufficiently distorted to display precession with a period of the order of a few years.
We also study the stability of toroidal fields using an energy principle and a local analysis. We extend the stability criteria established by Tayler for normal conductors to include type II superconductors with magnetic free energy that depends on density and magnetic induction. We also derive the conditions and growth rate for a specific instability of type II superconductors, first discussed by Muzikar, Pethick and Roberts.
Finally, we consider the harder problem of poloidal fields in type II superconductors. In this case, the magnetic field direction, as well as strength, is unknown, and needs to be calculated numerically.

url: http://hdl.handle.net/1813/7626
date: 2007-06-03
creator: Fogle, Homer William Jr.
viewed: 103
title: Report of the Alumni Historian, 2007
abstract: 4 p; ill.; 28 cm. Electronic reproduction. Original, 3 June 2007.The Alumni Historian recounts activities for FY2006-07: (1) publication of twenty-five DKE historical studies and administrative reports on the Cornell University DSpace site, (2) assembly of seventeen unpublished research notes, (3) tabulation of errata in previously released work, and (4) listing of several miscellaneous items.

url: http://hdl.handle.net/1813/7627
date: 2007-06-04
creator: Boymel, Libby
viewed: 97
title: False Recall in Manipulations of the DRM Paradigm
abstract: Senior Honors Thesis 2007 - Department of Human Development, Cornell UniversityThis study was conducted using the DRM paradigm to try to further comprehend false recall positioning. The objective of this study was twofold: to demonstrate that gist, verbatim, and gist + verbatim instructions can alter the positional output of true versus false memories, and to see whether placement of these memories can be affected by other manipulations and their interactions. Results showed that altering the instructions given has a statistically significant effect (at the p <.000 level) in regards to the placement of false memory and true memory,. Significant effects were also witnessed for various other manipulations that confirm the dual process theory. Although the study presented limitations, the results are very useful when applied to criminal investigations and psychotherapy.

url: http://hdl.handle.net/1813/7628
date: 2007-06-04
creator: Cornell University Library
viewed: 344
title: Uris Library Historical Tour
abstract: Cornell University Library Historical Tours focuses on the library's history and showcases its noteworthy architecture, collections and artwork.
The first part of the series is an introduction to Cornell's oldest library, now known as Uris Library. Built in 1891, elements of the university's history are preserved in the architecture and art work that fills Uris.
The Uris Library Historical Library Tour podcast highlights the building's Dean Room, the Class of 1957 - Kinkeldey Room, the Andrew Dickson White Library and Jacques Lipchitz's sculpture, Song of the Vowels.
Cornell University Library ; Department of Collections, Reference, Instruction & Outreach ; Cornell University

Library Communications

url: http://hdl.handle.net/1813/7629
date: 2007-06-05
creator: Preble, Stefan
viewed: 69
title: DYNAMIC SILICON NANOPHOTONIC DEVICES
abstract: This dissertation is driven by a vision to continue improvements in system functionality by alleviating bottlenecks in interconnects and enabling the processing of large amounts of information on a chip. Light was the key for achieving long-haul interconnects 35 years ago and is now becoming the key for achieving high speed data communications on smaller scales [1-3]. The ultimate goal of this research is continue this trend to the smallest possible scale by developing a complex integrated Silicon Nanophotonic chip. Here I will present some of the building blocks for such a chip.
This dissertation is divided in five chapters, organized as follows. Chapter 1 gives an overview of why optical interconnects are needed on the chip scale. Then it discusses the challenges and the advantages of using a Silicon platform for such a photonic chip. We then provide a solution to the challenges by using compact resonators to dramatically increase light-matter interaction.
In Chapter 2 we demonstrate one of the most basic building blocks of a silicon nanophotonic chip ? an all-optical modulator, where one beam of light controls the propagation of another. First we present low-powered all-optical modulation using a one-dimensional photonic crystal nanocavity. Then we demonstrate ultra-fast modulation using a ring resonator device with an integrated PIN diode. The diode is used to dramatically increase the speed of typical silicon modulators to at least 20 Gbit/s.
In Chapter 3 we discuss using evolutionary algorithms to design silicon nanophotonic devices that outperform human designs. In order to demonstrate the promise of evolutionary algorithms we present an example that designs a photonic crystal with a bandgap that is larger than previous human designs.
In Chapter 4 we present a new technique for achieving wavelength conversion where the wavelength of light confined in a resonator is changed by dynamically tuning the resonator. We discuss theoretically how this occurs and then demonstrate it experimentally using a ring resonator device.
Finally in Chapter 5, we demonstrate photonic transitions where light is transitioned between the discrete states of a resonator, in analogy to electronic transitions in an atom.

url: http://hdl.handle.net/1813/7630
date: 2007-06-05
creator: Choi, Hwan-sik
viewed: 89
title: Essays on Model Selection
abstract: Model selection and nonnested hypothesis testing procedures are considered in three papers. The papers generalize the existing testing procedures and propose methods to improve approximations to the sampling distribution of the test statistics. The first paper proposes robust tests which generalizes the J test (Davidson and MacKinnon (1981)) and the F test (Deaton (1982) and Dastoor (1983)) for non-nested dynamic models with unknown serial correlation and conditional heteroskedasticity in errors. In the second paper, a model selection procedure based on a general criterion function, with an example of the Kullback-Leibler Information Criterion (KLIC) using quasi-likelihood functions, is considered for dynamic non-nested models. I propose a robust test which generalizes Lien and Vuong's (1987) test with a Heteroskedasticity/Autocorrelation Consistent (HAC) variance estimator. In both papers, I use the fixed-b asymptotics developed in Kiefer and Vogelsang (2005) to improve the asymptotic approximation to the sampling distributions of the test statistics. The fixed-b approach is compared with a bootstrap method and the standard normal approximation in Monte Carlo simulations.

The third chapter considers the nonnested hypothesis testing of Vuong (1989) for which the null hypothesis is that the candidate models are equidistant in KLIC from an unknown true model. I propose a higher order asymptotic bias correction of the test statistic and show that it is invariant with respect to reparameterization. The reparameterization invariance leads to the differential geometrical approach where coordinate system invariant quantities like curvature are useful for understanding the corrections. The relationship of the correction factor with the preferred point geometry of Critchley et al. (1993, 1994) and the expected geometry of Amari (1982) is illustrated.

url: http://hdl.handle.net/1813/7631
date: 2007-06-05
creator: Schifano, Elizabeth Danielle

title: Generalized Wavelet Thresholding: Estimation and Hypothesis Testing with Applications to Array Comparative Genomic Hybridization
abstract: Wavelets have gained considerable popularity within the statistical arena in the context of nonparametric regression. When modeling data of the form y = f + \epsilon, the objective is to estimate the unknown `true' function f with small risk, based on sampled data y contaminated with random (usually Gaussian) noise \epsilon. Wavelet shrinkage and thresholding techniques have proved to be quite effective in recovering the true function f, particularly when f is spatially inhomogeneous.
Recently, Johnstone and Silverman (2005b) proposed using empirical Bayes methods for level-dependent threshold selection in wavelet shrinkage. Using the posterior median estimator, their approach amounts to a random thresholding procedure with impressive mean squared error (MSE) results. At each level, their approach considers a two-component mixture prior for each of the wavelet coefficients independently. This mixture prior inherently assumes that the wavelet coefficients are symmetrically distributed about zero.
Depending on the choice of wavelet filter and the interesting attributes of the true function, it may be the case that neither the magnitude nor the number of positive coefficients are equal to the those of the negative coefficients. Inspired by the work of Zhang (2005) and Zhang et al. (2007), this thesis introduces a random generalized thresholding procedure in the wavelet domain that does not require the symmetry assumption; it uses a three-component mixture prior that handles the positive and negative coefficients separately.
It is demonstrated that the proposed generalized wavelet thresholding procedure performs quite well when estimating f from a single sampled realization y. As in Johnstone and Silverman (2005b), the performance of the Maximal Overlap Discrete Wavelet Transform (MODWT) is substantially better than that of the standard Discrete Wavelet Transform (DWT) in terms of MSE and visual quality. An additional advantage for MODWT is that it is well-defined for any number of sampled points N, i.e., N need not be a power of two. The proposed procedure also performs well when estimating f from multiple noisy realizations y_i, i = 1,...,n.
In most, if not all, of the shrinkage and generalized shrinkage techniques considered, the noise standard deviation is assumed to be known and constant across the length of the function. In reality, it is typically not known and must be estimated. In the single realization setting, the estimate is usually taken to be a constant based on the median absolute deviation of the empirical wavelet coefficients at the finest decomposition level. With multiple realizations, there are more estimation options available. Various estimation options for a constant variance are examined via simulation. The results indicate that three of the six estimates considered are reasonable choices. The case of heterogeneous variances across the length of the function is also briefly explored via simulation.
Finally, an inferential procedure is proposed that first removes noise from individual observations via the generalized wavelet thresholding procedure, and then uses newly proposed F-like statistics (Cui et al., 2005; Hwang and Liu, 2006; Zhou, 2007) to compare populations of sampled observations. To demonstrate its applicability, the aforementioned statistical work is applied to datasets generated from Array Comparative Genomic Hybridization (aCGH) experiments.

url: http://hdl.handle.net/1813/7632
date: 2007-06-06
creator: Cornell University Library
viewed: 119
title: Uris Library Historical Tour
abstract: The Uris Library Historical Tour focuses on the library's history and showcases its noteworthy architecture, collections and artwork. Cornell's oldest library, now known as Uris Library, was built in 1891. Elements of the university's history are preserved in the architecture and art work that fills Uris. The Uris Library Historical Library Tour podcast highlights the building's Dean Room, the Class of 1957 - Kinkeldey Room, the Andrew Dickson White Library and Jacques Lipchitz's sculpture, Song of the Vowels.Cornell University Library

url: http://hdl.handle.net/1813/7633
date: 2007-06-07
creator: Church, Jonathan
viewed: 102
title: Strategic Networking in Standard Setting Organizations: The Case of JEDEC
abstract: This paper examines the strategic impact of networking within a cooperative standard-setting body. The JEDEC JC-42 committee sets standards for memory technologies, and was especially focused on DRAM standards in the early 1990s. I utilize cross-sectional and panel data to analyze whether internal networking helped firms to exert an influence on the development of formal standards for memory technology in general and DRAM technology in particular. Cross-sectional and panel results tentatively suggest that networking within JEDEC, in terms of attendance at different subcommittee meetings, contributed to firm influence on standards development. A somewhat surprising result, given industry-wide concern about DRAM standards, is that non-DRAM-related networking and standard setting activity proved more important for overall standards development success. In addition, coefficients on variables measuring intellectual property holdings suggest that IP portfolio tends to hurt firms in the standard setting process.
Interpretation of results should bear in mind small sample size and limited panel variation, which may yield inconsistent estimators of coefficients. Moreover, although I emphasize results in random effects models because they reflect more observations, fixed effects may be more appropriate given that firm-level characteristics underlie fixed and random effects. In conclusion, cross-sectional and panel analyses tentatively suggest that internal networking contributed to firm influence on standards development within the JEDEC JC-42 committee in the early 1990s. But further study using a richer dataset and accounting for institutional anomalies could improve our understanding of the strategic value of networking, both within and outside JEDEC, in the effort to develop next-generation DRAM standards.

url: http://hdl.handle.net/1813/7634
date: 2007-06-08
creator: Koc, Ecehan
viewed: 77
title: TURKISH ISLAMIC CLAIMS MAKING IN GERMANY: MILLI GORUS IN BETWEEN LOCAL AND GLOBAL
abstract: Recent academic work on the powers of the nation state has argued that nation state's position as the predominant unit of social organization is being diminished from outside by forces of globalization and through the shift of power from the national to the supra and transnational levels. It is also argued that the nation state's legitimacy, authority and integrative capacities are weakened form within by an increasing number of claims for special group rights emphasizing cultural difference. Not surprisingly, migrants and

ethnic minorities have been at the forefront of these claims; arguably contributing through their claims making both to the external erosion of sovereignty and to internal cultural differentiation. Post-nationalists argue that citizenship and welfare rights possessed and otherwise demanded by non-citizens contribute to the erosion and transcending of the frontiers of nation-states while migrant communities increasingly take on the character of transnational communities taking advantage of transnational political opportunities. Multiculturalists, in turn, argue that the liberal nation state is challenged when migrant minorities question the conception of a unified undifferentiated citizenship by putting forward demands for special group rights and for the recognition of cultural difference. A third strand of thought has emerged in response to these claims from supra-nationalists and multiculturalists emphasizing the continuing importance of the nation-state particularly in shaping migrant experience in general and migrant claims making in particular. Scholars have analyzed the citizenship configurations of nation-states as the explanatory variable in explaining different strategies in dealing with ethnic difference and the different manifestations of these strategies in different countries. In contrast to the above summarized polemical opposition of nation-state bound approaches on the one hand and an unbounded supra-nationalism on the other, I argue that host/home country influences, extra nation-state influences and group ideological/religious orientations affect migrant claims making through mechanisms like attribution of opportunity or threat and internalization. To specify the role of these factors in influencing migrant claims making and the inner workings of these mechanisms, I analyzed Milli Gorus Germany claims through content analyses of organizational media and observed changes and trends in the nature of this claims making. I also documented Milli Gorus Germany's organizational ties and conducted open-ended interviews with organization members to understand what factors have influenced these trends and changes. My findings show that understanding migrant claims making necessitates long term case study analyses of the claims making strategies of particular migrant groups. While national citizenship models do have an influence on the nature of migrant claims making in a particular country, claims making strategies of migrant groups are also influenced by home country, supra/transnational and intra-group changes. First, my empirical analysis shows that Milli Gorus Germany claims emerge as an outcome of broad change processes (national or international) which are attributed as threats and opportunities depending on the ideological/religious identification of group. Second, I show that extra-nation state pressures and events can unexpectedly lead to a very domesticated claims making due to internalization which I claim is dependant on an already emerging host-country orientation within the immigrant group. I argue that my focus on dynamic processes and mechanisms linking the local and global not only helps us to trace and explain changes in the nature of Milli Gorus Germany claims making over time, but it also enables us to understand the interaction of the local and the global. The global doesn't always rule the local and the local doesn't always rule the global. They interact in previously undetermined ways to affect migrant claims making through processes like attribution of threat and opportunity and internalization and create different claims making strategies over time and between different groups.

url: http://hdl.handle.net/1813/7635
date: 2007-06-08
creator: Moilanen, Sirkka
viewed: 61
title: SYNTHESIS OF A STRUCTURALLY AND STEREOCHEMICALLY DIVERSE SPIROKETAL LIBRARY USING NOVEL STEREOSELECTIVE SPIROCYCLIZATIONS OF C1-SUBSTITUTED GLYCAL EPOXIDES
abstract: A chemical genetic approach that uses small organic molecules to modulate protein function has the potential to overcome the limitations of classical genetic techniques for the study of biological processes. However, acquiring the features of broad applicability and specificity that are inherent to traditional genetics is still a challenge in chemical genetics. The impact that chemical genetics will have on our understanding of biological systems depends on a steady supply of biologically active small molecules with novel targets or

improved specificity for known targets.
Diversity-oriented synthesis (DOS) of small molecule libraries is an emerging method to identify new probes for biological studies and potential therapeutic lead compounds. We have explored the use of an approach that employs structural features commonly found in natural products as starting points for library design. Our library incorporates spiroketal motifs, but is otherwise stereochemically and structurally diverse to address a wide range of biological targets. Although many efforts have been made to synthesize members of the spiroketal class of natural products, traditional methods are not suitable for generating stereochemical diversity in DOS. Therefore, we have developed a strategy to create stereochemical diversity by using novel stereocontrolled spiroketalization reactions that provide access to both spiroketal stereoisomers from a common C1-substituted glycal epoxide precursor. Our route has allowed the synthesis of a library of diastereomeric spiroketals in which we control the stereochemical configuration not only at the quaternary spiroketal carbon, but also at multiple ring carbons. The library will ultimately be screened against a number of biological targets to evaluate the effectiveness of the design strategy, and potentially identify new biological probes or lead compounds for drug development.

url: http://hdl.handle.net/1813/7637
date: 2007-06-08
creator: Bates, Sandy;Stanton, Ruth;Cooke, J. Robert
viewed: 54
title: CU ABEN Graduate Degrees (1913 - 1995)
abstract: This is a Chronological and Alphabetical Listing of the Graduate Degrees for the Department of Agricultural and Biological Engineering at Cornell University from 1913- 1995.

url: http://hdl.handle.net/1813/7637
date: 2007-06-08
creator: Bates, Sandy;Stanton, Ruth;Cooke, J. Robert
viewed: 54
title: CU ABEN Graduate Degrees (1913 - 1995)
abstract: This is a Chronological and Alphabetical Listing of the Graduate Degrees for the Department of Agricultural and Biological Engineering at Cornell University from 1913- 1995.

url: http://hdl.handle.net/1813/7638
date: 2007-06-08
creator: Cooke, J. Robert
viewed: 95
title: The Publications, Papers and Patents (1980-1995)
abstract: This is a list of the Publications, Papers and Patents for Department of Biological and Environmental Engineering for the years 1980 - 1995.

url: http://hdl.handle.net/1813/7638
date: 2007-06-08
creator: Cooke, J. Robert
viewed: 95
title: The Publications, Papers and Patents (1980-1995)
abstract: This is a list of the Publications, Papers and Patents for Department of Biological and Environmental Engineering for the years 1980 - 1995.

url: http://hdl.handle.net/1813/7639

date: 2007-06-08
creator: Furry, Ronald B.;Cooke, J. Robert
viewed: 129
title: Memorial Statements for the Department of Agricultural Engineering, Cornell University (1939 - 2004)
abstract: The University Faculty has always followed the practice of including within the faculty records a memorial resolution on the death of one of its members. This is a collection of just such memorials.

url: http://hdl.handle.net/1813/7639
date: 2007-06-08
creator: Furry, Ronald B.;Cooke, J. Robert
viewed: 129
title: Memorial Statements for the Department of Agricultural Engineering, Cornell University (1939 - 2004)
abstract: The University Faculty has always followed the practice of including within the faculty records a memorial resolution on the death of one of its members. This is a collection of just such memorials.

url: http://hdl.handle.net/1813/7640
date: 2007-06-08
creator: Cooke, J. Robert
viewed: 155
title: BEE Picnic (July 08, 2002)
abstract: This is a video snapshot of the BEE Department Picnic of July 08, 2002.

url: http://hdl.handle.net/1813/7640
date: 2007-06-08
creator: Cooke, J. Robert
viewed: 155
title: BEE Picnic (July 08, 2002)
abstract: This is a video snapshot of the BEE Department Picnic of July 08, 2002.

url: http://hdl.handle.net/1813/7641
date: 2007-06-08
creator: White, Earl Archibald
viewed: 137
title: A study of the plow bottom and its action upon the furrow slice
abstract: This is the first Thesis produced by the Department of Biological Engineering at Conrell University in 1917.

url: http://hdl.handle.net/1813/7641
date: 2007-06-08
creator: White, Earl Archibald
viewed: 137
title: A study of the plow bottom and its action upon the furrow slice
abstract: This is the first Thesis produced by the Department of Biological Engineering at Conrell University in 1917.

url: http://hdl.handle.net/1813/7642

date: 2007-06-08
creator: Furry, Ronald B.
viewed: 349
title: A Pioneering Department: Evolution from Rural Engineering to Biological and Environmental Engineering at Cornell University, 1907 - 2007
abstract: Why does a Department of Biological and Environmental Engineering exist at Cornell University and what was the vision of those who saw the need? This book explores the beginnings and growth of Biological and Environmental Engineering at Cornell University in Ithaca, NY over its first 100 years, starting with excerpts from the historic legislation that made it possible, next relating the beginning of agricultural engineering and the important contributions that Cornell University had in pointing the way in this new field, and summarizing the department's first century of service through its teaching, research and Extension programs. Also included is a description of the struggle to obtain appropriate facilities, a look at the people who helped make the Department a national and world leader in the field, along with a benchmark of current activity as the department enters its second century. Illustrations remind the reader of "the good old days", as well as how time has brought about transformations to the present.Edited by John Marcham

url: http://hdl.handle.net/1813/7642
date: 2007-06-08
creator: Furry, Ronald B.
viewed: 349
title: A Pioneering Department: Evolution from Rural Engineering to Biological and Environmental Engineering at Cornell University, 1907 - 2007
abstract: Why does a Department of Biological and Environmental Engineering exist at Cornell University and what was the vision of those who saw the need? This book explores the beginnings and growth of Biological and Environmental Engineering at Cornell University in Ithaca, NY over its first 100 years, starting with excerpts from the historic legislation that made it possible, next relating the beginning of agricultural engineering and the important contributions that Cornell University had in pointing the way in this new field, and summarizing the department's first century of service through its teaching, research and Extension programs. Also included is a description of the struggle to obtain appropriate facilities, a look at the people who helped make the Department a national and world leader in the field, along with a benchmark of current activity as the department enters its second century. Illustrations remind the reader of "the good old days", as well as how time has brought about transformations to the present.Edited by John Marcham

url: http://hdl.handle.net/1813/7646
date: 2007-06-08
creator: Baer, Richard
viewed: 34
title: Introduction: Religion and culture - the nature of religion; personal stories
abstract: Introduction: Religion and culture - the nature of religion; personal stories from January 25, 1994.

url: http://hdl.handle.net/1813/7647
date: 2007-06-10
creator: Libby, Laura A.
viewed: 80
title: Science About What Scientists Do: Distinguishing Between Explanations for Causal Events
abstract: The causal reasoning literature suggests that hypothesis testing will only include tests that support a particular hypothesis (confirmation bias), rather than distinguish between possible hypotheses (Wason,

1960; Mynatt, Daugherty, & Tweney, 1977; Klayman & Ha, 1987). Self-generated hypotheses should elicit a stronger confirmation bias than other-generated hypotheses, possibly because the generation of a hypothesis requires an initial assessment of plausibility (Schunn & Klahr, 1993). Plausibility is determined by considering a possible cause within a network of prior knowledge about the world (Koslowski, 1996). Our study examines the testing of genuine explanations in non-emotion-laden, complex causal reasoning situations. We predict that the source of the explanation (self or other) and presence of alternative explanations will influence ability to distinguish between two hypotheses. Furthermore, we predict that the incorporation of prior knowledge into the hypothesis test will allow individuals to distinguish more successfully. Sixty subjects (F = 32, aged 18-22) completed a structured interview evaluating explanations that varied on number of explanations present and source of explanation. Ability to distinguish between a target explanation and its complement (but not a genuine alternative) was shown to differ based on the source (self or other) of the target and whether an alternative was provided. Prior knowledge was only used when distinguishing between the target and a genuine alternative. In general, the use of a contrast or covariation test is the best predictor of ability to distinguish between two explanations.

url: http://hdl.handle.net/1813/7648
date: 2007-06-11
creator: Purcell, Jeffrey
viewed: 72
title: Keeping Stolen Land
abstract: This thesis explores the common roots of several contemporary social movements in Durban, South Africa. My point of departure is a series of community meetings in May, June, and July 2006, during which geographically separated Black and Indian community organizations expressed remarkably similar grievances against the municipality and government, all rooted, I argue, in the colonial dispossession and alienation of Africans, and later in the enforced marginalization of Indian communities. Largely, these dispossessions occurred in the 19th century and early in the 20th century ? decades before the policy Apartheid begin in 1948. It is the continued relationship of exclusion and repression in relation to land and space in Natal, I argue, that accounts for the common struggles of these movements. I shall cite Antonio Gramsci extensively in order to argue that his conceptions of ?consent? and ?coercion? explain the perpetual success of policies designed to preserve colonial and Apartheid dispossession. Moreover, several labor struggles will be considered in order to illustrate the degree to which the majority?s consent has been secured, and to offer evidence that Gramsci?s theories are powerful assistance to us. Moreover, Mahmood Mamdani?s identification of ?subject? and ?citizen? will factor, as the transition from Apartheid to ANC rule has essentially cemented the status of landless South African subjects. His lengthy iteration of indirect rule in Apartheid South Africa will become crucial to understanding how the transition was ineffectual for many.
In addition, by surveying documents relating to the management and control of these populations, I argue that (KwaZulu-)Natal?s managers, through several succeeding governing regimes, have implemented policies of great similarity to achieve the same effect ? keeping the power of land and space of Natal in the hands of Europeans. These movements represent, I believe, an iteration of a continued resistance to policies of exclusion from and access to valuable land and space in the province. From their concerns and mobilizations, I will finally attempt to construct an understanding of what has, and has not, changed in South Africa.

url: http://hdl.handle.net/1813/7650
date: 2007-06-12
creator: Cartmill, Lee
viewed: 80
title: Academic Assembly Budget Presentation
abstract: The presentation is a brief account of the Library's financial standing as of May 3, 2007.

url: http://hdl.handle.net/1813/7651
date: 2007-06-12
creator: Kenney, Anne R.
viewed: 80
title: State of the Library Address
abstract: Presentation and recording of a talk given by Anne R. Kenney, Interim Cornell University Librarian, at the May 3, 2007, Cornell University Library Academic Assembly about the top 10 assumptions for the future of academic libraries and librarians, as well as its impact on Cornell.

url: http://hdl.handle.net/1813/7652
date: 2007-06-12
creator: Dupuis, Elizabeth;Maughan, Patricia
viewed: 85
title: FROM DIALOGUE TO IMPACT: Enhancing Campus Collaboration in the Service of Student Learning & Engagement
abstract: This presentation will focus on UC Berkeley's Mellon Library/Faculty Fellowship for Undergraduate Research, a four-year, grant supported initiative spearheaded by the University Library which focuses on large enrollment and high impact undergraduate courses. The Mellon Program is aimed at encouraging and facilitating faculty collaboration with a range of campus academic support units and personnel to strengthen the connections between undergraduate research, information literacy, and library collections. The presentation will provide an overview of the grant, explore the campus partnerships formed through the project, describe the annual Faculty Institute, detail Library-Faculty collaborations on courses and assignments, and review the evaluation and assessment components of the project.An audio recording of the presentation given to Academic Assembly on October 5, 2006 by Elizabeth Dupuis & Patricia Maughan, Project Director and Project Manager of the Mellon Library/Faculty Fellowship for Undergraduate Research at the University of California, Berkeley.Cornell University Library, Priority Implementation Team on Information Fluency. Cornell University Library, Academic Assembly Steering Committee.

url: http://hdl.handle.net/1813/7653
date: 2007-06-12
creator: Wedgeworth, William
viewed: 77
title: Advancing Information Literacy
abstract: Presentation of a talk given by Robert Wedgeworth, President and CEO of ProLiteracy Worldwide, at the November 2, 2006, Cornell University Library Academic Assembly about the information literacy, leadership, and libraries.

url: http://hdl.handle.net/1813/7654
date: 2007-06-12
creator: Wheatley, Steven
viewed: 82
title: The New Kaleidoscope of Scholarly Communication
abstract: Excerpt of talk: "A fairly stable system of scholarly communication -- with defined roles for libraries, university presses and scholarly societies -- arose along with the modern American university. Digitization is only the most prominent force stressing that system and altering the interaction of its components. To make sense of this shifting kaleidoscope we need to think again on the missions of the several actors."Presentation and recording of a talk given by Steven Wheatley, Vice President of the American Council of Learned

Societies, at the June 7, 2007, Cornell University Library Academic Assembly about the role that scholarly communication plays in our society as it relates to electronic and print materials.

url: http://hdl.handle.net/1813/7655
date: 2007-06-12
creator: Chevalier, Victoria A.
viewed: 60
title: Decolonizing Mimesis in the Works of Jessie Fauset, David Bradley, and Nelly Rosario
abstract: DECOLONIZING MIMESIS IN THE WORKS OF JESSIE FAUSET, DAVID BRADLEY, AND NELLY ROSARIO
Victoria Alicia Chevalier, Ph.D.
Cornell University, 2007
Decolonizing Mimesis in the Works of Jessie Fauset, David Bradley, and Nelly Rosario historicizes the category of mimesis by tracing its function as a modality in 20th Century African American Literature. Decolonizing Mimesis interprets the modalities of mimesis across disciplinary schools of thought as a historicized literary function, not a trans-historical category. For this reason, in different historical contexts in African American literature, mimesis takes on different possibilities for the black subject of language in a decolonizing frame. The works upon which I focus engage what occurs when the problem of mimesis as a category of interpretation presses up against the problem of African American representation. Jessie Fauset?s Plum Bun and The Chinaberry Tree, David Bradley?s The Chaneysville Incident, and Nelly Rosario?s Song of the Water Saints engage the ways in which black subjects in representation destabilize the logic of identity as irreducible difference that underpins scientific racism and racist practices in America, and through contact with America; simultaneously, these works insist upon an understanding of a shared vernacular, because inherited history constitutive of ?race? through the attainment of a decolonizing and, therefore, oppositional position within discourse. This position within language is specifically rendered through the literary tropes ellipsis, caesura, and aporia. These tropes are themselves figures for a blank space, a silence, or a pause whose presence in these texts is visible and invisible, legible and illegible. Decolonizing Mimesis argues that the transformative work of identification, as opposed to identity, is the primary project with which the aspects of the interior world are represented throughout these texts. In an attempt to stave off the putative annihilation of racial uplift, these works argue for a black world in which play is possible, indeed necessary, for decolonizing representational properties acquired by black subjects. Although the early chapters of the dissertation focus on the literary project of the Harlem Renaissance as it is understood by Jessie Fauset, I pay attention throughout to the way the novels are concerned with modalities of mimesis expressed in psychoanalytic, narrative, and aesthetic paradigms, particularly regarding the ritualization of history and memory. I demonstrate, for instance, that Fauset?s work relies on figures of visuality and visual technologies to organize modern identification rituals and subject-formation established in psychoanalysis; Nelly Rosario?s work constitutes the limits of a nascent and oppositional Caribbean historical narrative represented by the discontinuities of an alternative and black postmodernity; and both confront history through visual and narrative mimetic models that necessarily fail to inscribe a black feminine subject across the fallacy of binaries ?self/other,? ?masculine/feminine,? ?white/black.? Finally, my chapter on David Bradley?s The Chaneysville Incident argues that this text participates in a similar logic which motivates Fauset?s and Rosario?s work. A potential alternative sexuality, and therefore a different relation to memory and history link Bradley?s work to Fauset and Rosario?s representation of repressed, black subjects. The novels I focus upon in this dissertation argue that history inevitably brings itself to bear; therefore the only way to effect literary and social change is through praxis, through a confrontation with linguistic and figurative historical forms, themselves inherently political.

url: http://hdl.handle.net/1813/7656
date: 2007-06-12

creator: Rosen, Devan
viewed: 76
title: FLOCK THEORY: COOPERATION AND DECENTRALIZATION IN COMMUNICATION NETWORKS
abstract: Research has shown that decentralized organizations and groups perform better and have more satisfied members than centralized ones. Further, decentralized self-organizing groups are particularly superior when solving complex problems. Despite mounting research in support of decentralization, the means of how to foster and maintain a decentralized, coordinated group remains a particular problem for organizations. The current line of research proposes a theory of decentralized organizational communication, flock theory, and conducts preliminary tests of the theory. Grounded in literature from social networks, flock theory represents a theoretical model for the decentralized evolution of communicative systems. The flock model is then extended to integrate roadmap based flocking, bipartite networks, and findings from small world research to create a theory of cooperation, coordination, and navigation within decentralized communication networks. Empirical illustrations of flock theory are conducted via two studies on two different research-based organizations, as research organizations focus on complex problem solving and coordination of knowledge. Findings provide initial support for flock theory, confirm parallel research on decentralization, and indicate that research-based organizations may be different from traditional corporate organizations in several ways.

url: http://hdl.handle.net/1813/7657
date: 2007-06-12
creator: Neyaz, Sarah
viewed: 65
title: Rx-to-OTC Switch: Changes in Physician and Patient Behavior
abstract: RX-TO-OTC SWITCH: CHANGES IN PHYSICIAN AND PATIENT BEHAVIOR
Sarah Hoda Neyaz, Ph. D.
Cornell University 2007
When Claritin (a popular allergy/antihistamine drug) and Prilosec (a popular anti-ulcer/anti-acid drug) became available over the counter (OTC), a unique situation was created in which a drug was now available OTC while close substitutes remained prescription (Rx) only. The OTC/Rx status of a drug should not affect physician recommendations for it or others in its class as no chemical change has occurred. The theory developed here to model physician incentives suggests, however, that due to several institutional features of insurance markets, such as reimbursement methods, there may be differences in the incentives faced by physicians that lead to changes in which medications are prescribed as drugs switch regulatory status. In this model, capitated physicians are expected to use the lowest cost form of treatment since they can be held financially responsible for their treatment decisions. The existence of an OTC version of a drug is also hypothesized to alter patient behavior as well. The availability of an OTC is expected to increase the likelihood that patients will self-medicate and therefore should result in fewer visits to physicians with diagnoses related to that condition. Self-treatment with OTC drugs is likely to be greater when symptoms are not very severe. Consequently, it is also hypothesized that after the OTC drug is available those who do see a physician will manifest more severe symptoms. To test the theory empirically the National Ambulatory Medical Survey for the years 1997-2004 is utilized. The analysis shows that when a drug in a class becomes available in the OTC market, fewer patients visit physicians for the related diagnoses and the severity of ailments of patients visiting physicians does seem to change somewhat after the availability of OTC medication. There is some evidence that physicians change their prescribing behavior, when a drug moves from prescription to OTC. In both the allergy and acid reflux markets, capitated physicians are found to utilize the least costly form of treatment. These physicians are found to cost shift away from the insurance company, while FFS cost shift away from the patient. Finally, both the allergy and acid reflux classes show some evidence of brand loyalty

for drugs amongst patients.

url: http://hdl.handle.net/1813/7658
date: 2007-06-12
creator: Kormaksson, Matthias
viewed: 57
title: ONE WAY FANOVA USING PENALIZED SPLINES
abstract: There are several methods available for smoothing scatter-plots. One interesting method involves using mixed model techniques that can be shown to be equivalent to the penalized splines method. In order to analyze certain functional data sets, we propose an extension of this mixed model approach that involves the smoothing of several scatter-plots simultaneously. More precisely, we show how one can estimate the mean profiles of functional data that have one grouping factor by fitting a single mixed model. The underlying mixed model will then be used to set up a hypotheses testing scheme for doing one way functional analysis of variance, FANOVA. In doing so, we will establish an interesting connection between the one way FANOVA problem and the problem of testing whether variance components from certain mixed models are zero. Finally we will propose a method for doing multiple comparisons in the functional setting, again using the underlying mixed model from the fitting criteria. The proposed methods are then demonstrated through an analysis of a typical functional data set.

url: http://hdl.handle.net/1813/7661
date: 2007-06-13
creator: Woodbury, Peter B.;Ritchie, Jerry C.;Fahey, Timothy J.;Nagle, Gregory N.
viewed: 64
title: Variations in sediment sources and yields in the Finger Lakes and Catskills regions of New York
abstract: The proportional contributions of stream bank and surface sources to fine sediment loads in watersheds in New York State were quantified with uncertainty analysis. Eroding streamside glacial drift, including glaciolacustrine deposits, were examined to help explain variations in the proportional contributions made by bank erosion. Sediment sources were quantified by comparing concentrations of the bomb-derived radionuclide 137Cs in fluvial sediment with sediment from potential source areas such as agricultural soils, forest soils and stream banks.
To compare sediment sources in streams containing abundant deposits of fine-grained glacial drift with watersheds that lacked moderate or extensive streamside deposits, samples were taken from 15 watersheds in the region. The mean contribution of bank erosion to sediment loads in the six streams with glaciolacustrine deposits was 60% (range 46?76%). The proportional contribution of bank erosion was also important in one stream lacking glaciolacustrine deposits (57%) but was less important in the remainder, with contributions ranging from 0 to 46%. Data from this study on the varying contributions of bank erosion and data from past studies of sediment yield in 15 watersheds of New York State suggest that eroding streamside glacial deposits dominate sediment yield in many watersheds. In other watersheds, past impacts to streams, such as channelization, have also resulted in high levels of bank erosion.

url: http://hdl.handle.net/1813/7662
date: 2007-06-13
creator: Baer, Richard
viewed: 24
title: The epistemological status of moral claims, CS Lewis The Abolition of Man, human dominance over nature; Thomas Merton
abstract: The epistemological status of moral claims, CS Lewis The Abolition of Man, human dominance over nature; Thomas Merton. Lecture was recorded on a Lapel Microphone, using a Cassette Tape (NOTE:

incomplete recording).

url: http://hdl.handle.net/1813/7663
date: 2007-06-13
creator: Baer, Richard
viewed: 21
title: Friends
abstract: Friends. Lecture was recorded on a Lapel Microphone, using a Sony Minidisk Recorder.

url: http://hdl.handle.net/1813/7664
date: 2007-06-13
creator: Baer, Richard
viewed: 30
title: How should we live?, CS Lewis, sehnsucht, the sweet poison of the false infinite, overzealous reformers and planners, praise and celebration, cosmic compost, Merlin Caruthers, Thomas Merton
abstract: How should we live?, CS Lewis, sehnsucht, the sweet poison of the false infinite, overzealous reformers and planners, praise and celebration, cosmic compost, Merlin Caruthers, Thomas Merton. Lecture was recorded on a Lapel Microphone, using a Sony Minidisk Recorder.

url: http://hdl.handle.net/1813/7665
date: 2007-06-13
creator: Baer, Richard
viewed: 26
title: How much of heaven is available to us now? How much of the biocentric agenda is implementable without becoming inhumane? pros and cons of anthropo-, bio-, and theo-centrism; Parfit's dilemma - our obligations to future generations; John Passmore, Man's Responsibility to Nature; theistic, Christian, Jewish approaches; biocentrics as prophets of the ideal abstract: How much of heaven is available to us now? How much of the biocentric agenda is implementable without becoming inhumane? pros and cons of anthropo-, bio-, and theo-centrism; Parfit's dilemma - our obligations to future generations; John Passmore, Man's Responsibility to Nature; theistic, Christian, Jewish approaches; biocentrics as prophets of the ideal. Lecture was recorded on a Lapel Microphone, using a Cassette Tape.

url: http://hdl.handle.net/1813/7666
date: 2007-06-13
creator: Baer, Richard
viewed: 25
title: What is nature, discussion, the infamous caterpillar example
abstract: What is nature, discussion, the infamous caterpillar example. Lecture was recorded on a Lapel Microphone, using a Cassette Tape.

url: http://hdl.handle.net/1813/7667
date: 2007-06-13
creator: Tantillo, James
viewed: 40
title: The Machine In The Garden (also the title of a book by Leo Marx): the Walden Pond restoration project; Martin Lewis, Green Delusions; the biocentric world view; breeding endangered species in captivity; Michael Pollan, Second Nature, A Gardener's Education; the garden metaphor vs. the wilderness metaphor; primitivism, primal purity, decentralization, "appropriate technology", capitalism as evil; Rodman, Four

Forms of Ecological Consciousness Reconsidered; the principle of non-intervention, the California Condor, "better dead than bred".
abstract: The Machine In The Garden (also the title of a book by Leo Marx): the Walden Pond restoration project; Martin Lewis, Green Delusions; the biocentric world view; breeding endangered species in captivity; Michael Pollan, Second Nature, A Gardener's Education; the garden metaphor vs. the wilderness metaphor; primitivism, primal purity, decentralization, "appropriate technology", capitalism as evil; Rodman, Four Forms of Ecological Consciousness Reconsidered; the principle of non-intervention, the California Condor, "better dead than bred".. Lecture was recorded on a Lapel Microphone, using a Cassette Tape.

url: http://hdl.handle.net/1813/7668
date: 2007-06-13
creator: Baer, Richard
viewed: 25
title: Environmental studies - theory vs. specifics
abstract: Environmental studies - theory vs. specifics. Lecture was recorded on a Lapel Microphone, using a Cassette Tape.

url: http://hdl.handle.net/1813/7669
date: 2007-06-13
creator: Baer, Richard
viewed: 25
title: God and Religion: William Cantwell Smith The Meaning and End of Religion, "religio", reification, God reveals not religion, but himself; the language of discourse in the university, the importance of soft knowledge
abstract: God and Religion: William Cantwell Smith The Meaning and End of Religion, "religio", reification, God reveals not religion, but himself; the language of discourse in the university, the importance of soft knowledge. Lecture was recorded on a Lapel Microphone, using a Cassette Tape.

url: http://hdl.handle.net/1813/7670
date: 2007-06-13
creator: Baer, Richard
viewed: 27
title: Religion in the University: Emil Brunner, Jefferson and the use of the word sectarian, implications for government public schools, the Big Questions, religious neutrality, a functional view of religion, Emil Durkheim, the Cornell School of Human Ecology, discussion
abstract: Religion in the University: Emil Brunner, Jefferson and the use of the word sectarian, implications for government public schools, the Big Questions, religious neutrality, a functional view of religion, Emil Durkheim, the Cornell School of Human Ecology, discussion. Lecture was recorded on a Lapel Microphone, using a Cassette Tape (Exceptional Lecture).

url: http://hdl.handle.net/1813/7671
date: 2007-06-13
creator: Baer, Richard
viewed: 23
title: Moral judgments, epistemology and Liberal thinking, enlightenment and post-modern reasoning, polishing bowls
abstract: Moral judgments, epistemology and Liberal thinking, enlightenment and post-modern reasoning, polishing bowls. Lecture was recorded on a Lapel Microphone, using a Cassette Tape.

url: http://hdl.handle.net/1813/7672
date: 2007-06-13
creator: Baer, Richard
viewed: 38
title: Wayne Booth The Rhetoric of Assent, knowledge claims in the hard sciences vs. knowledge claims in the humanities, Neurath's boat, how to show proper respect for moral and religious arguments
abstract: Wayne Booth The Rhetoric of Assent, knowledge claims in the hard sciences vs. knowledge claims in the humanities, Neurath's boat, how to show proper respect for moral and religious arguments. .

url: http://hdl.handle.net/1813/7673
date: 2007-06-13
creator: Baer, Richard
viewed: 27
title: Descriptive vs. normative ethics, meta-ethics, logical positivism, the extent of ethical consensus, John Rawls "reflective equilibrium", teleological ethics, Alistair MacIntyre
abstract: Descriptive vs. normative ethics, meta-ethics, logical positivism, the extent of ethical consensus, John Rawls "reflective equilibrium", teleological ethics, Alistair MacIntyre . Lecture was recorded on a Lapel Microphone, using a Cassette Tape.

url: http://hdl.handle.net/1813/7674
date: 2007-06-13
creator: Baer, Richard
viewed: 27
title: Deontological ethics, social contract theories, John Rawls A Theory of Justice, Jeremy Bentham and John Stuart Mill (utilitarians), "rights", English Liberalism, John Locke
abstract: Deontological ethics, social contract theories, John Rawls A Theory of Justice, Jeremy Bentham and John Stuart Mill (utilitarians), "rights", English Liberalism, John Locke. Lecture was recorded on a Lapel Microphone, using a Cassette Tape.

url: http://hdl.handle.net/1813/7675
date: 2007-06-13
creator: Baer, Richard
viewed: 25
title: Stanley Hauerwas on Iris Murdoch, the meaning of "freedom", rationality in the service of desire vs. being part of a worthy story, cost-benefit analysis vs. "unselfing", Aleksandr Solzhenitsyn, discussion
abstract: Stanley Hauerwas on Iris Murdoch, the meaning of "freedom", rationality in the service of desire vs. being part of a worthy story, cost-benefit analysis vs. "unselfing", Aleksandr Solzhenitsyn, discussion. Lecture was recorded on a Lapel Microphone, using a Cassette Tape (Exception Lecture).

url: http://hdl.handle.net/1813/7676
date: 2007-06-13
creator: Baer, Richard
viewed: 23
title: Uriah the Hittite, ideological taint, sensuality vs. pride
abstract: Uriah the Hittite, ideological taint, sensuality vs. pride. Lecture was recorded on a Lapel Microphone, using a Cassette Tape (Exceptional Lecture).

url: http://hdl.handle.net/1813/7677
date: 2007-06-13
creator: Baer, Richard
viewed: 25
title: Greek vs. Hebrew views of history, discussion of Deut. 26, Deut. 6:20-25, the indicative precedes the imperative
abstract: Greek vs. Hebrew views of history, discussion of Deut. 26, Deut. 6:20-25, the indicative precedes the imperative. Lecture was recorded on a Lapel Microphone, using a Cassette Tape.

url: http://hdl.handle.net/1813/7678
date: 2007-06-13
creator: Baer, Richard
viewed: 38
title: Galatians, historical time line for Judaism and Christianity, Gospel precedes Law, Peter, Paul, and circumcision, Harvard grad school, Emil Brunner, how are we to love our neighbor?
abstract: Galatians, historical time line for Judaism and Christianity, Gospel precedes Law, Peter, Paul, and circumcision, Harvard grad school, Emil Brunner, how are we to love our neighbor?. Lecture was recorded on a Lapel Microphone, using a Cassette Tape.

url: http://hdl.handle.net/1813/7679
date: 2007-06-13
creator: Baer, Richard
viewed: 26
title: Controlling nature: Leiss The Domination of Nature, the myth of Icarus, Francis Bacon, Betrand Russell Icarus, or the Future of Science, Mircea Eliade The Forge and the Crucible, alchemy and magic, the secular version of the alchemist's dream as the driving force in modern society, Goethe's Faust, CS Lewis The Abolition of Man and That Hideous Strength, discussion
abstract: Controlling nature: Leiss The Domination of Nature, the myth of Icarus, Francis Bacon, Betrand Russell Icarus, or the Future of Science, Mircea Eliade The Forge and the Crucible, alchemy and magic, the secular version of the alchemist's dream as the driving force in modern society, Goethe's Faust, CS Lewis The Abolition of Man and That Hideous Strength, discussion. Lecture was recorded on a Lapel Microphone, using a Cassette Tape (Exceptional Lecture).

url: http://hdl.handle.net/1813/7680
date: 2007-06-13
creator: Baer, Richard
viewed: 27
title: A feminist perspective on environmental ethics: Carol Gilligan, Val Plumwood, the effects of the sexual revolution, daycare vs. parental care, Wendell Berry The Unsettling of America
abstract: A feminist perspective on environmental ethics: Carol Gilligan, Val Plumwood, the effects of the sexual revolution, daycare vs. parental care, Wendell Berry The Unsettling of America. Lecture was recorded on a Lapel Microphone, using a Cassette Tape (Exceptional Lecture).

url: http://hdl.handle.net/1813/7681
date: 2007-06-13
creator: Baer, Richard
viewed: 27
title: Class discussion: the meaning of nature: can human beings be fully comprehended under the term

nature? Are human beings more valuable than any other part of nature? The infamous caterpillar example
abstract: Class discussion: the meaning of nature: can human beings be fully comprehended under the term nature? Are human beings more valuable than any other part of nature? The infamous caterpillar example. Lecture was recorded on a Lapel Microphone, using a Cassette Tape (Exceptional Lecture).

url: http://hdl.handle.net/1813/7682
date: 2007-06-13
creator: Baer, Richard
viewed: 25
title: What is nature? Gordon Kaufman The Concept of Nature: A Problem for Theology; terms: nature, natural, artificial, world, cosmos, universe
abstract: What is nature? Gordon Kaufman The Concept of Nature: A Problem for Theology; terms: nature, natural, artificial, world, cosmos, universe. Lecture was recorded on a Lapel Microphone, using a Cassette Tape (Exceptional Lecture).

url: http://hdl.handle.net/1813/7683
date: 2007-06-13
creator: Baer, Richard
viewed: 24
title: Anthropocentrism, efficacy of ethics courses vs. great literature and drama in forming "environmental character", Joseph Sachs, biocentrism, Lynn White The Historical Roots of Our Ecological Crisis, conservatism regarding "nature" vs. conservatism regarding "human nature"
abstract: Anthropocentrism, efficacy of ethics courses vs. great literature and drama in forming "environmental character", Joseph Sachs, biocentrism, Lynn White The Historical Roots of Our Ecological Crisis, conservatism regarding "nature" vs. conservatism regarding "human nature". Lecture was recorded on a Lapel Microphone, using a Cassette Tape.

url: http://hdl.handle.net/1813/7684
date: 2007-06-13
creator: Baer, Richard
viewed: 30
title: Biocentrism and animal rights; Paul Taylor, The Ethics of Respect for Nature; Peter Singer, Animal Liberation - human beings are not different from other animals in any qualitative sense; Regan, Animal Rights and Human Obligations: the rights view - attempts to limit the rights view to human beings are "rationally defective"; Paul Taylor - extends rights to plants; the Image of God as the origin of human equality; the bigotry of modern philosophers
abstract: Biocentrism and animal rights; Paul Taylor, The Ethics of Respect for Nature; Peter Singer, Animal Liberation - human beings are not different from other animals in any qualitative sense; Regan, Animal Rights and Human Obligations: the rights view - attempts to limit the rights view to human beings are "rationally defective"; Paul Taylor - extends rights to plants; the Image of God as the origin of human equality; the bigotry of modern philosophers. Lecture was recorded on a Lapel Microphone, using a Cassette Tape (Exceptional Lecture).

url: http://hdl.handle.net/1813/7685
date: 2007-06-13
creator: Baer, Richard
viewed: 53
title: Barry Smith, ideological solutions vs. practical solutions, Baer's Garbage Principle, justice issues, John

Rawls, foreign aid, Peter Berger and Richard John Neuhaus To Empower People - mediating structures, government neutrality on issues of The Good, the effects of private sexual behavior on our ability to address environmental issues - illegitimacy and single parenting
abstract: Barry Smith, ideological solutions vs. practical solutions, Baer's Garbage Principle, justice issues, John Rawls, foreign aid, Peter Berger and Richard John Neuhaus To Empower People - mediating structures, government neutrality on issues of The Good, the effects of private sexual behavior on our ability to address environmental issues - illegitimacy and single parenting. Lecture was recorded on a Lapel Microphone, using a Cassette Tape.

url: http://hdl.handle.net/1813/7686
date: 2007-06-13
creator: Baer, Richard
viewed: 44
title: The nature of the environmental debate, extremist language, the Loyal Opposition, magnanimity and trust vs. government regulation, developing standards for truth-telling in the context of contentious issues, elephants in Zimbabwe, the Boston Rt 128 loop, development value, Henry George Progress and Poverty, ethics of transition and compromise, Spotted Owl habitat, property use restrictions
abstract: The nature of the environmental debate, extremist language, the Loyal Opposition, magnanimity and trust vs. government regulation, developing standards for truth-telling in the context of contentious issues, elephants in Zimbabwe, the Boston Rt 128 loop, development value, Henry George Progress and Poverty, ethics of transition and compromise, Spotted Owl habitat, property use restrictions. Lecture was recorded on a Lapel Microphone, using a Cassette Tape.

url: http://hdl.handle.net/1813/7687
date: 2007-06-13
creator: Baer, Richard
viewed: 25
title: The God Who Plays
abstract: The God Who Plays. Lecture was recorded on a Lapel Microphone, using a Cassette Tape (Exceptional Lecture).

url: http://hdl.handle.net/1813/7688
date: 2007-06-13
creator: Baer, Richard
viewed: 23
title: Celebration, praise, and thanksgiving
abstract: Celebration, praise, and thanksgiving. Lecture was recorded on a Lapel Microphone, using a Cassette Tape.

url: http://hdl.handle.net/1813/7689
date: 2007-06-13
creator: Smart, Mical
viewed: 19
title: Foundations for a Jewish Environmental Ethic: the Biblical world view, the world and all that is in it belongs to God, Lynn White's article, Jewish law - human autonomy subject to restraint; there is purpose to everything in creation; God is continuously active in creation; the connection between social and ecological justice; the Sabbath year; spirituality and the wilderness experience; all creation as a "community of praise"; laws regarding ownership and use of property; the Sabbath as a curb on unbridled consumption and

acquisition; discussion
abstract: Foundations for a Jewish Environmental Ethic: the Biblical world view, the world and all that is in it belongs to God, Lynn White's article, Jewish law - human autonomy subject to restraint; there is purpose to everything in creation; God is continuously active in creation; the connection between social and ecological justice; the Sabbath year; spirituality and the wilderness experience; all creation as a "community of praise"; laws regarding ownership and use of property; the Sabbath as a curb on unbridled consumption and acquisition; discussion. Lecture was recorded on a Lapel Microphone, using a Cassette Tape (Exceptional Lecture).

url: http://hdl.handle.net/1813/7690
date: 2007-06-13
creator: Baer, Richard
viewed: 24
title: Epistemology (discussion): radical doubt, "knowledge equals certainty", warrantable assertions, examples: gratuitous harm and truth-telling, difference between hard and social sciences, experimental method, literature as thought-experiment, learning by mistakes (eg. no-fault divorce), unprovable assumptions of science
abstract: Epistemology (discussion): radical doubt, "knowledge equals certainty", warrantable assertions, examples: gratuitous harm and truth-telling, difference between hard and social sciences, experimental method, literature as thought-experiment, learning by mistakes (eg. no-fault divorce), unprovable assumptions of science. Lecture was recorded on a Lapel Microphone, using a Cassette Tape (Exceptional Lecture).

url: http://hdl.handle.net/1813/7691
date: 2007-06-13
creator: Baer, Richard
viewed: 23
title: Epistemology, Gordon Kaufman, Ian Barbour, Carl Sagan, the Genesis account from the Bible, H. and H.A. Frankfort Before Philosophy, personalized nature, myths, an example of a scientific myth
abstract: Epistemology, Gordon Kaufman, Ian Barbour, Carl Sagan, the Genesis account from the Bible, H. and H.A. Frankfort Before Philosophy, personalized nature, myths, an example of a scientific myth. Lecture was recorded on a Lapel Microphone, using a Cassette Tape.

url: http://hdl.handle.net/1813/7692
date: 2007-06-13
creator: Baer, Richard
viewed: 24
title: The de-mythologizing and de-sacralizing of nature, Greek philosophy, natural causes for natural events, cyclical vs. linear view of time, David and Bathsheba, discussion
abstract: The de-mythologizing and de-sacralizing of nature, Greek philosophy, natural causes for natural events, cyclical vs. linear view of time, David and Bathsheba, discussion. Lecture was recorded on a Lapel Microphone, using a Cassette Tape (NOTE: incomplete recording).

url: http://hdl.handle.net/1813/7693
date: 2007-06-13
creator: Baer, Richard
viewed: 24
title: The modern university, Aleksandr Solzhenitsyn, questions and comments about the course, imposing beliefs on others

abstract: The modern university, Aleksandr Solzhenitsyn, questions and comments about the course, imposing beliefs on others. Lecture was recorded on a Lapel Microphone, using a Sony Minidisk Recorder.

url: http://hdl.handle.net/1813/7694
date: 2007-06-13
creator: Baer, Richard
viewed: 25
title: Anthropocentrism (Joseph Sachs), biocentrism (Paul Taylor), theocentrism (St. Agustin, St. Thomas), John Locke, "positive law" and "rights", CS Lewis
abstract: Anthropocentrism (Joseph Sachs), biocentrism (Paul Taylor), theocentrism (St. Agustin, St. Thomas), John Locke, "positive law" and "rights", CS Lewis. Lecture was recorded on a Lapel Microphone, using a Sony Minidisk Recorder (NOTE: incomplete recording).

url: http://hdl.handle.net/1813/7695
date: 2007-06-13
creator: Baer, Richard
viewed: 31
title: The future of NR-407
abstract: The future of NR-407. Lecture was recorded on a Lapel Microphone, using a Sony Minidisk Recorder.

url: http://hdl.handle.net/1813/7696
date: 2007-06-13
creator: Richards, Brian
viewed: 46
title: Land application of wastewater sludge - science, policy, and politics
abstract: Land application of wastewater sludge - science, policy, and politics. Lecture was recorded on a Lapel Microphone, using a Sony Minidisk Recorder (NOTE: incomplete recording).

url: http://hdl.handle.net/1813/7697
date: 2007-06-13
creator: Tantillo, James
viewed: 20
title: No-kill animal shelters, feral cats vs. wildlife, hunting
abstract: No-kill animal shelters, feral cats vs. wildlife, hunting. Lecture was recorded on a Lapel Microphone, using a Sony Minidisk Recorder.

url: http://hdl.handle.net/1813/7698
date: 2007-06-13
creator: Baer, Richard
viewed: 26
title: Introduction: How should we live? intentions vs. performance, Bill Joy Why the future doesn't need us, the theology of the ballet, CS Lewis The Abolition of Man, discussion
abstract: Introduction: How should we live? intentions vs. performance, Bill Joy Why the future doesn't need us, the theology of the ballet, CS Lewis The Abolition of Man, discussion. Lecture was recorded on a stereo microphone, using a Sony Minidisk Recorder.

url: http://hdl.handle.net/1813/7699

date: 2007-06-13
creator: Baer, Richard
viewed: 49
title: Guided discussion on values and facts, theoretical certainty, knowledge as warrantable assertions
abstract: Guided discussion on values and facts, theoretical certainty, knowledge as warrantable assertions. Lecture was recorded on a stereo microphone, using a Sony Minidisk Recorder (Exceptional Lecture).

url: http://hdl.handle.net/1813/7700
date: 2007-06-13
creator: Baer, Richard
viewed: 26
title: How to read the assigned readings, Sachs, facts, values, knowledge, relativism, radical doubt
abstract: How to read the assigned readings, Sachs, facts, values, knowledge, relativism, radical doubt. Lecture was recorded on a stereo microphone, using a Sony Minidisk Recorder.

url: http://hdl.handle.net/1813/7701
date: 2007-06-13
creator: Baer, Richard
viewed: 35
title: Carl Sagan's Cosmos vs. the Genesis accounts of creation, human dominion over nature, freedom, determinism, moral responsibility, Gordon Kaufman on Kant The Concept of Nature: A Problem for Theology, what is nature? can human beings be fully comprehended under the term nature? The terms world, cosmos, and universe, brief discussion
abstract: Carl Sagan's Cosmos vs. the Genesis accounts of creation, human dominion over nature, freedom, determinism, moral responsibility, Gordon Kaufman on Kant The Concept of Nature: A Problem for Theology, what is nature? can human beings be fully comprehended under the term nature? The terms world, cosmos, and universe, brief discussion. Lecture was recorded on a stereo microphone, using a Sony Minidisk Recorder.

url: http://hdl.handle.net/1813/7702
date: 2007-06-13
creator: Baer, Richard
viewed: 28
title: Relationship between humans and nature, dominion over nature, H. and H.A. Frankfort Before Philosophy, ancient and modern cultural myths, Lynn White The Historical Roots of Our Ecological Crisis, Western scientific progress and the desacralization of nature, Louis Moncrief The Cultural Basis of Our Environmental Crisis, democratization and the exploitation of nature, Biblical environmentalism, short discussion
abstract: Relationship between humans and nature, dominion over nature, H. and H.A. Frankfort Before Philosophy, ancient and modern cultural myths, Lynn White The Historical Roots of Our Ecological Crisis, Western scientific progress and the desacralization of nature, Louis Moncrief The Cultural Basis of Our Environmental Crisis, democratization and the exploitation of nature, Biblical environmentalism, short discussion. Lecture was recorded on a stereo microphone, using a Sony Minidisk Recorder.

url: http://hdl.handle.net/1813/7703
date: 2007-06-13
creator: Baer, Richard
viewed: 24
title: The meaning of the term nature, consequences of the desacralization of nature, King David and Nathan

the prophet, the romanticization of nature, the need for historical imagination
abstract: The meaning of the term nature, consequences of the desacralization of nature, King David and Nathan the prophet, the romanticization of nature, the need for historical imagination. Lecture was recorded on a Lapel Microphone, using a Sony Minidisk Recorder (NOTE: incomplete recording).

url: http://hdl.handle.net/1813/7704
date: 2007-06-13
creator: Baer, Richard
viewed: 23
title: The desacralization of nature, Leo Marx Pastoral Ideals and City Troubles, recurring themes in literature - retreat from civilization, escape to nature, return to civilization; The Interrupted Idyll, symbolic landscape, lengthy discussion - racism, breakdown of family structure, lack of diverse viewpoints at Cornell
abstract: The desacralization of nature, Leo Marx Pastoral Ideals and City Troubles, recurring themes in literature - retreat from civilization, escape to nature, return to civilization; The Interrupted Idyll, symbolic landscape, lengthy discussion - racism, breakdown of family structure, lack of diverse viewpoints at Cornell. Lecture was recorded on a stereo microphone, using a Sony Minidisk Recorder.

url: http://hdl.handle.net/1813/7705
date: 2007-06-13
creator: Baer, Richard
viewed: 39
title: Philosophy of science - faith and reason, values and facts; fallibism, running commentary on Ian Barbour Issues in Science and Religion: logical positivism and the "verification principle", factual claims vs. value claims, Michael Polanyi Personal Knowledge, brief discussion
abstract: Philosophy of science - faith and reason, values and facts; fallibism, running commentary on Ian Barbour Issues in Science and Religion: logical positivism and the "verification principle", factual claims vs. value claims, Michael Polanyi Personal Knowledge, brief discussion. Lecture was recorded on a Lapel Microphone, using a Sony Minidisk Recorder (Exceptional Lecture).

url: http://hdl.handle.net/1813/7706
date: 2007-06-13
creator: Baer, Richard
viewed: 26
title: Arterial roads and development - a case study
abstract: Arterial roads and development - a case study. Lecture was recorded on a Lapel Microphone, using a Sony Minidisk Recorder.

url: http://hdl.handle.net/1813/7707
date: 2007-06-13
creator: Baer, Richard
viewed: 27
title: Allen Wood Relativism, indoctrination in K-12 schools, Ian Barbour, what motivates scientists, William Leiss The Domination of Nature, science as knowledge for knowledge's sake (middle ages) vs. knowledge for the sake of domination of nature (modern era), the value of the scientific practice of viewing nature as value-free, the intuitive fear of the power of technology, Francis Bacon, Bertrand Russell Icarus, or the Future of Science, Mircea Eliade The Forge and the Crucible alchemy and modern science, mining and metallurgy, the Faustus legend, discussion
abstract: Allen Wood Relativism, indoctrination in K-12 schools, Ian Barbour, what motivates scientists,

William Leiss The Domination of Nature, science as knowledge for knowledge's sake (middle ages) vs. knowledge for the sake of domination of nature (modern era), the value of the scientific practice of viewing nature as value-free, the intuitive fear of the power of technology, Francis Bacon, Bertrand Russell Icarus, or the Future of Science, Mircea Eliade The Forge and the Crucible alchemy and modern science, mining and metallurgy, the Faustus legend, discussion. Lecture was recorded on a Lapel Microphone, using a Sony Minidisk Recorder (Exceptional Lecture).

url: http://hdl.handle.net/1813/7708
date: 2007-06-13
creator: Baer, Richard
viewed: 27
title: Science in the context of an absence of transcendent authority, the need for authoritative community, a functional view of religion, Emil Durkheim, the Big Questions, Wilfred Cantwell Smith
abstract: Science in the context of an absence of transcendent authority, the need for authoritative community, a functional view of religion, Emil Durkheim, the Big Questions, Wilfred Cantwell Smith. Lecture was recorded on a Lapel Microphone, using a Sony Minidisk Recorder (Exceptional Lecture).

url: http://hdl.handle.net/1813/7709
date: 2007-06-13
creator: Baer, Richard
viewed: 26
title: The limitations of rationalism in ethics, male and female perspectives, Carol Gilligan, modern feminism, the environmental effect of social pathologies
abstract: The limitations of rationalism in ethics, male and female perspectives, Carol Gilligan, modern feminism, the environmental effect of social pathologies. Lecture was recorded on a Lapel Microphone, using a Sony Minidisk Recorder.

url: http://hdl.handle.net/1813/7710
date: 2007-06-13
creator: Baer, Richard
viewed: 28
title: Running commentary on Stanley Hauerwas on Iris Murdoch, the concepts of freedom, humility, and love
abstract: Running commentary on Stanley Hauerwas on Iris Murdoch, the concepts of freedom, humility, and love. Lecture was recorded on a Lapel Microphone, using a Sony Minidisk Recorder.

url: http://hdl.handle.net/1813/7711
date: 2007-06-13
creator: Baer, Richard
viewed: 33
title: Wendell Berry, hyper-individualism and faithfulness to each other and to the environment, the environmental effect of social pathologies, the interrelatedness of things, David Blankenhorn, fatherlessness
abstract: Wendell Berry, hyper-individualism and faithfulness to each other and to the environment, the environmental effect of social pathologies, the interrelatedness of things, David Blankenhorn, fatherlessness. Lecture was recorded on a Lapel Microphone, using a Sony Minidisk Recorder.

url: http://hdl.handle.net/1813/7712

date: 2007-06-13
creator: Baer, Richard
viewed: 50
title: What do Christianity and Judaism have to say about environmental ethics, Plato, the ancient Hebrews, Deuteronomy 26:1-9, Joshua, the Decalogue, Emil Brunner
abstract: What do Christianity and Judaism have to say about environmental ethics, Plato, the ancient Hebrews, Deuteronomy 26:1-9, Joshua, the Decalogue, Emil Brunner. Lecture was recorded on a Lapel Microphone, using a Sony Minidisk Recorder.

url: http://hdl.handle.net/1813/7713
date: 2007-06-13
creator: Baer, Richard
viewed: 42
title: Sin, determinism, human responsibility, Reinhold Niebuhr
abstract: Sin, determinism, human responsibility, Reinhold Niebuhr. Lecture was recorded on a Lapel Microphone, using a Sony Minidisk Recorder.

url: http://hdl.handle.net/1813/7714
date: 2007-06-13
creator: Baer, Richard
viewed: 42
title: The God Who Plays
abstract: The God Who Plays. Lecture was recorded on a Lapel Microphone, using a Sony Minidisk Recorder.

url: http://hdl.handle.net/1813/7715
date: 2007-06-13
creator: Baer, Richard
viewed: 37
title: Reinhold Niebuhr, history of Judaism and Christianity, Paul's letter to the Galatians, God's love, freedom, writer's block at Harvard
abstract: Reinhold Niebuhr, history of Judaism and Christianity, Paul's letter to the Galatians, God's love, freedom, writer's block at Harvard. Lecture was recorded on a Lapel Microphone, using a Sony Minidisk Recorder (NOTE: Copying flaws).

url: http://hdl.handle.net/1813/7716
date: 2007-06-13
creator: Baer, Richard
viewed: 44
title: Animal rights, classical Liberalism, wilderness preservation, intergenerational justice, Derek Parfit, Peter Singer, Tom Regan, equality, speciesism, the image of God, religion in the public sphere, Robert Audi, Kramnick and Moore
abstract: Animal rights, classical Liberalism, wilderness preservation, intergenerational justice, Derek Parfit, Peter Singer, Tom Regan, equality, speciesism, the image of God, religion in the public sphere, Robert Audi, Kramnick and Moore. Lecture was recorded on a Lapel Microphone, using a Sony Minidisk Recorder (NOTE: Copying flaws).

url: http://hdl.handle.net/1813/7717

date: 2007-06-14
creator: Arnout, van de Rijt
viewed: 63
title: Rational Reconstructions of Society
abstract: The dissertation contains four stand-alone studies, chapters 2 through 5. In chapter 1, I highlight commonalities among the studies.
In chapter 2, I consider the principle of structural balance - "The friend of a friend is a friend, the enemy of a friend is an enemy, the friend of an enemy is an enemy, and the enemy of an enemy is a friend." I consider Harary's (1954) result that this principle can only be satisfied in a world consisting of two inimical friendship cliques. And I consider recent studies that show that when individuals in a structurally imbalanced world change ties one by one following the principle, they do not necessarily end up in a structurally balanced world. I prove that if multiple ties can be changed simultaneously, then a structurally balanced world is guaranteed.
In chapter 3, I consider Burt's (1992) argument of "structural holes" that unconnected parts of a social network are niches for brokerage. I consider Burt's suggestion that those aware of brokerage benefits end up occupying structurally advantaged network positions. I show how this statement crucially depends on the unawareness of these benefits by others. If everyone strives for structural holes, no one ends up with a structural advantage.
In chapter 4, I consider the extensive laboratory evidence on the relationship between the structure of small exchange networks and expected exchange rates. I consider a theory that reasonably predicts this relationship in a handful of networks. I show that if individuals add ties that increase expected earnings from exchange more than they cost and delete all other ties, then networks emerge that distribute exchange benefits equally.
In chapter 5, I consider the old immigrant assimilation model of a monotonic process. I consider recent work in the direction of an alternative model. I propose an alternative model that follows up on this work and adds minimal complexity to the old model. In this model, quite assimilated migrants further assimilate, while not so assimilated migrants reverse-assimilate. Using longitudinal survey data, I show that the model is empirically competitive.
In chapter 6, I propose four follow-up studies.

url: http://hdl.handle.net/1813/7718
date: 2007-06-15
creator: Kulkofsky, Sarah
viewed: 87
title: Narrative Skills as a Predictor of Suggestibility and Memory Accuracy
abstract: Narrative skills have been identified as an important contributor to memory development in young children. In the present research, I examine the relationship between children?s narrative skills and suggestibility as well as memory accuracy. Across two studies, a total of 112 preschool-aged children engaged in a staged event with a classroom visitor and were subsequently questioned suggestively. Results from Study 1 indicated that children's ability to provide a high quality narrative of the event was related to resistance to suggestive questions, appearing to supersede age as a predictor. Study 2 further examined the role of children's general language abilities (measured through a teacher report) and general narrative skills (measured through an autobiographical memory narrative). These results replicated the findings that children's ability to produce a high quality narrative of a previously experienced past event independently predicts resistance to suggestion independent of language skill. However, the quality of children's autobiographical memory narratives predicted increased suggestibility. In addition, in both studies high quality narratives were related to reporting more spontaneous errors. Findings are considered in light of narrative's role in memory development and underlying mechanisms which may explain children's suggestibility.American

Psychology and Law Society College of Human Ecology

url: http://hdl.handle.net/1813/7721
date: 2007-06-18
creator: Smith, Julian Cleveland
viewed: 45
title: The School of Chemical Engineering at Cornell : a history of the first fifty years
abstract: Cornell Engineering Histories Volume 1This is a history of the School of Chemical Engineering at Cornell University, from the time of the School's founding and establishment as part of the College of Engineering in 1937-38 to the present, fifty years later.

url: http://hdl.handle.net/1813/7726
date: 2007-06-18
creator: Sosa-Velasco, Alfredo Jesus
viewed: 66
title: SPAIN IS ILL! SICK BODY AND POLITICAL DISCOURSE IN TWENTIETH-CENTURY SPAIN: SANTIAGO RAMON Y CAJAL, PIO BAROJA, GREGORIO MARANON, AND ANTONIO VALLEJO NAGERA
abstract: In this dissertation, I study the metaphorical representations of disease by four Spanish physician writers from 1885 to 1960: Santiago Ramon y Cajal (1852-1934), Pio Baroja (1872-1956), Gregorio Maranon (1887-1960), and Antonio Vallejo Nagera (1889-1960). I analyze the role of physicians as writers and as intellectuals in Spanish peninsular literature, and I illustrate not only how they use science and medicine to define and critique nation, nationalism, culture, and politics in Spain, but also how politics can be read in these four physicians? literary production, by analyzing the metaphors of science, medicine, doctor, patient, sickness, and cure. Physician writers produce a space for social and political critique in which medical discourse becomes political discourse. Through the four chapters of my dissertation, I show that Spanish nationalism imposes a centralistic, homogeneous, and unified vision of Spain. This homogeneity leads to the construction of a Spanish nation in which the particularities of three historical nations (Catalonia, Galicia, and Basque Country) are ignored, and imposes Castilian culture in order to legitimize such a construction. Ramon y Cajal, Baroja, Maranon, and Vallejo Nagera construct a singular Spanish national culture by using the metaphor of the sick body as an opposition to the ideal healthy body, defining Spanish national culture in opposition to the other nations that constitute Spain. In order for these physicians to talk about the sick body, they refer to the Other: Americans, Catalans, Basques, intersexuals, homosexuals, Communists, and Marxists, among others. I also show that the fictionalization of the pathological body and the symbolic representation of sickness underscore these physician writers? political anxieties. Not only do these authors reproduce the ideology of the hegemonic group, but they also produce this ideology by building it from within the State, where medical discourse is institutionalized. They support an authoritarian, colonialist, imperialist, and totalitarian political regime, representing Castilian values. The literary production of these four physician writers requires a reconsideration of the cultural dynamics created by medical language, the human body, and political discourse.

url: http://hdl.handle.net/1813/7727
date: 2007-06-18
creator: Rosenstein, Judith E.
viewed: 57
title: Threat and Bias: Understanding the Role of Threat in Attitudes towards Race, Gender, and Sexual Orientation
abstract: This research project is motivated by the question of what type of relationship exists between threat

and bias. Such a relationship has been demonstrated for racial bias and theorized for sexism and heterosexism; however the nature of the relationship is unknown. In particular, it is unclear whether threat functions at the individual level, group level, or both levels simultaneously. This is accomplished by considering three types of bias: sexism, racism, and heterosexism.
All three analyses utilize virtually identical background measures and employ ordered logistic and multinomial logistic regressions, with differing outcome measures and threats. Each paper begins by considering how the relevant literatures treat threat and bias. They then examine the same four hypotheses describing the possible relationships between individual threat, group threat, and biased attitudes.
The gender and race analyses utilize the General Social Survey. Attitudes towards policies aimed at promoting gender equity are the outcome measures for the gender study, while attitudes towards policies aimed at promoting racial equity are the outcome measures for the race analysis. Threat measures assess perceptions of the impact of the women?s movement on individuals and men (gender analysis) and perceptions of white job security and stability (race analysis).
The sexual orientation analysis relies on student data, because there are no available datasets with appropriate measures of individual and group threats. A questionnaire was developed and administered to undergraduate students at an elite Northeastern university. Unlike the other two analyses, the results from this study are not generalizable; however, they should provide an indication of whether the trends identified with gender and racial attitudes may carry over to opinions regarding sexual minorities. Outcomes are attitudes towards legalizing gay marriage and providing same-sex couples with job benefits
The results confirm the link between feelings of threat and negative views of the out-group. All three analyses demonstrate that individual threat and group threat are simultaneously associated with opposition to policies aiding the subordinate group. Furthermore, the results suggest the possibility of a proxy relationship between individual threat and group threat.

url: http://hdl.handle.net/1813/7728
date: 2007-06-19
creator: Rankenburg, Ivan
viewed: 63
title: Application of the Difference Map Algorithm to Protein Folding
abstract: This dissertation focuses on the application of a new search algorithm, the difference map, to the problem of protein structure prediction.
First a short review of protein structure is given to explain the terms and concepts used in the following chapters. A brief description of the current structure determination techniques (x-ray diffraction, NMR) are given, but the bulk of this dissertation is focused on ab initio structure prediction. Using ab initio methods, the native fold of a protein is assumed to be the global minimum of a high dimensional energy function. The current methods for minimizing this energy function are reviewed. The next chapter introduces a new search algorithm, the difference map. The difference map has been applied to many fields and problems where an exhaustive search is not feasible. A brief description of its historical development is given. Following this is an explanation of how the algorithm efficiently searches a high dimensional search space. A program called the difference map explorer was created to explore the effects of various difference map parameters on the search dynamics of the algorithm.
The application of the difference map to the problem of protein energy minimization is demonstrated in chapter 3. In this chapter, the rate at which the difference map produces low energy protein conformations is compared with that of a Monte Carlo based search algorithm, parallel tempering. It is shown that the difference map finds low energy protein conformations at a significantly higher rate than parallel tempering. The final chapter describes in detail NENA, the software implementation of the difference map folding algorithm.

url: http://hdl.handle.net/1813/7729

date: 2007-06-19
creator: Gyrya, Pavel
viewed: 77
title: Heat kernel estimates for inner uniform subsets of Harnack-type Dirichlet space
abstract: The main result of this thesis is the two-sided heat kernel estimates for both Dirichlet and Neumann problem in any inner uniform domain of the Euclidean space $\mathbb R^n$. The results of this thesis hold more generally for any inner uniform domain in many other spaces with Gaussian-type heat kernel estimates. We assume that the heat equation is associated with a local divergence form differential operator, or more generally with a strictly local Dirichlet form on a complete locally compact metric space. Other results include the (parabolic) Harnack inequality and the boundary Harnack principle.

url: http://hdl.handle.net/1813/7736
date: 2007-06-20
creator: Flenniken, Meagan
viewed: 36
title: Reindeer Nutrition and Pasture Analysis in the Mongolian Taiga
abstract: The research for this thesis has taken place over the last two years (2005-2006) in the northern-most pinnacle of Mongolia only miles from the Russian border. It is aimed at assessing nutritional availability, range quality and utilization by domesticated reindeer (Rangifer tarandus tarandus) in a small sliver of taiga ecosystem inhabited by a nomad reindeer-herding people called the Tsaatan. Indigenous reindeer herding practices and cultural strategies link the survivability of the people with the survivability of their reindeer. The period of Soviet occupation in Mongolia from 1921 to 1991 caused massive damage to the social fabric of Tsaatan culture and also herd health. Since 1991, the Tsaatan have been attempting to revive their culture in post-soviet, Mongolian democracy. Through dairy, packing, riding, meat and other by-products, reindeer provide the raw materials and power the Tsaatan need to survive in this cold mountainous region of Mongolia.
Though a multitude of health problems effect the herd today including inbreeding and zoonotic diseases such as Brucellosis, I believe the herd?s recovery is predicated on first establishing better herd nutrition. Herd demographic data collected by myself and other researchers in 2006 showed a correlation between herd body condition and management strategies/forage quality [Appendix 1]. With the underlying assumption that heard health is influenced by nutrition, this study set out to collect the first set of data on forage availability/quality in Tsaatan pastures. My hypothesis was that both availability and diet composition vary from other reindeer groups and warrant a dynamic set of considerations in terms of best-management policies for the herd.

url: http://hdl.handle.net/1813/7737
date: 2007-06-20
creator: Shao, Feng
viewed: 44
title: Triggers and Ranked Keyword Searches over Virtual XML Views
abstract: Current systems that publish XML/relational data using XML views are passive in the sense that they can only respond to user-initiated queries over the XML views. Further, existing systems do not support ranked keyword searches over virtual XML views, which is important for exploring and retrieving information from large views. In this dissertation, we propose an XML view system whereby users can place active triggers on virtual (unmaterialized) XML views, and can efficiently evaluate keyword search queries over such views. In this architecture, we present scalable and efficient techniques for processing triggers over nested views by leveraging existing support for SQL triggers over flat relations in commercial relational databases. When evaluating the keyword search queries, our approach exploits indices present on the base data and thereby avoids computing large parts of the view that are not relevant to the query results. Another feature of the

algorithm is that it supports top-k results for queries over the virtual view, and the resulting rank order is the same as if the view was materialized. We have implemented our proposed techniques in the context of the Quark XML middleware system. Our performance results indicate that our proposed techniques are a feasible approach to supporting triggers and ranked keyword searches over virtual XML views.

url: http://hdl.handle.net/1813/7738
date: 2007-06-21
creator: Reed, Kristan
viewed: 32
title: Effects of Concentrate Addition on In Vitro Rumen Fluid pH and Forage Fiber Digestion
abstract: Further characterization rumen digestion could aid in development of a more efficient diet. The objective was to determine the early effects (0-6h) of concentrate type on rumen pH and forage digestion. Two forages, orchard grass and corn (Zea mays L.) stover, were combined in a 50:50 ratio with 5 concentrate treatments (no concentrate, corn meal, corn gluten meal, barley (Hordeum vulgare L.) and wheat (Triticum aestivum L.)). Samples were incubated in vitro in a 1:4 buffer to rumen fluid mixture for 420 min. The pH was measured at intervals throughout the trial and samples were collected for volatile fatty acid (VFA) analysis. Forage samples alone had significantly lower pH ($P<0.05$) than those samples containing concentrate. For corn stover samples, this correlates with a high mean lactic acid concentration (535 ppm). The final study measured change in pH and the difference in neutral detergent fiber (NDF) digestibility of four concentrate treatments (no concentrate, corn meal, corn gluten meal, and barley). Two sample distribution methods were tested; forage and concentrate were mixed together in the same filter bag or separated into individual bags. Barley had the largest inhibitory effect on fiber digestion and caused the largest decline in pH. Treatments with feeds in the same bag showed larger differences in pH and digestibility. Results suggest a diet containing a mixture of forages or, a mixture of corn and forage minimizes declines in rumen pH. They also suggest the study of associative effects is impeded by separation of feeds through filter bags.

url: http://hdl.handle.net/1813/7739
date: 2007-06-21
creator: Abramson, Alexandra
viewed: 42
title: Comparison of Antimicrobial Resistance Patterns Between Salmonella Enterica Subsp. Enterica and Escherichia Coli in Dairy Calves
abstract: The primary objective of this study was to compare antimicrobial resistance patterns of Salmonella enterica with Escherichia coli isolated from the same dairy calves. Fecal samples were collected from February 2004 to September 2005 from 74 calves. Calves with at least one Salmonella isolate and one E.coli isolate were included in our analysis. The 148 isolates collected from the 74 calves were tested using a broth tube dilution method for determining resistance to several antimicrobial agents (n=14): AMP, APR, CEF, CHL, ENR, FLO, GEN, NEO, OXY, SPE, SCH, SDI, STH, and TRI. Considering resistance to individual drugs, the percent of E.coli isolates with resistance was over 50 for 11 drugs and the percent of Salmonella isolates resistant was over 50 for 9 drugs. From the antimicrobial resistance patterns generated for E.coli (n=42) and Salmonella (n= 22), the bacteria were found to have 6 identical patterns in common. From these 6 patterns the most common pattern showed resistance to AMP, CEF, CHL, FLO, NEO, OXY, SCH, SDI, and STH. The association of antimicrobial resistance between Salmonella and E.coli for the same calves for individual antimicrobial agents proved not statistically significant. This study showed that resistance to drug classes important in human and animal medicine was common in Salmonella and E.coli from clinically ill calves. Overall, E.coli isolates were more resistant than Salmonella. While there were shared patterns of resistance (n=6) between Salmonella and E.coli, Salmonella isolates were not significantly more likely to be resistant to individual antibiotics if a calf had a resistant E.coli. Results suggest that selection pressure from recent

exposure to drugs or interspecific gene transfer was not resulting in a strong association of resistance between the bacteria.

url: http://hdl.handle.net/1813/7740
date: 2007-06-21
creator: Corrado, Christopher
viewed: 29
title: Effect of Changes in Weaning Age on Carcass Traits in Forage Finished Beef Cattle
abstract: An increase in percent intramuscular fat (%IMF) and average daily gain (ADG) are advantageous to the profitability and consumer palatability of forage finished beef. The effects of weaning age in beef cattle fed an all forage diet on measure of weight gain and carcass quality were analyzed over two years of calf data. Measures of gain included average daily gain, weight per day of age (WDA), and weight at the conclusion of trial two weaning (CW2). Measures of carcass quality included percent intramuscular fat, Longissimus muscle area (REA), rib fat (BF), finished live-weight (FW), rump fat (RF) at the conclusion of trial two weaning, empty body fat (EBF) and Longissimus muscle area as a function of finished weight (REA/FW). Angus x Simmental beef calves (N=50 over two years) were weaned at two distinct ages. In both trials, calves were weaned using a calf-weaner, a plastic removable nose ring used for low stress weaning. In trial one calves were weaned at the time normally practiced, approximately 157 (+13) days of age in 2004 and 182.7 (+ 9.7) days of age in 2005. In trial two the time of weaning was delayed to 338.5 (+ 13.6) days of age in 2004 and 266.1 (+ 8.4) days of age in 2005. Following weaning in both trails, calves were fed an all forage diet. For calves born in 2004, carcass data for both weaning groups was gathered by ultrasound at 597(+ 13.6) days of age; in 2005, calves from both trails were analyzed by ultrasound at approximately 554(+ 8.9) days of age. The calves in which weaning was delayed showed numerically higher values for percent intramuscular fat, rib eye area, rump fat, back fat, finished weight, weight per day of age, empty body fat (percent), and rib eye area as a function of finished weight. These differences however were generally not statistically significant using the general linear model in SAS (1998), and analyzing least square means using The Waller-Duncan K-ratio t test. There was a statistically significant difference in WDA and CW2 for 2005 born calves. The results of this research potentially show a relationship between delaying weaning and an increase in the carcass quality of forage finished beef. As farmers producing forage finished beef seek to compete for market share in a market primarily dominated by grain finished, highly marbled, younger carcasses, a delay in weaning age may produce carcasses which are more highly competitive in the current market and capable of better suiting consumer preferences.

url: http://hdl.handle.net/1813/7741
date: 2007-06-21
creator: Gailor, Mabel
viewed: 52
title: Maturity of the Lamb Immune System
abstract: Vaccines targeting specific threats to lamb health could be immensely instrumental in curbing high levels of lamb mortality in the U.S. lamb industry. However, the age at which vaccine administration would be most beneficial is currently unspecified due to limited knowledge of when lambs become immunocompetent. This study?s main objective was to determine the effect of age on the immunological competency of sheep in order to determine the optimal schedule for vaccinating lambs. An experiment was designed to examine the ability of lambs of varying ages to mount an antigen-specific immune response against Keyhole Limpet Hemocyanin (KLH) after vaccination with KLH in 10% aluminum hydroxide as the adjuvant. Groups of five lambs were vaccinated subcutaneously with one of three treatments (vaccine, control, adjuvant only) three times at two week intervals over a total of six weeks. The age at administration of the treatment was also variable (n=5); the lambs were either 0, 5, or 40 weeks of age at the start of their respective six week vaccine

trial. Three blood samples were taken immediately prior to the second and third treatment and two weeks after the third. Lymphocyte proliferation, and production of total immunoglobulin (Ig), and KLH-specific Ig were measured. An increase in lymphocyte production in vaccinated animals in response to vaccines was seen as early as 4 weeks of age, after two vaccines. The production of anti-KLH Ab in vaccinated lambs began after the first vaccination and had a fold response four times as high as control and adjuvant-only animals when sampled two weeks after the first vaccination.

url: http://hdl.handle.net/1813/7742
date: 2007-06-21
creator: Rossman, Rachel
viewed: 30
title: Effects of Age, Dominance, and Mating System on Vocal Consistency in Mockingbirds (Aves: Mimidae)
abstract: While many studies have looked at selection for large repertoire sizes in birds, few have explored the potential for selection on the ability to sing each type in the repertoire consistently. I explored this issue by studying the consistency with which two closely related species of mockingbirds, i.e. the northern (Mimus polyglottos) and the tropical mockingbird (M. gilvus), repeated each syllable type. I hypothesized that if there is selection for singing ability and not just for an increase in repertoire size, it could be expected that syllable consistency should be (1) higher in older, more experienced individuals, (2) higher in species with higher potential for sexual selection via female choice (i.e. higher in the northern versus the tropical mockingbird) and (3) higher in males expected to be of higher quality (i.e. in dominant versus subordinate birds). I found that song consistency could be improved with practice because tropical mockingbirds became more consistent with age. When comparing across male types, I found that consistency was higher in northern and dominant tropical mockingbirds than in subordinate tropical mockingbirds (although the data suggests that dominant tropical mockingbirds that compete with subordinates for breeding may not be much better singers than these subordinates). I suggest that the lack of significant differences between northern mockingbirds and dominant tropical mockingbirds could be a product of a trade-off between repertoire size and singing consistency because as the number of types in a repertoire increases, the opportunities to practice each type are reduced.

url: http://hdl.handle.net/1813/7743
date: 2007-06-21
creator: Avery, Michael
viewed: 24
title: Investigations into Colony Identity in a Social Spider: Does Delena cancerides Utilize Chemical Cues to Distinguish Between Kin and Non-kin?
abstract: The presence of recognition systems, though oft-studied and well documented in the eusocial insects, has been largely unreported among the spiders. Most spider species are solitary and cannibalistic, such that kin recognition is not particularly advantageous, and most social spiders do not apparently differentiate between relatives and non-relatives. However, Delena cancerides, a social huntsman spider from southern Australia, is the only social spider known to respond aggressively to introduced non-relatives and has been shown to preferentially consume non-kin in starvation experiments. It is hypothesized that chemical cues mediate the differentiation of related colony mates from non-colony mates, and that D. cancerides prefer exposure to cues derived from their natal colony to those derived from an alien colony. I used a three choice olfactometer to implement an olfactory preference assay with D. cancerides, using the degree of exploration in the olfactometer to divide trials into three analyzable groups. Movement within the olfactometer during trials was highly non-random. Spiders in the group characterized by exploration of both the same-colony and foreign-colony stimuli settled with their same-colony stimulus at the end of the trial significantly more than

predicted by chance. However, none of the three trial groups spent significantly more time in the presence of a same-colony stimulus than predicted by random motion. Spiders spent significantly more time in the presence of conspecific stimuli, from either same- or foreign-colonies, than predicted by random motion in two of three trial groups, suggesting that recognition of conspecifics and the tendency to aggregate is also mediated chemically.

url: http://hdl.handle.net/1813/7744
date: 2007-06-21
creator: Bayless, Keith
viewed: 41
title: Taxonomic Revision of the Genus Schildia Aldrich, 1923 (Diptera: Asilidae: Leptogastrinae) with Descriptions of New Extant and Fossil Species
abstract: Schildia Aldrich, 1923, a distinctive and rare genus of Leptogastrinae (Diptera: Asilidae), is revised. Twelve species are recognized, of which five are new to science. The nine extant species are Neotropical, Afrotropical, and Oriental in distribution. The extant Neotropical species are S. alphus Martin, 1975; S. caliginosa sp. n., described from southern Venezuela; S. fragilis (Carerra, 1944); S. guatemalae Martin, 1975; S. gracillima (Walker, 1855); S. jamaicensis Farr, 1963; S. microthorax Aldrich, 1923; and S. zonae Martin, 1975. S. ocellata Martin, 1975 is synonymized with S. gracillima. The extant Afrotropical species is S. adina sp. n., described from extant and copal (0-11000 years ago) specimens from Madagascar. The extant Oriental species is S. malaya sp. n., described from Kedah, Malaysia. Two extinct species, S. angustifrons and S. martini, are newly described from Dominican amber (15-20 million years ago). Redescriptions and descriptions of the genus and all extant and fossil species are provided. An identification key to the extant and fossil species is presented. Illustrations, photographs, and scanning electron micrographs are provided to support the descriptions and key. Distribution, biogeography, occurrence in biodiversity hotspots, seasonal incidence, and biology are discussed. The geographic distributions of several species are expanded. Potential reasons are explored to explain why Schildia, previously thought to be strictly Neotropical, is also found in Madagascar and Malaysia. Tentative minimum age of the genus is discussed in light of new fossil and biogeographical data.

url: http://hdl.handle.net/1813/7745
date: 2007-06-22
creator: Deacutis, Juliane
viewed: 22
title: A Multi-faceted Analysis of Spinosad Resistance in the House Fly (Musca domestica L.)
abstract: House flies are important vectors of a number of animal and human pathogens, thus controlling them is of great importance. Commercial insecticide control of house flies is limited to a few chemicals, and the development of resistance to these chemicals is an ongoing concern. Therefore, finding new effective insecticides is critical. Spinosad is a relatively new promising insecticide that was released in 2005 for house fly control. It is derived from the bacterium Saccharopolyspora spinosa. It is highly effective against pest species and is thought to have a unique mode of action. A resistant laboratory house fly strain was developed and studies indicate the resistance mechanism is unique, recessive, and located on autosome 1. Although house fly resistance to spinosad has been developed in the laboratory, resistance in field populations has not been characterized. In this study I monitored spinosad resistance at several dairy, hog and poultry farms over the summers of 2004 and 2005. Results showed that there was a variation in baseline susceptibility between different field sites, but no development of resistance was observed. Due to limitations of insecticide bioassays, developing a more sensitive resistance detection method and identifying the gene responsible for resistance will be important for future monitoring programs. As part of an important step in determining the gene for resistance, I linked a number of nicotinic acetylcholine receptor (nAChR) subunits to a particular house

fly autosome. Spinosad toxicity is due to interactions with nAChRs and is associated with autosome 1. Of the four genes analyzed, two (Md?5 and Md?6) were associated with autosome 1, one (Md?2) was associated with autosome 2, and one gene association (Md?3) was not determined. Lastly, I assessed the fitness effects of spinosad resistance on mating competition. I found that a laboratory susceptible strain had a mating advantage over a laboratory spinosad resistant strain.

url: http://hdl.handle.net/1813/7746
date: 2007-06-22
creator: Pimsler, Meaghan
viewed: 28
title: A Survey of the Dung Beetles in Cattle Manure on Pastures of an Organic and a Conventional Dairy Farm in New York State
abstract: Dairy is an important part of New York state agriculture. Many dung beetle species live in pasture cattle manure. This study was a survey of the species of beetles (Scarabaeidae, Geotrupidae, Hydrophilidae, and Histeridae) in dairy cattle manure from pastures of two different farms, one conventional and one organic. Aphodius species, specifically A. granarius, A. haemorrhoidalis, and A. stercorus were the most numerous beetles (approximately 21% of the identified beetles), excluding the small, unidentified Hydrophilidae less than 2 mm in length. This contrasts with results of similar studies using the same protocol in North Carolina where Onthophagus taurus was the most abundant species of dung beetle on pastures, suggesting that latitude has a an effect on the composition of dung beetle communities.

url: http://hdl.handle.net/1813/7747
date: 2007-06-22
creator: Zimmerman, Ariel
viewed: 22
title: Shooting Blanks: Mate Choice and Determination in a Parasitically Castrated Snail, Littorina littorea
abstract: The trematode parasite Cryptocotyle lingua completely castrates both male and female Littorina littorea snails that it infects. Selection should favor males who distinguish between fertile and parasitically-castrated females when choosing mates. I addressed this question by sampling mating pairs in the intertidal and those snails in their immediate vicinity. I compared the frequency of infection in females in mating pairs with that of ambient non-mating females to determine if the frequency of infection was significantly lower in mating females. In addition, to test the assumption that infected males were physiologically incapable of initiating copulatory behavior, I compared the infection prevalence of mating males with that of non-mating ambient males. I found that there was no significant difference in the infection prevalence between mating and non-mating females, indicating that males were not distinguishing between infected and uninfected females. This may be the case due to high levels of gene flow between highly infected and unexposed populations, insignificant costs associated with wasted mating attempts for males, or low heritability of the means for detecting infection in females. Infection prevalence in mating males was nearly significantly lower than that of non-mating males. However, the surprising frequency of infected males mating (15%) suggests that gonad health is not a pre-requisite for initiating copulatory behavior.

url: http://hdl.handle.net/1813/7748
date: 2007-06-22
creator: Zimmerman, Ariel
viewed: 26
title: Assessing the Costs of Group Living: Comparing Metabolic Physiology and Growth in Social and Solitary Spiders
abstract: Sociality in arachnids is extremely rare though well documented for the few cases that exist. However,

no research to date has examined the metabolic and growth characteristics associated with social behavior. Delena cancerides is a social huntsman spider that closely overlaps in distribution with several closely related species of solitary huntsmen, providing a unique opportunity for comparison. I compared the metabolic rate of D. cancerides to other species of solitary huntsman using a closed-system respirometer. I also compared the growth, survival and molting frequency of D. cancerides spiderlings in solo and group treatments to those of solitary huntsman species. Delena cancerides had a significantly lower mass-specific metabolic rate than all other species to which it was compared. This is explained in the context of reduced food availability per individual for prolonged periods of time due to sharing. Delena cancerides spiderlings did not differ from other species when housed alone, but grew significantly more in group environments than did solitary species. Mortality was lowest for D. cancerides living in groups than for any other species living in groups. There was no difference for any species in molting patterns between solo and group treatments. D. cancerides molted consistently earlier and more often than the species to which it was compared. The consequences of these findings are discussed in the context of prey-sharing and avoidance of cannibalism.

url: http://hdl.handle.net/1813/7749
date: 2007-06-22
creator: Colle, Royal D.
viewed: 128
title: Advocacy and Interventions: Readings in Communication and Development
abstract: As the 21st century rolled out, communication in relation to development became more prominent in the international community. Efforts to reach the Millennium Development Goals sharpened our attention on communication with many asking how the new information and communication technologies could accelerate progress toward the Goals. This book addresses these issues. It is intended to be a "practical" book. It is filled with examples and case studies that illustrate ways that carefully planned and implemented communication interventions have produced positive results. It shows how approaches such as social marketing, extension, participation, and entertainment have contributed to development initiatives. Many of these have used media and the new information and communication technologies. "Advocacy and Interventions" includes ideas from people who have experienced the challenges of communicating effectively in development programs. The book is also based on the author's own insights from almost four decades of communication and development experience in countries ranging from Guatemala to Western Samoa, with many other stops in Asia, Africa and Latin America. "Advocacy and Interventions" is especially suitable for policy makers, project planners and advanced courses in development communication or rural development.

url: http://hdl.handle.net/1813/7750
date: 2007-06-25
creator: Vanderveld, Riva
viewed: 29
title: Systematic Effects of Local Large Scale Structure on the Measured Expansion History of the Universe
abstract: Committee members: Ira Wasserman, Eanna Flanagan, Jim AlexanderWe discuss some of the ways that local cosmological inhomogeneity has been found to affect our interpretation of the measurements of the redshifts and luminosity distances of Type Ia supernovae, so that we may ask: Can a matter dominated universe, with gravity governed by general relativity, appear to be accelerating? This discussion focuses on the systematic corrections to measured cosmological parameters that one would find as a result of the ``fitting problem", wherein the fitting of data to what we would see in a homogeneous universe introduces errors due to the nonlinearity of general relativity. It has been suggested that this fitting effect could explain the supernova data without introducing dark energy or modifications of general relativity. We explore this claim within the context of several cosmological scenarios, all of which use standard general relativity and are dust dominated, with no dark energy. First, we use the spherically-symmetric Lema\^{i}tre-Tolman-Bondi cosmological

models, then we look at a simple model for cosmological voids and sheets, and finally we treat the problem in full three dimensional generality. In each of these contexts, we analyze the systematic corrections to the luminosity distances and redshifts of Type Ia supernovae that result from local large scale structure. We then find how such corrections affect the properties of the Universe that we infer from this measured luminosity distance-redshift relation. We show how, in principle, a very large degree of inhomogeneity can trick us into thinking that the expansion of the Universe is accelerating when it is not. However, within the confines of more realistic models, such effects are shown to be small. In the full three dimensional case, we find that the error in the best-fit cosmological constant is approximately $\Delta\Omega_{\Lambda}\approx 0.004$ for a large sample of supernovae at small redshifts, between $z_{min}=0.02$ and $z_{max}=0.15$. Although this error is not large enough to explain the measured cosmological constant value $\Omega_{\Lambda}\approx 0.7$, it is still a potentially significant systematic error that has not been accounted for previously.The National Science Foundation, NASA, Cornell University, the American Association of University Women

url: http://hdl.handle.net/1813/7751
date: 2007-06-25
creator: Prochaska, Mark
viewed: 40
title: Use of a Combinatorial Search for the Discovery of New Fuel Cell Electrocatalysts
abstract: Francis J. DiSalvo, R. Bruce van Dover, Hector AbrunaPolymer electrolyte fuel cells are devices that convert chemical energy to electrical energy through oxidation of a fuel (typically hydrogen, methanol, or ethanol) at the anode and reduction of oxygen at the cathode. They have the potential to be more efficient and less environmentally harmful than combustion engines and other heat transfer processes for the extraction of energy. Pt is a typical anode electrocatalyst, but it suffers from slow kinetics for methanol and ethanol oxidation and is susceptible to poisoning from impurities, even for hydrogen oxidation. Although several notable materials discoveries have improved anode electrocatalysts, the materials are far from ideal. While previous research has shown that ordered intermetallic compounds may be better electrocatalysts than those presently used, an investigation through all possible binary and ternary component electrocatalysts using traditional synthesis methods would take an inordinate amount of time.
We use a combinatorial method to more quickly search through the majority of compositions in binary and ternary phase diagrams for better fuel cell anode electrocatalysts than Pt. We deposit thin film composition spreads of up to three elements that cover up to 75% of a phase diagram. We test the compositions for electrocatalytic activity for methanol and ethanol oxidation using a fluorescence screening method and characterize the composition, surface morphology, and crystal structure of active regions.
We synthesized and tested films of Pt-Ru-X (where X = Pb, Co, Ni, Ag, V, Mo, Fe, In, and Sb), Pt-Pb-X (where X = Bi, Sn, Mo, Co, Cr, Fe, Nb, Ni, Si, Ta, and In), and Pt-Nb-X (where X = Co, In, Ni, Sb, and Fe). Of all the films tested, a Pt-Pb-Ta film deposited at 405C has an active region for methanol oxidation with the lowest onset potential of -50 +/- 25 mV vs. Ag/AgCl, bulk composition of Pt0.65Pb0.02Ta0.24O0.09 (measured by WDS), and an fcc Pt structure type. Pt-Ru-Pb films deposited at ambient temperature have regions with the lowest onset potentials for ethanol oxidation: the average onset potential is -235 +/- 25 mV vs. Ag/AgCl, the average bulk composition is Pt0.42Ru0.45Pb0.04O0.09 (measured by WDS), and the structure type is fcc Pt.Department of Energy, National Science Foundation

url: http://hdl.handle.net/1813/7752
date: 2007-06-25
creator:
viewed: 18
title: Cornell Chronicle Vol. 25, No. 1 - No. 44, 1993-1994
abstract: The Cornell Chronicle, the official weekly of record for Cornell University.

url: http://hdl.handle.net/1813/7753
date: 2007-06-25
creator:
viewed: 34
title: Cornell Chronicle Vol. 26, No. 1 - No. 43, 1994-1995
abstract: The Cornell Chronicle, the official weekly of record for Cornell University.

url: http://hdl.handle.net/1813/7755
date: 2007-06-25
creator:
viewed: 12
title: Cornell Reports Vol. 1, No. 1 - No. 4, 1967
abstract: Cornell Reports

url: http://hdl.handle.net/1813/7756
date: 2007-06-25
creator:
viewed: 10
title: Cornell Reports Vol. 2, No. 1 - No. 4, 1968
abstract: Cornell Reports

url: http://hdl.handle.net/1813/7757
date: 2007-06-25
creator:
viewed: 9
title: Cornell Reports Vol. 3, No. 1 - No. 4, 1969
abstract: Cornell Reports

url: http://hdl.handle.net/1813/7758
date: 2007-06-25
creator:
viewed: 29
title: Cornell Reports Vol. 4, No. 1 - No. 4, 1970
abstract: Cornell Reports

url: http://hdl.handle.net/1813/7759
date: 2007-06-25
creator:
viewed: 30
title: Cornell Reports Volume 5, No. 1 - No. 8, October 1970 - July 197i1
abstract: Cornell Reports

url: http://hdl.handle.net/1813/7760
date: 2007-06-25
creator:
viewed: 35
title: Cornell Reports Volume 6, No. 1 - No. 6, October 1971 - July 1972

abstract: Cornell Reports

url: http://hdl.handle.net/1813/7761
date: 2007-06-25
creator:
viewed: 24
title: Cornell Reports Volume 7, No. 1 - No. 6, October 1972 - July 1973
abstract: Cornell Reports

url: http://hdl.handle.net/1813/7762
date: 2007-06-25
creator:
viewed: 25
title: Cornell Reports Volume 8, No. 1 - No. 6, October 1973 - July 1974
abstract: Cornell Reports

url: http://hdl.handle.net/1813/7763
date: 2007-06-26
creator: Woodbury, Peter;Fahey, Tim;Nagle, Greg
viewed: 81
title: Distribution of Cs-137 in stream sediments and stream banks in the upper Susquehanna basin - 2006
abstract: This project is part of the Cornell University Agricultural Ecosystems Program: Understanding Sources and Sinks of Nutrients and Sediment in the Upper Susquehanna River Basin. Principal Investigators: Robert Howarth, Cornell University, Department of Ecology and Evolutionary Biology, Professor; Johannes Lehmann, Cornell University, Department of Crop and Soil Sciences, Associate Professor; Alice Pell, Cornell University, Department of Animal Sciences, Professor; Roxanne Marino, Cornell University, Department of Ecology and Evolutionary Biology, Senior Research Associate.This study expanded on our previous regional study of sediment sources in central New York by using 137Cs and other tracers to quantify the relative importance of sediment producing processes in the upper Susquehanna watershed. We sampled recently eroded sediments in a suite of watersheds in the upper Susquehanna basin of NY with contrasting historical and current land uses, and differing geomorphic and stream channel characteristics, focusing on likely high sediment-producing areas to identify subbasins with high levels of sediment contributed by bank erosion. By fingerprinting stream sediment sources, we hope to improve the basis for conceptualizing the process of erosion and sediment delivery and for devising and implementing effective sediment control programs. The most effective work with sediment tracers has involved the analysis of nuclear bomb-derived and natural fallout radionuclides that bond to sediment. Fallout radionuclides generally are retained in the upper few cm of soil; hence, they can be employed to analyze whether stream sediments have been eroded recently from surface sources or represent erosion from deeper sources like rills, gullies and streambanks. See the following for related work using similar methods: Nagle,G.N., T.J. Fahey, J.C. Ritchie, and P.B. Woodbury. 2007. Variations in sediment sources and yields in the Finger Lakes and Catskills regions of New York. Hydrological Processes 21(6): 828-838. Online: http://hdl.handle.net/1813/7661US Department of Agriculture Cooperative State Research, Education, and Extension Service under award number 2005-34244-15740.

url: http://hdl.handle.net/1813/7764
date: 2007-06-26
creator: Barazangi, Nimat Hafez
viewed: 31
title: Woman's Identity and the Qur'an: A New Reading

abstract: Copyright 2004, University Press of Florida.
For the Cornell Community: http://racereligion.library.cornell.edu/religion/ebook_profile028.php.
A Paperback edition (2006): http://www.upf.com/book.asp?id=BARAZF04.
See also: http://www.eself-learning-arabic.cornell.edu/publications.htm#1An original and uncompromising study of the Qur'anic foundations of women's identity and agency, this book is a bold call to Muslim women and men to reread and reinterpret the Qur'an, Islam's most authoritative source, and to discover within its revelations an inherent affirmation of gender equality.
Nimat Hafez Barazangi asserts that Muslim women have been generally excluded from equal agency, from full participation in Islamic society, and thus from full and equal Islamic identity, primarily because of patriarchal readings of the Qur'an and the entire range of early Qur'anic literature. Based on her pedagogical study of the sacred text, she argues that Islamic higher learning is a basic human right, that women have equal authority to participate in the interpretation of Islamic primary sources, and that women will realize their just role in society and their potential as human beings only when they are involved in the interpretation of the Qur'an. Consequently, a Muslim woman's relationship with God must not be dependent on her husband's or father's moral agency.
Barazangi, an American Muslim of Syrian origin, is a scholar, an activist, and a concerned feminist. Her analysis of the complex interaction of gender, religion, and the power of knowledge for self-identity offers a paradigm shift in Islamic studies. She documents the historical development of Islamic thought and describes how Muslim males have arrived at the prevailing exclusionary positions. She considers the issues of dependent morality and of modesty, especially in attire--a polarizing subject for many Muslim women. She integrates her analysis with interviews she conducted with Muslim women in the United States and Canada, comparing that data with information from a parallel group in Syria and with historical cases. She concludes that the majority of Muslim women today are not educated even for a complementary role in society.
The book offers a curricular framework for self-learning that could prepare Muslim women for an active role in citizenship and policy making in a pluralistic society and may serve as a guideline for moving toward a "gender revolution." Her main thesis, if carried out in the lives of Muslims in America or elsewhere, would be so radical and liberating that her discourse is more powerful than those of many Muslim feminists. She writes, "I intend this book to affirm the self-identity of the Muslim woman as an autonomous spiritual and intellectual human being."

url: http://hdl.handle.net/1813/7765
date: 2007-06-26
creator: Barazangi, Nimat Hafez
viewed: 35
title: Woman's Identity and the Qur`an: A New Reading (Arabic Translation)romanized Arabic: Qira'a Jadidah lil Qura'n: Al Huwiyah Al Dhatiyah lil Mara'
abstract: Copyright 2007, Nimat Hafez Barazangi. Reprinted with the permission of the University Press of Florida.
See also: http://www.eself-learning-arabic.cornell.edu/publications.htm#1An original and uncompromising study of the Qur'anic foundations of women's identity and agency, this book is a bold call to Muslim women and men to reread and reinterpret the Qur'an, Islam's most authoritative source, and to discover within its revelations an inherent affirmation of gender equality.
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url: http://hdl.handle.net/1813/7766
date: 2007-06-26
creator: with M. Raquibuz Zaman, and Omar Afzal;Barazangi, Nimat Hafez, First Editor
viewed: 30
title: Islamic Identity and the Struggle for JusticeAl Kayan Al Islami wa-Al Nidhal min Ajl Al`AdalahArabic Translation Editor
abstract: Copyright 1996, University Press of Florida. See also: http://www.upf.com/book.asp?id=BARAZS96; http://www.eself-learning-arabic.cornell.edu/publications.htm#1Book description: Islam today counts one billion people as adherents or believers. Its teachings produced a civilization that has flourished for fourteen centuries. Islamic identity exerts a potent force around the globe, though Muslims are often stigmatized by Westerners as a religious threat. Presenting the Islamic concept of justice, this book is an introduction to contemporary Islamic thought and practice, offering a catalyst for dialogue and understanding.

url: http://hdl.handle.net/1813/7767
date: 2007-06-26
creator: Barazangi, Nimat Hafez
viewed: 39
title: Da`una Natakalam: Mufakirat Amrikiyat Yaftahn Nawafidh al Iman `Ala `Alam MutagheyrWindows of Faith: Muslim Women Scholar-Activists in North America
abstract: Copyright 2002, Dar Al-Fikr. See also: http://www.fikr.com/cgi-bin/_listgroup.cgi?tp=2&step=0; http://www.eself-learning-arabic.cornell.edu/publications.htm#1See attached Arabic abstract.

url: http://hdl.handle.net/1813/7768
date: 2007-06-26
creator: Barazangi, Nimat Hafez
viewed: 36
title: Educational Reform
abstract: Copyright 1995, Oxford University Press.
This is a pre-copyedited version of an article accepted for publication in the edited Oxford Encyclopedia of the Modern Islamic World following peer review. The definitive publisher-authenticated version is available through Oxford University Press: http://www.oup.com/us/catalog/general/subject/ReligionTheology/

Islam/?ci=0195148037&view=usa.
See also: http://www.eself-learning-arabic.cornell.edu/publications.htm#1The dynamic relationship between political, social and educational changes is central to determining whether educational reform occurred in the Muslim world during the nineteenth and twentieth centuries. Changes in curricular and instructional policies and their implications for intellectual and cultural development are discussed in relation to four major issues.
The Muslim world initially rejected as irrelevant changes introduced from Europe in the early nineteenth century. Changes in technical, military, and vocational training dictated by local rulers and elites did not conform to the traditional educational practices that were the remnants of Islamic education. Comparing these practices with recent changes runs the risk of overstating where and how educational reform has taken place.
Available literature indicates that old practices were not reformed and changes resulted in no significant attitudinal or cultural development. Setting the European utilitarian and the Muslim altruistic modes against each other resulted in centralized state-controlled educational institutions and a complete departure from Islamic education.
The intellectual stagnation that characterized the Muslim world since the early fourteenth century remained despite mass and compulsory schooling in the postcolonial era. Recent reports indicate school and teacher shortages, low educational quality, lack of planning and of curricular and instructional compatibility, and disparity in access to and completion of all types and levels of education between the sexes and between rich and poor and rural and urban populations.

url: http://hdl.handle.net/1813/7769
date: 2007-06-26
creator: Barazangi, Nimat Hafez
viewed: 32
title: Religious Education
abstract: Copyright 1995, Oxford University Press. This is a pre-copyedited version of an article accepted for publication in the edited Oxford Encyclopedia of the Modern Islamic World following peer review. The definitive publisher-authenticated version is available through Oxford University Press: http://www.oup.com/us/catalog/general/subject/ReligionTheology/Islam/?ci=0195148037&view=usa. See also: http://www.eself-learning-arabic.cornell.edu/publications.htm#1Internal political and social movements of the eighteenth, nineteenth, and twentieth centuries neglected Islamic education within the Muslim world and allowed external secular and missionary ideas to turn it into "religious" education. Variations in worldview and interpretation of Qur'anic principles of education resulted in emphasis on form over essence in educating Muslims.
Historical accounts of Islamic/Muslim education provide a variety of perspectives on its nature and the function of its traditional institutions. Cultural and political restraints ended Islamic education as a functional system aimed at understanding and appropriating Qur?anic pedagogical principles and limited it to "religious" knowledge confined to selected males. Islamic education has recently been confused with a subject matter, "religion," or a moral, social codes, akhlaq. The primacy of formalized and juridical education over the informal development of Islamic character resulted in curricular and instructional differentiation between class and gender, a separation of "Islamic" and "non-Islamic" knowledge, and a dichotomy between ideal and practice in Muslim education.

url: http://hdl.handle.net/1813/7771
date: 2007-06-26
creator: Barazangi, Nimat Hafez
viewed: 26
title: Understanding Muslim Women's Self-Identity and Resistance to Feminism and Participatory Action

Research
abstract: Copyright 2004, Praeger Publishing.
This is a pre-copyedited version of an article accepted for publication in the edited book Traveling Companions: Feminism, Teaching, and Action Research, following peer review. The definitive publisher-authenticated version is available through Praeger Publishing: http://www.greenwood.com/catalog/C8027.aspx. See also: http://www.eself-learning-arabic.cornell.edu/publications.htm#2While headed in similar directions, rarely have feminist researchers and participatory action researchers acknowledged each other as collaborators with mutually important contributions to the journey. Through the work presented in this volume, the contributors hope to influence feminist scholarship to be more participatory and action-oriented, and participatory action research to be more grounded in feminist theories and values.
This book has two distinct yet interrelated and intertwining aims. First, it creates a space for a diverse group of educators, researchers, and scholars to grapple with the multiple and complex issues that are threaded throughout feminist and action research. Second, it seeks to examine how action research and feminist research can complement each other in developing strategies for engaging in collaborative research that is rooted in activism and productive change.

url: http://hdl.handle.net/1813/7772
date: 2007-06-26
creator: Barazangi, Nimat Hafez
viewed: 17
title: Muslim Women's Education: Between East and West
abstract: Copyright 2004, Nimat Hafez Barazangi.
This is a pre-published version of an article accepted for publication in the edited book Women in Islamic and Judaic Societies following peer review to be published by Holmes and Meier: http://www.holmesandmeier.com. See also: http://www.eself-learning-arabic.cornell.edu/publications.htm#2The media and the popular culture literature in America and Europe are not the only biased groups in portraying women in Islam as "oppressed" and that their liberation can take place only outside Islam. Contrary to my trust in the impartiality of Western scholarly and activists groups, I am finding that such groups are as inequitable when it comes to addressing the "Muslim woman question" from within the framework of Islam. Empirical and historical findings in my current research on Muslim women's education in western societies, such as in North America, suggest that the absence of concerns for Muslim women's religious education is not only evident, but particularly polarized during the last two decades of the twentieth centuries. Though many of these groups are advocates of Judo-Christian women's participation in their respective religious theological and scholarly ranks, none of these groups raises the issue of Muslim women inclusion in decision-making and scholarly ranks among Muslim communities.
The Qur'an and the Hadith are rich in precepts that speak of Almighty God's design for harmonious social order and humanity's responsibility for understanding God's design and working from within it. For many Muslims, including those active in North America, citing these precepts is enough to prove that Islam has always embraced a well integrated educational imperative and comprehensive knowledge of the Islamic teachings for all Muslims. Few, however, are critical when the discussion concerns women's Islamic education and the women's role as preservers of culture and as the primary educators within the faith of Islam. These few Muslims may readily acknowledge that women have more power in Islam than most Westerners realize, but when the question of allowing more women to become Islamic scholars and jurists is raised, the issue becomes that of women's primary role as nurturing mother and wife instead of educating scholar and a partner in the interpretation of the tradition.
Meanwhile, Muslim women in the USA and Canada, as generally is the case in other Western societies, are not free to practice certain aspects of Islam with the excuse that women are being oppressed by Islam. While Muslim women are trying to build their own agenda for emancipation, they are being torn between secular

humanists who do not allow them to practice their own reading of the religion, and the Muslims who still think that a women's Islamicity is expressed through the wearing of a headcover and seclusion and by her male household.
Analyzing this polarization in the context of Muslim women's education historically, since the interaction between the West and Muslim societies has intensified in late nineteenth century, and empirically, using North American Muslim women as the case-in-point, indicates a discrepancy in the world views on education, on Islamic education, and on women's education. This discrepancy resulted in a tension between Muslims and Westerners in which Muslim women's education suffered the brunt. By synthesizing these discrepancies and the resulting historical and contemporary practices, I will conclude with some suggestions for developing an integrated educational strategies for Muslim women within the Islamic framework and in the contemporary Western social context.

url: http://hdl.handle.net/1813/7773
date: 2007-06-26
creator: Barazangi, Nimat Hafez
viewed: 13
title: Domestic Democracy: The Road to National and International Democracy
abstract: Copyright 2003, Nimat Hafez Barazangi. See also: http://www.islam-democracy.org/4th_Annual_Conference-Barazangi_paper.asp; http://www.eself-learning-arabic.cornell.edu/publications.htm#2In this paper, I draw an analogy between participatory democracy in the Qur`anic gender revolution and the national-international democratic relationship. Qur`anic relations create an active process of individual political consciousness and social action, while the present national-international relations hardly create national awareness or global justice. I argue that antithetical to the active process of the Qur`anic gender revolution stands the analysis of Muslim women's role in the political discourse and the governance of Muslim societies merely within gender "add-on" strategies, particularly as discussed in contemporary Western academic and Muslim traditionalist discourses.
As a Muslim woman scholar-activist, I view the use of gender and other constructs as deactivating factors in the conscious process of participatory democracy within Islam. This deactivation of consciousness could explain why some Muslim women scholar-activists resist feminism that emphasizes universal group solidarity, without paying attention to individual worldviews. It could also explain why these women resist the predominantly Muslim male elite conception and practice of the consultative process (shura): participation is limited to the selected few, and women's participation is an "add-on" or only to address domestic issues.
By defining Islam as an action-oriented worldview that encompasses social, cultural, and political elements, including religious and secular "Ijtihad", I emphasize this worldview's reliance on human capacity to reason, and its goal being the construction of fair decision-making process that brings equilibrium (Taqwa). I bring to the surface underlying assumptions about how tension in the domestic relationship is reflected in tensions between national and international relationships. I specifically address the tension between feminists-generated conceptions of democracy vis-a-vis Muslim women's participatory democracy. These tensions are manifested on four levels: ontological or value claims, epistemological or knowledge claims, cultural or historical claims, and praxis or socialization claims. My focus will be on the relation between the power of knowledge and social and political constructs.
My goal is to develop a self-learning process to improve my own capacities and those of other Muslim women (and men) to control our destinies more effectively: to change life situations in the home, in the learning/work environment, and in the larger social context to support self-realization and self-determination. It means the ability to bridge individual political consciousness and social action to effect a cognitive and attitudinal change on the individual, social and political levels, mitigating potential resistance by both modernists and traditionalists.

url: http://hdl.handle.net/1813/7774
date: 2007-06-26
creator: Barazangi, Nimat Hafez
viewed: 12
title: Al Huwiyah Al Dhatiyah lil Mar'a Al MuslimahSelf Identity of the Muslim Woman
abstract: Copyright 2003, Dar Al-Fikr.
This is a pre-copyedited version of an article accepted for publication in the edited journal Al Mar'a wa-Tahawlat Asr Jadid following peer review. The definitive publisher-authenticated version is available through Dar Al-Fikr: http://www.fikr.com/cgi-bin/_listgroup.cgi?tp=2&step=0. See also: http://www.eself-learning-arabic.cornell.edu/publications.htm#2See attached abstract in Arabic.

url: http://hdl.handle.net/1813/7775
date: 2007-06-26
creator: Barazangi, Nimat Hafez
viewed: 34
title: Muslim Women's Islamic Higher Learning as a Human Right: Theory and PracticeArabic translation under the title: Da`una Natakalam: Mufakirat Amerikiyat Yaftahn Nawafidh Al-Iman (Dar Al-Fikr, 2002)
abstract: Copyright 2000, Syracuse University Press.
This is a pre-copyedited version of an article accepted for publication in the edited book Windows of Faith:Muslim Women Scholar-Activists in North America following peer review. The definitive publisher-authenticated version is available through Syracuse University Press: http://www.syracuseuniversitypress.syr.edu/books-in-print-series/women-religion.html. See also: http://www.eself-learning-arabic.cornell.edu/publications.htm#2Limited access to Islamic higher learning is argued to be the basis for the Muslim woman's inability to emancipate and to self-identity as a Khalifa (trustee)--a Qur'anic mandate (or potential) of human existence. Muslim woman's reliance solely on others' interpretations to guide her spiritual and intellectual needs, be it those of Muslim or of non-Muslim men and women, is by itself an evidence that Muslim woman's right to understand, to consciously choose, and to actively act on her choice of Islam is being compromised. Full access to the Diin, the Islamic belief system, calls for the Muslim woman to take part in the interpretation of Islamic teachings of the Qur'an and the Hadith and to maintain the pedagogical dynamics of Islam, rather than being limited to maintaining the human re-production, the Muslim family structure, or the individual human rights as suggested by others.
My understanding of woman's gender justice vis-a-vis "liberation" within the Islamic worldview is based on epistemological reading (the philosophy of knowledge) of the Qur'an. The rationale behind the demand for woman's access to knowledge is derived from the Islamic framework. The methodologies of the discipline of education and learning and the struggle for human dignity that define the parameters for Muslim woman's emancipation are grounded in that framework. To examine her role as a human entity in the Qur'an does not merely concern the Muslim woman's "freedom of expression;" it concerns the woman as an autonomous spiritual and intellectual human being who can effect a change in history. The intent of this chapter and of my overall research is to make a contribution towards an educational and pedagogical interpretation of the Qur'an for women living in the post-modern era and thereby to produce an action plan for the Muslim woman to regain her identification with Islam. My analysis of empirical data concerning Muslim women's perception of Islam, the contemporary North American Muslim woman, in a historical context serves to clarify the meaning and the implications of Islamic higher learning regardless of these women's educational level. Preliminary observations suggest that the majority of Muslim women's movements do not aim to eliminate the tension between the two sexes by claiming sameness in the struggle for equality. Rather, their goal is Taqwa (to balance) the tensionback in favor of woman, as the Qur'an intends in the first place when human beings, male and female, were entrusted with individual rights and responsibilities toward themselves, each other, and the universe. I will argue that one of the basic principles of Islamic justice is gender justice.

The interpretations of these "equal" rights and responsibilities, however, stem from different perspectives of Islam. Muslim women groups are scattered on a continuum from the idealized polemic Muslim to the idealized static Western perspectives. Few are those who are making efforts to exact the balance between these perspectives.
The pedagogical implications of this research lies in : (1) intervening among Muslim men by coaching them to rethink and to act within the balanced perspective of Islam and its first source, the Qur'an, away from both the many layers of Muslim "taqlid " (following precedence) and from Western interpretations of Islam, (2) facilitating for Muslim women the environment and the means to realize their identity as autonomous spiritual and intellectual beings, and to realize the vastness of their task in educating themselves and others in Islam--encluding changing the entrenched paradigm of understanding Islam studies and its practice, and (3) integrating human-rights activists' concerns within the Qur'anic concerns for a just human society, where justice means the balance and fair play in the ideals and realities among all humans.

url: http://hdl.handle.net/1813/7776
date: 2007-06-26
creator: Barazangi, Nimat Hafez
viewed: 26
title: Self-identity as a Form of Democratization: The Syrian ExperienceTa`rif al Dhat Kashakl min Ashkal al Dimoqratiyah

This is a pre-copyedited version of an article accepted for publication in the edited book Democratization and Women's Grassroots Movements following peer review. The definitive publisher-authenticated version is available through the Indiana University Press: http://www.iupress.indiana.edu/catalog/product_info.php?cPath=1037_1100_1188&products_id=21083. See also: http://www.eself-learning-arabic.cornell.edu/publications.htm#2This chapter combines historical research and a field reporting of participatory action research (PAR) with one of the grassroots women's movement in Syria. I will analyze the participatory or democratization efforts by members of this informally organized group (the group) that is working toward Muslim women's self-identity. Islamic higher learning and its relation to Islamic principles of gender justice provide the framework of this analysis.
Various factors have been affecting the priorities in women's Islamic knowledge and self-realization within the predominantly Muslim society of Syria. Even when the group emphasizes community-based informal education and social welfare activities, inside and outside views of Islam and Muslim women do influence the decision-making process. These decisions may concern matters ranging from the group agenda to the members' identifications with Islam. Interpreting Islam in this group's course of action is, consciously or unconsciously, affected by the domestic, national and international affairs of Syria. The present Syrian constitution does not declare Islam as a state religion. Yet, it is hardly possible to find a discussion of any issue in Syria or any other Middle Eastern and Muslim countries without invoking a "monolithic" representation of Islamic religion-cultural and political image. Meanwhile, no studies attempted to present the Islamic conceptual and pedagogical foundations for individuals' self- identity with Islam and the consequent civic decision-making process that affects the individual and communal life.
As a PAR researcher and educator, my working and reporting on this group is to argue for the change in discourse to be able to understand Muslim women's movement towards democratization. Some members of the group felt a need to further their indigenous educational strategies and invited me to participate in the group's study-circles. The group strategies consisted on reading the Qur'an and acting on what they learn. I knew of the group earlier and had informally observed some of their activities during subsequent visits to Syria. My presence in Syria for a period of three months annually during 1995-1997 helped develop this research and educational working relationship with the group.
Considering the Islamic principle of self-discipline for self-realization as neither inferior nor superior, this

group affirms autonomous responsibility as central to the Islamic religio-political process of educating. The group interpreted this principle to mean first-hand knowledge of Islam from its primary sources. Intimate knowledge of these sources (the Qur'an and the books of Hadith that contain the Prophet Muhammad's extrapolation of Qur'anic principles) is viewed as the only means to 'liberation.' Liberation is intended to rid oneself of the dichotomous agendas of "liberal" vis-a-vis "traditional" interpretations of Islam.3 The group's primary concern have been to understand and apply the Qur'anic way of life. Participatory decision-making process in the group, has been confined within the males' 'traditional' (i.e., grounded in absolute principles) interpretation of Islamic texts concerning the role of individual within a religio-socio-political structure of family and society. My work with this group, as a facilitator, takes the Islamic principle of self-discipline one step further to affirm self-identity within the Islamic premise of gender justice.
To facilitate their movement from the predominantly males' interpretations of the Islamic primary sources is to make the Islamic principle of trusteeship (Qur'an, 2:30) explicit through higher Islamic learning. A Muslim individual may not fulfill the Islamic pedagogy of a trustee without being able to autonomously choose, understand, and act on her choice of Islam as a worldview. This process requires both autonomous morality and intimate knowledge of the Qur'an before an individual can act as a trustee. Proxy or heternomous moralities--though represent prevalent practices--do not replace autonomous morality. Community welfare is central to Islamic principles of governing, but it does not preclude the primacy of autonomous morality as a form of self-governing. Within the guidance of the Qur'an and Hadith, when in conflict, the community collective welfare takes precedent over individual rights. My analysis of this group self-learning and self-governing is intended to present a form of democratization by this Syrian feminine movement to affirm Muslim women's agency. The group may not call its work democratic, nor feminine. This movement, though, has achieved and maintained some form of effective intellectual and civic participation despite the historical and cultural constraints that dominated the Syrian society, like other Muslim-Arab societies. My intention is not to compare this Syrian grassroots movement with other movements inside or outside Syria, but to change the perception of Muslim women's invisibility as an indicator of full dependency and/or oppression. By changing the discourse we find that "mainstream" literature concerning democratization, Syrian society, and Syrian Muslim Arab women have overlooked this type of groups because these groups are not connected to the center of power. Applying self-identity for self-realization approach within the Islamic framework of gender justice as a base of participation or democratization presents different set of assumptions. Self identity for self-realization approach presupposes higher Islamic learning to re-gain the power of knowledge as a means of active agency. Further synthesis of the context of this study, the history and culture of Syria provide evidence for this group's active agency.

url: http://hdl.handle.net/1813/7777
date: 2007-06-26
creator: Barazangi, Nimat Hafez
viewed: 25
title: Parents and Youth: Perceiving and Practicing Islam in North America

This is a reprint of a pre-copyedited version of an article accepted for publication in the edited book Muslim Families in North America following peer review. The definitive publisher-authenticated version is available through Alberta University Press: http://www.uap.ualberta.ca/UAP.asp?lid=41&bookid=162. This article was reprinted with permission by Temple University Press: http://www.temple.edu/tempress/titles/1255_reg.html
See also: http://www.eself-learning-arabic.cornell.edu/publications.htm#2This chapter examines how some Arab Muslim youth and families in North America perceive themselves both as Arabs and as Muslims in the context of Canadian and United States societies. Parents are concerned with how best to transmit the Islamic ideological and Arab cultural heritage to their children. One of their problems derives from differences

among Arab Muslims, who come from varied national origins and hold several interpretations of the Islamic view, not all of which are based on the Qur'an; as a result they also have different nationalistic attachments to their understanding of Arab heritage. A second problem arises between immigrant parents and their American-reared children. The children may participate in American culture to a greater extent than their parents, and they are constantly faced with the conceptual need to accommodate potentially conflicting points of view. Effective identity transmission requires the determination of the nature and extent of the different interpretations held by parents and their children and of the way these interpretations are reflected in their practice of Islam and association with the Arabic heritage.

url: http://hdl.handle.net/1813/7778
date: 2007-06-26
creator: Barazangi, Nimat Hafez
viewed: 28
title: The Equilibrium of Islamic Education: Has Muslim Women's Education Preserved the Religion?
abstract: Copyright 1998, Nimat Hafez Barazangi.
This is a pre-copyedited version of an article accepted for publication in the edited journal Religion and Education following peer review. The definitive publisher-authenticated version is available through Religion and Education: http://fp.uni.edu/jrae/islamicissuetoc.htm. See also: http://www.eself-learning-arabic.cornell.edu/publications.htm#2I focus on issues of equilibrium in Muslim women's education to understand the tension between the ideals and practice and its ramifications for Islamic and Muslims' education in the United States. I argue that one maintainer of Muslim women's low effectiveness, perpetuated across new generations of Muslims, is the general perception that women are the preservers of culture and religion by proxy. The issue before us: How is it possible for a morally dependent individual to instill the character of autonomous spiritual and intellectual Muslim who can integrate effectively in a "pluralistic" society?
In addition to the various degrees of perceptions and misconceptions about Islam, religious tolerance and Multiculturalism, the problem is mainly of perceiving women, particularly Muslim women as morally dependent and, hence, socially and politically irrelevant or non-central to issues of Islamic education. With the exception of few, the majority of Muslim women are neither involved in the educational decsion-making of the Muslim community nor of this nation. Often perceived as preservers of customary practices instead of agents of cultural change and contributors to inter-cultural understanding, Muslim women and their Islamic higher learning has been marginalized.

url: http://hdl.handle.net/1813/7779
date: 2007-06-26
creator: Barazangi, Nimat Hafez
viewed: 31
title: Muslim Women's Islamic Higher Learning as a Human Right: The Action Plan
abstract: Copyright 1997, Syracuse University Press.
This is a pre-copyedited version of an article accepted for publication in the edited book Muslim Women and the Politics of Participation: Beijing Platform following peer review. The definitive publisher-authenticated version is available through the Syracuse University Press: http://syracuseuniversitypress.syr.edu/index.html. See also: http://www.eself-learning-arabic.cornell.edu/publications.htm#2How do we expect the Muslim woman, collectively and individually, to identify with Islam as revered teachings and to act within its parameters, and to accommodate new human knowledge, be it that of a local Mufti's (clergy) injunction or a human rights advocate's recommendation, while neither Muslim societies nor human rights advocates recognize her self-identity as an autonomous spiritual and intellectual being? Accessing Islamic higher learning (deeper knowledge of the Islamic primary sources, the Quran and the authentic Hadith [prophetic tradition]), is argued to be the means by which the Muslim woman self-identity is recognized as a trustee.

Relying solely on others' interpretations to guide her spiritual and intellectual needs is by itself an evidence that the Muslim woman's right to understand, to consciously choose, and to actively act on her choice of Islam is being compromised. Muslim Woman's deeper knowledge of the Islamic primary sources is significant to defining her relationship to God and to others.
Muslim woman's understanding of "human rights" within the Islamic worldview, based on pedagogical reading (the art of learning and teaching) of the Quran is significant. I derive the rationale behind the demand for woman's educational rights from the Islamic worldview. The methodologies of the discipline of education and the strategies to implement the platform for action--that define the parameters for the Muslim woman's human rights--are grounded in that worldview. Examining her role as a human entity in the Quran does not merely concern the Muslim woman's "free choice;" it concerns her ability to maintain the pedagogical dynamics of Islam to effect a sustainable change in history. Self-realization of Muslim woman can only effect a sustainable change in history when that self-realization unfolds the meaning of trusteeship. The Quranic intention of trusteeship or vicegerency (AL-khilafah) (2:30) eliminates the replacement of the individual trusteeship by proxy.
The intent of this essay is to make a pedagogical interpretation of the word and the script of the sacred, analyzing empirical data concerning Syrian Muslim women's perception of Islam regardless of their educational level. Such an interpretation is to be a meaningful exercise to women living in the post-modern era and to produce an action plan for the Muslim woman to regain her identification with Islam. One of the Quranic intentions in entrusting human beings with individual rights and responsibilities toward themselves, each other, and the universe is to bring a balance between the sexes. The interpretations of these rights and responsibilities, therefore, need to stem from efforts to exact the balance between polarized perspectives that have dominated, for instance, the fields of Muslim women's studies and of human rights activism.
The strategic implications of this chapter lie in : (1) presenting a pedagogical paradigm to rethink and to act within the balanced perspective of Islam and its primary source, the Quran, away from the many layers of "taqlids" (following precedence) and from Western rationalization of Islam, (2) facilitating for Muslim women the strategies to realize their identity and to re-learn Islam in its clear, transforming meanings, and (3) interpreting human-rights activists' concerns within the Quranic concerns for a just human society, where justice means balance and fair play in the order of things, and a sustainable change of women's role.

url: http://hdl.handle.net/1813/7780
date: 2007-06-26
creator: Barazangi, Nimat Hafez
viewed: 31
title: Vicegerency and Gender Justice in Islam

This is a pre-copyedited version of an article accepted for publication in the edited book Islamic Identity and the Struggle for Justice following peer review. The definitive publisher-authenticated version is available through the University Press of Florida: http://www.upf.com/book.asp?id=BARAZS96. See also: http://www.eself-learning-arabic.cornell.edu/publications.htm#2This chapter summarizes Islamic view of life as a system and analyzes some implications of this system for family and male-female relationships. It is necessary, therefore, to replace the conceived notion that Islam is a religion limited to the ritual acts of worship (the five pillars) with the affirmation that Islam is a system designed for a purpose, and that this system is either accepted as a whole, understood within its ontological worldview, and acted upon within its components, or its practice may not be total. It is as important to understand that one cannot be operating partially within this system and still claim it as the base of operation. That is because whenever something is not accomplished according to what the system was designed to achieve one cannot discredit the system for not fulfilling its goals. One might understand the reason(s) that have lead to the unexpected results, rather, by exploring the steps that may have been missed during the application.

I am proposing that Islam as a system or an ideology has a central concept (or an essence) around which certain principles (or secondary and tertiary concepts) are built. These principles vary in their priority depending on their closeness to objectifying the central concept. The closer they are, the higher value they should be given and the more consideration they should receive in application of the system. Then on the outer circle (of the imaginary diagram) there are the auxiliary hypotheses (or the manifestations) which, if were appropriated within the framework of the central concept and with the essence of the principles as the base, will achieve the intended results (or the outcome) of the system.
The focus of this paper is on the Islamic principle of al-Khilafah (vicegerency of human beings to Allah as the Only God and the Supreme Guide), its social implications for the family, and where and how its manifestations may have been mistaken for its essence. Al-Khilafah is the purpose of the Islamic system, that is, fulfilling the purpose of creation and the will of Allah through human morality. The first part of the argument is that the principle of al-khilafah has been generally understood by Muslims and non-Muslims alike, and has been practiced by the majority of Muslims on its manifestation level and not at the essence level of the principle. Furthermore, the perception (conception and practice) of this principle has been generally outside the Islamic ontological view and without consideration of the central concept of Islam, Tawhid (the Oneness of God and humanity).
The second part of the argument will be stated as follows. Unless scholars, Muslims or non-Muslims, who are concerned with the study of Islamic family realize the different conceptual levels of the Islamic system, understand the variation in the implications of the different conceptualizations, and use the central concept as the epistemological base, their attempt to understand or prescribe solutions to injustice in male-female relations in the Muslim family will fail. Also, as long as Muslims are practicing the principle of al Khilafah and its social and political implications on the manifestation level only, they will not fulfill that principle nor the central concept of Islam, Tawhid.

url: http://hdl.handle.net/1813/7781
date: 2007-06-26
creator: Barazangi, Nimat Hafez
viewed: 32
title: Arabic Self-Learning: A Module of A Research-Based Computerized Curriculum
abstract: Copyright 1999, American Association of the Teachers of Arabic.
This is a pre-copyedited version of an article accepted for publication in the edited journal Al-Arabiyya, A Journal of the American Association of Teachers of Arabic following peer review. The definitive publisher-authenticated version is available through the American Association of Teachers of Arabic: http://www.wm.edu/aata/index.php. See also: http://www.eself-learning-arabic.cornell.edu/publications.htm#3We discuss a research-based, computerized curriculum in Arabic. Self-Learning of Arabic as a foreign language (AFL) at the college level is presented as one module of this curriculum. Computer simulation of communicative and structural Arabic are intended to facilitate metacognitive learning or higher order thinking of Arabic and Arabic language learning strategies.

url: http://hdl.handle.net/1813/7782
date: 2007-06-26
creator: Haddad, Safa;Barazangi, Nimat Hafez;Rebdawi, Ghaya
viewed: 32
title: Al Hasub Wa-Ta`allum Al Lugha Al `Arabiyya li-Ghayr Al-Mukhtasiin Biha Bi-Al Tariqa al TawasulliyaLearning of Arabic Language for Native Non-Specialists: A Model of Research-Based Computerized Curriculum
abstract: Copyright 1998, Al-Takddom El-Elmi, A Publication of the Kuwait Foundation for the Advancement of Science.

This is a pre-copyedited version of an article accepted for publication in the edited journal Al-Takddom El-Elmi, A Publication of the Kuwait Foundation for the Advancement of Science following peer review. The definitive publisher-authenticated version is available through the Kuwait Foundation for the Advancement of Science: http://www.kfas.com. See also: http://www.eself-learning-arabic.cornell.edu/publications.htm#3 We discuss a research-based, computerized curriculum in Arabic. Learning of Arabic language for native non-specialists (ANNS) at the college level is presented as one module of this curriculum. Computer simulation of communicative and structural Arabic are intended to facilitate metacognitive learning or higher order thinking of Arabic language learning strategies.

url: http://hdl.handle.net/1813/7783
date: 2007-06-26
creator: Barazangi, Nimat Hafez
viewed: 31
title: Nidham Tarbawi Hasubi lil Ta`alumComputerized Educational System for Learning: An Application for Arabic Language
abstract: Copyright 1997, Al-Takddom El-Elmi, Kuwait Foundation for the Advancement of Sciences.
This is a pre-copyedited version of an article accepted for publication in the edited journal Al-Takddom El-Elmi, A Publication of the Kuwait Foundation for the Advancement of Sciences, following peer review. The definitive publisher-authenticated version is available through the Kuwait Foundation for the Advancement of Sciences: http://www.kfas.com. See also: http://www.eself-learning-arabic.cornell.edu/publications.htm#3
This paper is intended to summarize and complement the two reports prepared by Bawab et al., the linguistic and technical team from The Higher Institute for Applied Sciences and Technology (HIAST) headed by Dr. Muhammad Mrayati of the Scientific Studies and Research Center (SSRC) in Damascus, Syria. The first, entitled "PC-Based Conjugation of Arabic Verbs," was presented at the Arab School of Science and Technology's Second Spring Session on Information Technology and Applications, sponsored by the United Nations Industrial Development Organization and SSRC in May 25-31, 1992. The second (in Arabic), entitled "al Nidham al Sarfi al Nahawi li al `Arabiyah bi al Hasib (Computerized Conjugational and Syntactical System of Arabic)," was presented at the Second Conference on Arabic Computational Linguistics in Kuwait, November 26-29, 1989.
The objective of this paper is twofold. One, to provide some suggestions concerning the educational applications of the Expert System (Nidham Khabir) and one of its sub-program, the PC-Based Conjugation of Arabic verbs . During my visit to the SSRC in January 1993, I was asked by the above team to develop these suggestions, based on my practical introduction to the system in addition to reading the above two reports. Both, through the practical demonstration of the system by the team following prior discussions of the linguistic groundwork and information technology that underlie the system, and throughout the reading of the reports, I felt a need to make this work known to all users of Arabic. Thus, the second objective is to share this significant achievement of the Syrian team with Arabic linguists, Teachers of Arabic and scholars of Arabic and Islamic studies.

url: http://hdl.handle.net/1813/7784
date: 2007-06-26
creator: Barazangi, Nimat Hafez
viewed: 14
title: The Legacy of a Remarkable Muslim Woman: Sharifa Alkhateeb
abstract: Copyright 2004, Association for Middle East Women's Studies, Indiana University Press.
This is a pre-copyedited version of an article accepted for publication in the edited journal The Review, Newsletter/Journal of Middle East Women's Studies, following peer review. The definitive publisher-authenticated version is available through Indiana University Press: http://www.iupress.indiana.edu/

catalog/index.php?cPath=519_832. See also: http://www.eself-learning-arabic.cornell.edu/publications.htm#4American Muslim intellectual, activist, journalist, writer, and friend to all Muslim women, Sharifa Alkhateeb, passed away Wednesday, October 21, 2004 AD/7 Ramadhan, 1425 AH.
Sharifa has been an advocate for Muslims and more specifically Muslim women nationally and internationally for the last 35 years. She was the creator, co-founder, and president of the North American Council of Muslim Women (NACMW).

url: http://hdl.handle.net/1813/7785
date: 2007-06-26
creator: Barazangi, Nimat Hafez
viewed: 15
title: The Equilibrium in Islamic Education in the US
abstract: Copyright 2000, ISIM Newsletter, International Institute for the Study of Islam in the Modern World.
This is a pre-copyedited version of an article accepted for publication in the edited publication ISIM Newsletter following peer review. The definitive publisher-authenticated version is available through the International Institute for the Study of Islam in the Modern World: http://www.isim.nl/. See also: http://www.eself-learning-arabic.cornell.edu/publications.htm#4 American Muslims do face misconceptions, yet their view of the woman as morally dependent, hence socially and politically non-central to issues of Islamic and multicultural education is indeed problematic. How is it plausible for a morally dependent individual to instill the character of an autonomous spiritual and intellectual Muslim who can integrate effectively in a "pluralistic" society? A change in the paradigm of moral or religious education beyond multiculturalism may be the solution.

url: http://hdl.handle.net/1813/7786
date: 2007-06-26
creator: Barazangi, Nimat Hafez
viewed: 18
title: Worldview, Meaningful Learning, and Pluralistic Education: The Islamic Perspective
abstract: Copyright 1993, Nimat Hafez Barazangi.
This is a pre-copyedited version of an article accepted for publication in the edited journal Religion and Public Education (now Religion and Education) following peer review. The definitive publisher-authenticated version is available through Religion and Education: http://fp.uni.edu/jrae/index.htm. See also: http://www.eself-learning-arabic.cornell.edu/publications.htm#4In this paper I attempt to bridge some of the needs and realities of American multicultural educational paradigms in the 1990s and the often ignored educational goals, principles, and assumptions in a liberal democratic society that aspires to pluralism. I will argue that (a) multicultural paradigms are as essential to improving "mainstream" education as they are to furthering the education of different cultural groups and (b) plurality should be concerned with meaningful learning in both a particular and a multiple perspective and worldview.

url: http://hdl.handle.net/1813/7787
date: 2007-06-26
creator: Barazangi, Nimat Hafez
viewed: 15
title: Particularism and Multi-Cultural Education: Experience of Muslims in the United States
abstract: Copyright 1993, The Islamic Academy - Cambridge.
This is a pre-copyedited version of an article accepted for publication in the edited journal Muslim Education Quarterly following peer review. The definitive publisher-authenticated version is available through the

Islamic Academy - Cambridge. See also: http://www.eself-learning-arabic.cornell.edu/publications.htm#4An elementary school Muslim girl responded to her mother with the phrase, "BUT MOM, ALL MY FRIENDS DO THAT! WHY CAN'T I?" questioning the need to be different every time the mother said "No" to an activity the girl wanted to join neighborhood boys and girls in doing. The mother often contradicted herself and allowed her daughter to play because she was not able to explain the rationale for being different. The mother's spontaneous "No" response comes from the fact that in her home Islamic culture, children's activities are not usually separate from those of the family. Also, children rarely played in sexually heterogeneous groups where she was raised (the Indian subcontinent). Under the daughter's persistence, the mother gave permission, rationalizing to herself that a bicycle ride or video game with the neighborhood children would not affect the "Islamic" identity and values of her daughter. The mother rarely interacted with the parents of her daughter's playmates. She hardly knew who the playmates were or who supervised the play. Her understanding of these neighbors' values and worldview came only from what she saw manifested in their external behavior and in the norms of the society at large. The mother had contacts mainly with other mothers from her country of origin.

When the young girl reached puberty, her father, who rarely participated in decision making concerning his daughter's upbringing, told the young girl that she was to dress differently, she was no longer to have unnecessary conversations with boys, and she could no longer join in free play with her friends. The girl resisted her father's orders, and the mother supported her discreetly against the father's wishes. The mother thought that the father was being harsh and that there was no need to set such strict rules to ensure that the girl would develop the "Islamic" manners and the understanding of the "Islamic" religion as she, the mother, had been practicing it.

When the girl became a high school student, she took swimming as one of the sport activities required in the physical education course. She did not realize that close contact with the opposite sex, particularly in immodest clothes (a bathing suit in the presence of the opposite sex), violates a basic precept of the Islamic principle of modesty.

url: http://hdl.handle.net/1813/7788
date: 2007-06-26
creator: Barazangi, Nimat Hafez
viewed: 33
title: Islamic Education in the United States and Canada: Conception and Practice of the Islamic Belief System

This is a pre-copyedited version of an article accepted for publication in the edited book The Muslims of America following peer review. The definitive publisher-authenticated version is available through Oxford University Press: http://www.oup.com/us/catalog/general/subject/ReligionTheology/Islam/?view=usa&ci=9780195085594. See also: http://www.eself-learning-arabic.cornell.edu/publications.htm#4This study examines the way immigrant Muslim parents and their offspring perceive Islam and view its practice in the context of the Societies of the United States and Canada.

Historically and at present, the worldview of North American Muslims has generally differed from that of other groups who are either natives of or immigrants to North America. Yet not until recently has any substantial research been done on the presence of Muslims in North America let alone on their learning patterns or the role of differing worldviews in the education of their children.

Muslims may not be considered a minority ethnic group because they neither have the characteristics of the term minority ethnic nor Constitute a single linguistic, cultural, or socioeconomic group. Study of Muslims simply as minority ethnics or national groups will not help in understanding the variations in their attempts to maintain their Islamic identity. That is because, as Abdo A. Elkholy notes, "As Muslims in America are being assimilated, as Arabs, Turks, and other ethnic groups, many do not see the religious wrong in mixed

marriage."
Elkholy's observation relates to communicating Islam in North America on two levels. The first level is the way Muslims perceive themselves and hence identify with (a) Islam as a way of life, (b) Muslims as a religious group with which one may affiliate, or (c) nationality/ethnicity as an identity given to the Muslim subcultures by Western colonizers. The Muslim's perception of his/her own identity is the cornerstone in his/her ability to adjust to the new environment while maintaining the basics of the Islamic belief system and to transmit that system to the next generation in an integrative manner.
This perception of identity determines whether one's response is assimilation, integration, or withdrawal. The second level pertains to the realities of the North American pluralistic societies and their implicit and explicit demands for individual conformity to societal "norms." North American societies are established on a secular value system. They may allow for different religious practices, in the narrow sense of the word, but may not allow for ideological and epistemological differences. Therefore, Muslims will be assimilated as subcultural groups (Arabs, Turks, etc.) despite vigorous attempts by Muslim leaders and organizations to maintain the Islamic identity.
These leaders have failed to recognize that assimilation will persist as long as people's identity is in a state of confusion between ideological (Islamic), religious (Muslim), and ethnic (Arab, Turks, etc.) attachments. The clarity or confusion of one's identity is the key to the variation in Muslims' assimilation. The degree of Muslims' religiosity, as suggested by Elkholy, is only a part in the question of identification. The effort of any Muslim community in North America to formulate an educational program that will transmit the Islamic cultural and ideological heritage to its children is viewed here more as a conceptual than a socio-anthropological problem.

url: http://hdl.handle.net/1813/7789
date: 2007-06-26
creator: Barazangi, Nimat Hafez
viewed: 31
title: Parents and Youth: Perceiving and Practicing Islam in North America
abstract: Copyright 1991, Alberta University Press.
This is a pre-copyedited version of an article accepted for publication in the edited book Muslim Familes in North America following peer review. The definitive publisher-authenticated version is available through Alberta University Press: http://www.uap.ualberta.ca/UAP.asp?lid=41&bookid=162. See also: http://www.eself-learning-arabic.cornell.edu/publications.htm#4 This chapter examines how some Arab Muslim youth and families in North America perceive themselves both as Arabs and as Muslims in the context of Canadian and United States societies. Parents are concerned with how best to transmit the Islamic ideological and Arab cultural heritage to their children. One of their problems derives from differences among Arab Muslims, who come from varied national origins and hold several interpretations of the Islamic view, not all of which are based on the Qur'an; as a result they also have different nationalistic attachments to their understanding of Arab heritage. A second problem arises between immigrant parents and their American-reared children. The children may participate in American culture to a greater extent than their parents, and they are constantly faced with the conceptual need to accommodate potentially conflicting points of view. Effective identity transmission requires the determination of the nature and extent of the different interpretations held by parents and their children and of the way these interpretations are reflected in their practice of Islam and association with the Arabic heritage.

url: http://hdl.handle.net/1813/7790
date: 2007-06-26
creator: Barazangi, Nimat Hafez
viewed: 32

title: Acculturation of North American Arab Muslims: Minority Relations or Worldview Variations
abstract: Copyright 1990, Institute of Muslim Minority Affairs.
This is a pre-copyedited version of an article accepted for publication in the edited Journal of the Institute of Muslim Minority Affairs following peer review. The definitive publisher-authenticated version is available through Institute of Muslim Minority Affairs: http://www.imma.org.uk/jmma.htm. See also: http://www.eself-learning-arabic.cornell.edu/publications.htm#4The main objective of this study is to explore the concept of minority/majority relations as the underlying assumption in studying empowering and adjustment strategies of North American Arab Muslims (NAAM). That Muslims are viewed as Arabs, Turks, Pakistanis, etc. is a hindrance to the understanding of the metaphysical and epistemological variations between the Islamic and the Western secular worldviews, on one hand, and the Islamic and the Arabic acculturation processes, on the other. Attempts to develop an integrative Islamic education program for Arab Muslims, therefore, have failed mainly because NAAM view themselves, and are being studied, as an ethnic minority rather than a "mainstream" majority. Based on this view, "Islamic" education programs have emphasized the ideals of the Ummah (the Islamic State) and the teaching of Arabic as the empowering strategies for the Arab Muslim minority. Acculturation practices among Arab Muslims, however, have emphasized ethnic preservation strategies that do not empower these groups either with the privileges of recognized minorities (i.e., classified racial and socioeconomic groups such as Afro-Americans and Hispanics) or with the acceptance by the prevailing "color prejudice" majority. Results from the author's doctoral research project indicate that the majority of immigrant Arab Muslim adults have resolved this conflict between ideal and practice by separating their religious, ethnic, and secular societal lives. These adults also view the transmission of the Islamic/Arabic identity only as a transmission of religious teachings and ethnic traditions. The youth, on the other hand, remain unclear of their group identity and of its association with the larger society . The findings and the implications of this study are applicable to any group of people, Muslims or non-Muslims, who share a different worldview from that of the larger host society.

url: http://hdl.handle.net/1813/7791
date: 2007-06-26
creator: Barazangi, Nimat Hafez
viewed: 31
title: The Education of North American Muslim Parents and Children: Conceptual Change As a Contribution to Islamization of Education
abstract: Copyright 1990, Association of Muslim Social Scientists. http://www.amss.net/ See also: http://www.eself-learning-arabic.cornell.edu/publications.htm#4Four points of investigation are needed to develop a theoretical model for the Islamization of education in the context of the pluralistic societies of N. America. (1) The dynamics by which Muslims have arrived at a view of Islam that causes them to practice it in a particular way, (2) the variation in the conception and practice of Islam between the immigrant parents and their offspring, on one hand, and between the immigrant and the native Muslims, on the other, (3) the extent to which Muslims perceive the Western secular view to be in conflict with their own view as reflected in their adjustment process and in their transmission of the "Islamic" heritage, and (4) the ability of the educators to design programs that can reconcile the conflict, apparent or real, between the Islamic and the Western views of life and education.
The underlying assumptions are that in addition to the historical development of the Islamic conceptual ecology and its secular Western counterpart, the Muslims of N. America also have a distinct history and a living experience to be investigated. Moreover, understanding the subject matter, Islam, requires an investigation of the documents pertaining to it, namely al-Qur'an and the books of hadith. This investigation is a must for understanding (1) the variation in meanings given to the present ideas, (2) the relative stability or change in the conception and practice of the Islamic tenets over time, and (3) the new conception(s) and approach(s) to "Islamized education."

The aim is to determine (1) the Muslims' synthesis of all the factors (such as religion and faith, moral and cognitive development, socioanthropological demands, and pedagogical approaches) that have been secularized because of specialized approaches to human learning, (2) the level and type of awareness that the faithful individual has about human and revealed knowledge, (3) whether the individual is operating within the central concept of Islam, i.e., Tawhid (Oneness of God as the Source of knowledge and value), or within another concept that is outside of Tawhid that entails duality and secularity in education, and (4) whether or not curriculum designers are able to distinguish between Islam as the underlying value system and Islam as the subject matter as well as the encompassing social milieu.
The curriculum specialist developing programs for Muslim communities in pluralistic societies must keep in mind (1) the governing ideology (the belief system) and the authority (experts) who determine the type of "Islamic" knowledge, (2) the level of the experts'/learners' awareness of the relationship between their own conception of the ideology and the forces that govern their drawing of values and codes and, hence, the practice of the faith, and (3) the structure and means by which he or she can move from the Islamic philosophical system into an Islamic pedagogical system.
Three basic conditions, therefore, are essential for a program design and for a theoretical model of the Islamization of education: (1) to understand the Islamic educational pedagogy vis-a-vis the Western pedagogy, (2) to adopt an eclectic view of curriculum and to incorporate it with the reconstruction of religious thought in Islam(3) to keep in mind the epistemological, familial and contextual compositions and their effect on attitudinal and conceptual change of the learner.

url: http://hdl.handle.net/1813/7792
date: 2007-06-26
creator: Barazangi, Nimat Hafez
viewed: 32
title: Arab Muslim Identity Transmission: Parents and Youth
abstract: Copyright 1989, Association of Arab-American University Graduates. This is a pre-copyedited version of an article accepted for publication in the edited journal Arab Studies Quarterly following peer review. The definitive publisher-authenticated version is available through the Association of Arab-American University Graduates: http://www.emich.edu/asquarterly/. See also: http://www.eself-learning-arabic.cornell.edu/publications.htm#4Effective Islamic identity transmission requires determination of the nature and extensiveness of the different interpretations held by parents and their children and the ways these interpretations are reflected in their practice of Islam and association with Arabic heritage. Fifteen Arab Muslim families of varied nationalities were interviewed as part of a larger study on Muslims in North America. The findings indicate that parents and youth have significantly different perceptions. Parents have higher levels of perception for the central concept of Islam, i.e., Tawhid (Oneness of God), but only in abstract form, whereas youth tend to emphasize some of the auxiliary concepts of Islam, i.e., human-interrelation behavior, but in the context of Western values. This may explain (1) difficulties parents encounter in effectively transmitting the Islamic belief system and/or the Arabic heritage to their children, (2) the youths' inability to distinguish between the Islamic/Arabic and the Western systems on the ideological level, and (3) the youths' confusion concerning their roots and history.

url: http://hdl.handle.net/1813/7793
date: 2007-06-26
creator: Barazangi, Nimat Hafez
viewed: 37
title: An Ethical Theory of Action Research Pedagogy
abstract: Copyright 2006, SAGE Publications.

This is a pre-copyedited version of an article accepted for publication in the edited journal Action Research following peer review. The definitive publisher-authenticated version is available through SAGE Publications: http://arj.sagepub.com/cgi/content/abstract/4/1/97. See also: http://www.eself-learning-arabic.cornell.edu/publications.htm#5The theory of action research (AR) pedagogy presented in this article is, at its core, ethical in nature. For teaching, learning, and evaluating AR, the theory's goal is to increase individuals' capacity to act on their own behalf and preventing themselves from becoming an authoritarian expert. Achieving such an increased individual capacity requires the integration and deployment of multiple dimensions of ethical principles and understanding their implications for the ethics of AR pedagogy. An integration of Ibn Miskawayh's Islamic philosophy of ethical pedagogy, Iris Young's theory of justice, Greenwood and Levin's criteria for ethical participation, and my own model of participatory action research evaluation that is central to the learning process constitutes the basis of this ethical theory of AR pedagogy.

url: http://hdl.handle.net/1813/7794
date: 2007-06-26
creator: Finnie, Jamecia Lynn;Burns, Melissa Grace;Greenwood, Davydd J.;Barazangi, Nimat Hafez
viewed: 29
title: Evaluation Model for an Undergraduate Action Research Program
abstract: Copyright 2004, The University of Victoria.
http://www.educ.uvic.ca/ See also: http://www.eself-learning-arabic.cornell.edu/publications.htm#5In this paper, we will articulate how the model of "evaluation being central to learning, teaching, and living Action Research (AR)" has evolved. This model was developed as part of the Bartels Undergraduate Fellows Program at Cornell University who are collaborating with surrounding communities.
The model is centered on the Fellows' participation in the reflective analysis of their self-generated data. The goal is to learn about AR by actually using its tools to understand their own learning process and how their acquired learning behaviors are, to a certain extent, stand in the way of their being able to help their community partners solve issues of joint interest. These community partners are interested in finding sustainable and fair solutions to issues of North American Indian women's health, hazing, stereotyping, homelessness, youth conflicts and empowerment, incarceration, migrant farm workers, and community development that have been reinforced by the passive learning/teaching/research approach. This reflective view is what we hope will 'click' among the fellows when they examine their own self-evaluation data.
From this, we hope to learn how:
(1) the undergraduate seminar instructional process is imparting the epistemology and methodology of Participatory Action Research with the participating Fellows, and what have been limiting or facilitating the process, and
(2) how the university organizational structure is providing support or limitation to the faculty and staff who mentor the participating Fellows in service learning.
In other words, we hope to understand how best to realize AR in a participatory learning environment that is based in a participatory community development.

url: http://hdl.handle.net/1813/7795
date: 2007-06-26
creator: Barazangi, Nimat Hafez
viewed: 37
title: Future of Social Sciences and Humanities in Corporate Universities: Curricula, Exclusions, Inclusions, and Voice
abstract: Copyright 2001, Nimat Hafez Barazangi. See also: http://www.eself-learning-arabic.cornell.edu/publications.htm#5During three preceding sessions of the Institute for European Studies (IES) Topical Seminar, three themes were discussed: (1) The university as a corporation, focusing on faculty involvement

and partnership with the corporation and the corporate world beyond the university, (2) the students as inheritors of culture and the university as the means of perpetuating cultural norms, and (3) the economic base of higher education.
In my focus on the curriculum, I am basically looking at the philosophical, ethical, and pedagogical dynamics of all the above elements when mapping and disseminating knowledge. I am also looking at how knowledge itself, a main asset of the university, is manipulated between research, teaching, and learning by the old and new guard of academia. Though the three essays (Barazangi, 1993; hooks, 1994, Middleton, 1993) being analyzed under the curriculum theme were written for different cases and from different worldviews, they share the same historical context. A time when the New Right movements were back lashing at the different cultural groups, including women, as these groups voiced their concerns about curricular inclusions and exclusions, these reactions were manifested in the multicultural vs. mainstream curricula, in the affirmative action admission and testing practices, and in social welfare policies.
The contemporary context consists, in addition, in recent emphases by funding agencies on educational components in research proposals even by NSF, especially in K-12. Residential learning among college students, is replacing ethnic-based dorms or language houses. Yet, the old philosophy of dichotomized subject matters and fields of studies still prevails in recent discussions of liberal arts curricula. A recent report by the Curriculum Committee of the Cornell College of Arts and Sciences still classifies reasoning skills into quantitative and qualitative, with an add-on of moral reasoning. Furthermore, engagement in learning is mainly still treated as a practical skill for the arts and sciences and not part of their main mission, and so on.

url: http://hdl.handle.net/1813/7796
date: 2007-06-26
creator: Barazangi, Nimat Hafez
viewed: 28
title: Is Language the Object of Literacy among United States Female Adult Learners?
abstract: Copyright 1999, Language and Literacy Spectrum, Journal of The New York State Reading Association.
This is a pre-copyedited version of an article accepted for publication in the edited journal Language and Literacy Spectrum, a Journal of The New York State Reading Association, following peer review. The definitive publisher-authenticated version is available through The New York State Reading Association: http://www.nysreading.org/Publications/index.html. See also: http://www.eself-learning-arabic.cornell.edu/publications.htm#5We present a case-study of adult females becoming "literate." Low income female learners in Adult Basic Education (ABE) and recent immigrant learners in English as a Second Language (ESL), and their teachers in Central New York State were involved in a Participatory Action Research (PAR).
The goal is to present conceptual and attitudinal issues of adult literacy in the United States (US), including ESL and feminist pedagogy. The results suggest that language literacy by itself may not lead to a sustainable autonomous individual and group development. We discuss literacy within attitudinal change about female learner's self-realization vis-a-vis her productivity and social mobility.

url: http://hdl.handle.net/1813/7797
date: 2007-06-26
creator: Barazangi, Nimat Hafez
viewed: 29
title: Book Review of: Gender and Human Rights in Islam and International Law: Equal Before Allah, Unequal Before Man? by Shaheen Sardar Ali
abstract: Copyright 2003, Center for the Study of Islam & Democracy. All rights reserved.
Click here to visit the Muslim Democrat website: http://www.islam-democracy.org/md.asp.

See also: http://www.eself-learning-arabic.cornell.edu/publications.htm#6The objective of this book is "to engage in a conceptual analysis of human rights in Islam and international law, and application of this analytical discourse to explore women's human rights in the Islamic tradition" (p.3). Sardar Ali is responding to the question "of whether Islam is opposed to women's human rights and equality" that has assumed a special significance in the post United Nations era.

url: http://hdl.handle.net/1813/7798
date: 2007-06-26
creator: Barazangi, Nimat Hafez
viewed: 37
title: Book Review of: Claiming Our Rights: A Manual for Women's Human Rights Education in Muslim Societies by Mahnaz Afkhami and Haleh Vaziri
abstract: Copyright 1997, Association for Middle East Womens Studies.
This is a pre-copyedited version of an article accepted for publication in the edited AMEWS Newsletter following peer review. The definitive publisher-authenticated version is available through The Association for Middle East Womens Studies: http://www.amews.org/index.html. See also: http://www.eself-learning-arabic.cornell.edu/publications.htm#6The purpose of Claiming Our Rights: A Manual for Women's Human Rights Education in Muslim Societies by Mahnaz Afkhami and Haleh Vaziri (Bethesda, MD: Sisterhood Is Global Institute, 154 pp., 1996) is "to facilitate transmission of the universal human rights concepts inscribed in the major international human rights documents to grassroots populations in Muslim societies." It is an invaluable contribution of the Sisterhood Is Global Institute (SIGI) and a much needed beginning to educate Muslim women's of their rights in Islam.
Its themes, derived from the mission statement of Platform for Action of the Beijing Conference (iv), are necessary for individuals who are already aware and started to question the discrepancy in the practice concerning their human rights. What is needed in the methodology, therefore, is a section that will facilitate awareness-raising as the initial step that will instigate women to start questioning and dialoguing about the different themes. This methodological adjustment would have been addressed intuitively had the authors, as well as the scholars and practitioners who were consulted, considered an important element in their explanation of the meaning of "Shari`ah" under the section "Major Premise."
The authors, despite their utmost care not to "impart the truth" but to "facilitate dialogue" (Mahnaz Afkhami's letter of introduction) have over-looked the fact that human knowledge and action are affected by the human belief system. Whether we call it "religion," "faith," or "worldview", such a belief system composes an important component of one's prior knowledge. This prior knowledge either makes an individual aware or dormant concerning abuses of her human rights. It also makes an individual either accept or reject the "central premise of this human rights educational model that there is no contradictions between human rights and Islam." (v)

url: http://hdl.handle.net/1813/7799
date: 2007-06-26
creator: Barazangi, Nimat Hafez
viewed: 40
title: Book Review of: Qur'an and Woman by Amina Wadud-Muhsin
abstract: Copyright 1994, Journal of Islamic Studies, Oxford University Press.
This is a pre-copyedited version of an article accepted for publication in the edited publication Journal of Islamic Studies following peer review. The definitive publisher-authenticated version is available through Oxford University Press: http://jis.oxfordjournals.org. See also: http://www.eself-learning-arabic.cornell.edu/publications.htm#6Wadud-Muhsin's book is a welcomed addition to Islamic studies scholarly work as well as to the list of readings in Women's Studies and Islamic Studies courses. The media and the popular culture

literature in America and Europe are not the only biased group in portraying women in Islam as "oppressed" and that their liberation can take place only outside Islam. Contrary to my trust in the impartiality of educational institutions, I am finding that such institutions are more inequitable when it comes to scholars who address the "Muslim woman question" from within the framework of Islam. I was surprised, for instance to find that only one theological seminary library in the entire United States has obtained this book, even though many universities, including my institution, have a long list of recent publications on Muslim women.

url: http://hdl.handle.net/1813/7800
date: 2007-06-26
creator: Barazangi, Nimat Hafez
viewed: 34
title: Book Review of: The Rights of Women in Islam by Asghar Ali Engineer
abstract: Copyright 1994, Journal of Islamic Studies, Oxford University Press.
This is a pre-copyedited version of an article accepted for publication in the edited publication Journal of Islamic Studies following peer review. The definitive publisher-authenticated version is available through Oxford University Press: http://jis.oxfordjournals.org. See also: http://www.eself-learning-arabic.cornell.edu/publications.htm#6Engineer's book though not unique in its purpose, the defense of women's rights in Islam, is different from other books that deal with the same subject in its approach to the "question of women." By attempting , in this book, "to separate what is contextual from what is normative" and to "recapture the original spirit of Qur'anic laws with regard to male-female relationship," the author hoped to equip Muslim feminists with a powerful weapon in their fight for equal status with men (p. vi). The author is to be commended for this unprecedented courage to contradict what has been the customary views on women's rights in Islam, whether by Muslims or non-Muslims. His documentation from the Qur'an, Hadith and early Islamic history of issues like sexual equality, marriage, divorce, and others that have been only presented from the Muqallidun's (those who follow the foot-steps of ancestors) points of view is a major step by a Muslim male scholar.

url: http://hdl.handle.net/1813/7801
date: 2007-06-26
creator: Barazangi, Nimat Hafez
viewed: 72
title: Between the Post-ethnic and the Unique: Exclusion of American Muslim Women and Policy-Making
abstract: Copyright 2007, Nimat Hafez Barazangi. See also: http://www.eself-learning-arabic.cornell.edu/publications.htm#9Muslim women are treated in a similar manner by the media and the globalization political process. Because of this fusion between sensational media reporting and policy-making, combined with compartmentalized scholarship (area studies, Islamic studies, women's studies) and activism (Muslim vs. Western), a Muslim woman is often not viewed as an autonomous entity that could and should be involved in policy-making. This pattern of ignoring Muslim women's political participation is repeated even in the United States. With the exception of a few, the majority of American Muslim women of varying backgrounds and educational levels are neither involved in the domestic nor in the international affairs of the US. Hence, the issue is: how is it possible for the estimated three million American Muslim women to become a political reality to further the US democratic policy, the US Muslim political and legal rights, or Muslim women's human rights all over the world.

url: http://hdl.handle.net/1813/7802
date: 2007-06-26
creator: Barazangi, Nimat Hafez

viewed: 46
title: The Equilibrium: Issues of Islamic Education in the United States
abstract: Copyright 1998, Religion and Education, Nimat Hafez Barazangi.
This is a pre-copyedited version of an editorial accepted for publication in the edited journal Religion and Education following peer review. The definitive publisher-authenticated version is available through Religion and Education: http://fp.uni.edu/jrae/islamicissuetoc.htm. See also: http://www.eself-learning-arabic.cornell.edu/publications.htm#1The theme of this special edition of Religion and Education (R&E) on "Issues of Islamic Education" is taqwa. Taqwa is an Arabic word often translated oversimply as "piety," but which bears the meaning of "a conscious balance between the individual, the society, and the limits set by Allah or God as the source of value and knowledge". Since I was asked to be guest editor of this edition, three overarching issues have been formulating my thinking about it, from selecting the theme to the significance that this edition of R&E may have for the debate over education in the country as a whole.
The first issue is how to achieve a balance between the belief systems of individuals (often referred to as religion or philosophy) and this country's universal schooling system which has traditionally intended, to a large degree, to meld diverse individual views into the "common-ground" of a "pluralistic" social framework.
The second issue is questioning the efficacy of "teaching about religion" and "teaching a religion." This issue comes out in particularly sharp relief in teaching about Islam as a belief system, and about Muslims, in a "neutral" manner when many teachers have little or no knowledge of Islam, and what they have too often represents an inaccurate picture.
The third issue, which is the core of this edition, is how to introduce a discourse on "Islamic education" when females have traditionally been perceived as lacking the full privilege to interpret Islam. The centrality of Muslim women's and girls' education and acculturation (Barazangi and Kahf articles) to Islamic education may seem contradictory, and perhaps difficult to understand by those whose knowledge of Islam is limited to the perception that males are the only "legitimate interpreters" of Islamic texts or the perception that females are "oppressed by their patriarchal religion."

url: http://hdl.handle.net/1813/7803
date: 2007-06-26
creator: Brynjarsdottir, Eyja
viewed: 24
title: Instances of Instantiation: Distinguishing between Subjective and Objective Properties
abstract: This thesis explores the prospects of a distinction between subjective and objective properties in terms of how they are instantiated. While there are many ways in which the subjective can be separated from the objective, the one that interests me here is the difference between properties instantiated subjectively and properties instantiated objectively. The idea is that in some cases what makes it so that object o has the property p is what a thinking subject thinks of it or how she reacts to it, while in other cases what makes it so that o has p has nothing to do with what the subject thinks or does. In the first kind of case, the instantiation of the property is mind-dependent, or subjective, and in the second kind of case the instantiation is mind-independent, or objective. I examine ways to draw a distinction between subjective and objective properties in this sense and defend the possibility of such a distinction against conceivable threats. I then go on to arguing that instead of sorting properties into two groups, subjective and objective, it is more fruitful to think of them as on a continuum ranging from entirely subjective to entirely objective. While there may be cases of properties that are entirely objective, i.e. instantiated only objectively, finding entirely subjective properties if more difficult. Candidates for subjective properties do not seem to be exclusively subjective; i.e. they are instantiated objectively to some extent. I use color as a paradigm case to argue for my account of properties whose instantiation is partly objective and partly subjective. I then go on to arguing that all sensory properties should be treated as color in this respect.

url: http://hdl.handle.net/1813/7804
date: 2007-06-26
creator: Jakse, Sonia
viewed: 30
title: Understanding the Role of Human Dynamics in the Practices of Cleveland Area Landscape Architectural Firms
abstract: This thesis aims to discover, understand, and evaluate the contemporary client and user involvement practices of landscape architects in the Greater Cleveland area. The research used narrative interviews with firms and their clients to answer the following questions:
1. Do landscape architects correctly interpret their clients? needs?
2. Are clients? needs incorporated into designs?
3. Are clients satisfied with landscape architectural services?
4. Do landscape architects involve users on a regular basis?
5. Is there a set of best practices to adopt when working with clients?

The results showed that landscape architects focused on understanding the needs of their clients from the beginning of the design process through one-on-one communication with them. This input was incorporated into designs to the satisfaction of the clients. Landscape architects felt that part of their job was to educate clients about good design. This allows their practical and creative input to combine with the client?s producing a design that satisfies their needs and holds up over time. Clients appreciate the practical recommendations and high level of communication that the landscape architects offer.
Users do not participate in the design process on a day-to-day basis, although most firms work with them sporadically. The methods for working with them are not well defined by the interviewees.
Both client and user involvement is limited by budget constraints, project type, and client wishes.

url: http://hdl.handle.net/1813/7805
date: 2007-06-26
creator: Tuccio, Christopher
viewed: 36
title: Landscape Symbolism of Imperial Rome: Reflecting the Governmental Changes from the Republic to the Empire
abstract: This work presents research on the symbolic intent of public space in Rome during the fall of the Republic, (61 ? 2 BC). The thesis focuses particularly on the three largest public developments occurring during this time period: the Theatre Complex of Pompey, the Forum of Caesar, and the Forum of Augustus. The political organization of Rome was changing during this time period, slowly transitioning from a representative democracy to an imperial dictatorship. Certain elements of the three public spaces that were created at this time symbolize these political transformations. Providing detailed design analysis of these areas will help in understanding the use of symbolic attributes of the public landscape. The specific elements to be studied are: location, orientation, axes, and scale.

url: http://hdl.handle.net/1813/7806
date: 2007-06-26
creator: Bell, Caitlin
viewed: 16
title: Formative Evaluation of Massachusetts Audubon Society?s Coastal Waterbird Program
abstract: I conducted a formative evaluation of the Massachusetts Audubon Society?s Coastal Waterbird Program (CWP). Specifically, I used document analyses, interviews, and a mail census of CWP staff to assess the appropriateness and adequacy of CWP design and implementation actions. I identified that the Theory of Planned Behavior (TPB) could be used as an appropriate social science foundation to improve the program

design and the identification of additional implementation actions. Most implementation actions seemed to focus on the monitoring of nest success and fledging rate of protected bird species that nest on beaches and reacting to public behaviors that are disturbing to these birds. According to TPB, additional benefits likely could be achieved by developing implementation actions focused on proactively engaging the public to prevent disturbing behaviors before they occur. Survey results indicated that field staff already engage in proactive actions despite not being trained extensively to do so. In addition, staff held substantially more positive evaluative beliefs about proactive interactions than reactive interactions. Rather than identifying problems confronting the CWP, these results identify opportunities that can be built on to improve the program.

url: http://hdl.handle.net/1813/7807
date: 2007-06-26
creator: Hunn, Joshua
viewed: 18
title: Retention of logging debris to reduce deer browsing and promote forest regeneration
abstract: One of the most important species in northeastern forest ecosystems is the white-tailed deer (Odocoileus virginianus). Browsing by these herbivores can influence patterns of forest regeneration following a timber harvest. Logging debris, or ?slash?, has the potential to inhibit deer browsing and enhance forest regeneration in a cutover area. At two heavily logged sites in the Arnot Forest, NY, study plots containing experimental seedlings and natural vegetation were created in May 2004 and monitored thru November 2006. Each plot received one of three treatments: open - cleared of logging debris; tops ? tree tops and debris-covered; or fenced - cleared of debris and fenced to exclude deer. Levels of deer browsing in experimental seedlings and natural vegetation, tree seedling growth, and natural vegetation richness, were compared among these treatments. We found significantly higher deer browsing on experimental seedlings ($p = .0053$) and palatable herbaceous vegetation ($p = .0094$) in open plots, than tops-covered or fenced plots. Cumulative deer browsing negatively correlated with mean experimental seedling height at the plot level ($p = .0296$), resulting in higher black cherry (Prunus serotina) seedling growth in protected fenced and tops treatments. Additionally, logging debris was found to benefit common management objectives, such as herb richness and relative abundance of desirable timber tree seedlings. We conclude that logging debris left in place after a forest thinning can effectively inhibit deer browsing and promote forest regeneration. The degree of protection afforded by tree tops was intermediate between unprotected and fenced areas. The minimal effort and cost associated with this technique would make it highly preferable to constructing fences to improve regeneration. As white-tailed deer become increasingly overabundant, alternative options for the sustainable regeneration of forests are necessary; the post-harvest retention of logging debris in situ provides such an alternative.

url: http://hdl.handle.net/1813/7808
date: 2007-06-26
creator: Kates, Norah
viewed: 27
title: Macroinvertebrate colonization of invasive Fallopia x bohemica leaf litter in a temperate stream
abstract: We compared macroinvertebrate communities on leaf packs made of recently senesced leaves of native Quercus and Acer, and invasive Fallopia x bohemica. Leaf packs were left in Cascadilla Creek, a third-order temperate stream in central New York, U.S.A., for 7, 14, 28, or 56 days. After we removed them from the stream, we examined the leaf packs for biomass loss and invertebrate richness and abundance. While we expected to see a significant difference between leaf types, which would indicate a cascade effect of invasive vegetation on higher trophic levels, little variation was actually seen. The results of this study suggest that localized effects of F. x bohemica on invertebrate communities in streams are quite small if the invasive component represents only a small percentage of the total biomass of the system. Leaf breakdown rates also did not differ significantly between the invasive and either of the two native leaf types. We observed

larger numbers of predators on leaves of F. x bohemica than on either of the native leaf types, which may impact leaf breakdown and consumer activity over a longer study period, but what we have seen so far is still inconclusive. Further study will have to better simulate true invasion conditions where native vegetation is not available to invertebrate communities, and incorporate a full season of leaf breakdown.

url: http://hdl.handle.net/1813/7809
date: 2007-06-26
creator: Margulies, Elan
viewed: 25
title: William J. Hamilton, Jr. of Cornell, The Man and the Myth
abstract: William J. Hamilton, Jr. was a prominent Professor of Mammalogy who was beloved by his students and peers. Bill entered Cornell as an undergraduate in 1920 and stayed until his death in 1990. Professor Hamilton helped found the Department of Conservation in 1947, which was the precursor to the Department of Natural Resources. During his 33 years as a professor, he directed 60 graduate students and was on the thesis committee of 150. Bill was a meticulous note taker, and encouraged his students to do the same. He was a great naturalist whose specialty in mammalogy only exceeded his knowledge in other fields of natural history. Throughout his life he supported the study of "Backyard Biology" ? the belief that scientific wonders could be discovered at your own doorstep. He was an avid gardener who introduced many garden species to New York State. ?Wild Bill?, as he was known, was famous for his tall tales and practical jokes. Oftentimes, this jesting was focused on teaching his students a lesson, or exposing the faults in that person?s knowledge. His academic honors included publishing over 230 scholarly articles, serving as the president of the American Society of Mammalogists and as the president of the Ecological Society of America. His textbook, Mammals of Eastern North America, became the textbook of choice for decades and to this day has remained a critical resource for students. Through personal interviews, archival research and contact with the Hamilton family, the author has created an abbreviated biography.

url: http://hdl.handle.net/1813/7810
date: 2007-06-26
creator: Zhang, Yuanyuan
viewed: 21
title: The role of pre-mastication in the evolution of complementary feeding strategies: a bio-cultural analysis
abstract: Human milk is a poor source of iron. At birth, the newborn is well endowed with iron stores, which are adequate to meet his/her needs for the first 4-6 months of infancy (WHO March 2001), and iron deficiency is rare. On the other hand, iron deficiency is prevalent among infants between 6- 12 months of age, particularly in developing countries, and iron supplementation during breastfeeding, and thereafter, is recommended, in addition to 6 months exclusive breastfeeding (WHO, 2002). If exclusively breastfed infants are becoming anemic by the time complementary foods are first being introduced, this raises a challenge to our assumptions about the nature of human bio-cultural evolution. Is the anemia of infancy normal or did usual feeding practices prevent it? As iron supplementation was not possible until recently, I hypothesized that exclusive breastfeeding was complemented by premasticated foods during our evolution as a hunting-gathering species. In other words, that iron deficiency in infancy is a recent problem in human society, which was previously prevented by premastication.
The goals of this research were to assess the prevalence of premastication in non-modern societies in order to determine whether (1) it was prevalent enough to support plausibly its role as a behavioral adaptation to prevent iron deficiency and (2) to determine whether the potentially detrimental effects of premasticated food were harmful enough to be selected against. This research involves several lines of investigation: 1) bringing together the evidence that iron deficiency is a common problem, which is now found in many different regions

of the world, 2) a cross-cultural study, using the Human Relations Area Files (HRAF) to obtain ethnographic data on the distribution and time depth of premastication in human societies, 3) a field research study in China, based on interviews conducted by University students, to examine the potential for serious under-reporting of pre-mastication in the ethnographic studies, 4) a review of the iron content of foods that are reported to be premasticated, and 5) a review of the scientific literature on the content of saliva.
In the HRAF analysis, 39 cultures out of 119 cultures (33%) that contain any information on infant feeding describe premastication as an infant feeding practice. Notably none of the ethnographies from China mention premastication. However, the field survey in China, with a sample of 104 elite college students, found that 63% (65 of 104) were fed pre-masticated food when they were infants, and those who received premasticated foods were more likely to be fed complementary foods earlier than those who did not. The survey findings support the notion that premastication tends to be under-reported in ethnographic studies. Although salvia has not been as extensively studied as breastmilk, the review of the biomedical literature suggests that it contains several potential positive substances from the perspective of infant health and fewer negative substances than are commonly assumed.
The results of the various lines of investigation suggest that pre-mastication has been a common practice in human societies, but has been significantly under-reported.
The potential dangers of increased infection that pre-mastication poses for infant health have probably been less serious than the disadvantages of not engaging in pre-mastication, which is a means of giving infants iron to prevent deficiency as stores begin to drop during the first semester of life. Therefore I conclude it is probable that pre-mastication was the behavior/cultural solution to the complementary feeding challenge in human societies, that it probably prevented the level of iron deficiency, which is common today in poor societies.

url: http://hdl.handle.net/1813/7811
date: 2007-06-26
creator: Fan, Elaine
viewed: 23
title: Development and Characterization of a Novel Concentrated Milk Product Using Membrane Filtration Technology
abstract: In recent years microfiltration (MF) technology has gained prominence in dairy industry due to its ability to separate virtually every major component in milk without causing major damages to its properties. Current shelf-stable concentrated dairy products often have brown off-colors and ?cooked? off-flavors due to heat-induced Maillard browning and whey protein denaturation that occur during sterilization.
MF was used in this study to develop a novel concentrated milk product depleted of most of its lactose (to limit Maillard browning) and whey proteins. Acidified skim milk was concentrated to 8x microfiltration concentration factor and then diluted 1:1 with distilled water and sterilized in cans to produce a microfiltered milk concentrate (MMC).
The MMC was characterized by its chemical composition, color, apparent viscosity, flow behavior, and storage potential. Furthermore, these characteristics of the MMC were compared with a concentrated dairy product, commercial evaporated milk (CEM).
The % (w/w) composition of the MMC was found to be 20.6% total solids, 13.4% true protein, 12.0% casein, 0.6% fat, 1.5% ash, 1.8% lactose and 0.7% whey proteins. It was comparable to CEM in total solids, greater in true protein, casein, and fat, and lower in ash, lactose and whey proteins. The MMC retained much more of the white color of HTST-pasteurized milk than the CEM. The apparent viscosity (~9.5 cP at 30?C) of the MMC was much greater than that of the CEM and the MMC was seen to be more pseudoplastic in nature ($n < 1$) than the CEM. The changes during 12-month storage were comparable between the CEM and MMC samples.

url: http://hdl.handle.net/1813/7812
date: 2007-06-26
creator: Maron, Steven
viewed: 20
title: Molecular Evolution of the prfA Cluster in Listeria monocytogenes Lineage III Isolates
abstract: Listeria monocytogenes lineage III represents a diverse subset that is generally associated with non-human mammalian infection, although some isolates are capable of infecting humans. A cluster of virulence genes (prfA, plcA, hly, mpl, actA, and plcB), known as the prfA cluster, was sequenced in eleven lineage III isolates from food, animal, and human clinical cases, and analyzed in conjunction with forty previously sequenced isolates from lineages I (n = 18), II (n = 21), and III (n = 1). The lineage III isolates represent three previously identified lineage III subsets known as lineage IIIA, IIIB, and IIIC.
Evolutionary analysis identified intragenic positive selection in actA and plcA, and intergenic positive selection in the non-coding regions flanking hly. Positive selection in actA occurred in many positions previously recognized for their interactions with proteins involved in actin tail polymerization. Also, one positively selected site upstream of hly was located in its -35 promoter region. Additionally, horizontal gene transfer was recognized in actA, plcB, and mpl. The majority of events involved actA fragments transferred between lineages IIIA and II. Lineage IIIB did not partipate in any inter-lineage recombination events, but may have donated an mpl fragment to lineage IIIC. Neighbor joining phylogenies suggest that lineage III subsets IIIA and IIIC are monophyletic with lineage I, but that lineage IIIB is not. Therefore, due to its lack of horizontal gene transfer, and distant phylogenetic relationship to the rest of L. monocytogenes, lineage IIIB may represent a distinct subspecies.

url: http://hdl.handle.net/1813/7813
date: 2007-06-26
creator: McPhillips, Lauren
viewed: 20
title: Snow Distribution Patterns at Land Cover Boundaries in Tompkins County, NY
abstract: Since humans first began clearing land for agriculture, rural landscapes have become a complex mosaic of forests and fields. During winter, the borders between these two land use types become especially interesting as winds moving across fields entrain fallen snow and may redistribute it to the forest edge. Since snow depth can have serious implications for soil conditions and biogeochemical processes, I proposed to evaluate snow distribution at field- forest boundaries in Tompkins County, NY through a combination of techniques that address the degree of snow redistribution at a variety of scales. Continuous measures using time-lapse photographs taken along a field border from January to March 2007 were used to assess localized redistribution over a snow period. These observations revealed snow accumulation at the field-forest border particularly in areas where the grass in the field had been mowed. Manual measurements of snow depth across several field- forest borders throughout the county were used to estimate how much snow was redistributed to borders, on average, in the county. These data demonstrated that there are a number of factors affecting the extent of snow redistribution from fields to forest borders, but the phenomenon definitely exists. A rough extrapolation of our results suggests that 1.9% of Tompkins County?s snow accumulates at these boundaries (which comprise 1.3% of the county?s area). With the increasing fragmentation of landscapes, it is integral to understand physical processes such as snow drifting at forest edges so that we can then better comprehend the ecological implications of such occurrences.

url: http://hdl.handle.net/1813/7814
date: 2007-06-27
creator: Whittenburg, Diedra
viewed: 24

title: The Destruction and Revival of a Neighborhood
abstract: This examination of what is apparently the oldest African-American and ethnically diverse neighborhood in the United States, Faubourg Treme, New Orleans, LA, follows the development of urban renewal and regeneration and transportation projects "gone bad" in the Treme neighborhood. These projects have been the major factor on the blight of the community. The faubourg is located in close proximity to both downtown New Orleans and the French Quarter (Vieux Carre) making it exploitable to city planners and the government as a place to service the downtown and French Quarter. These services included but were not limited to housing for service and working class employees and an interstate highway ramp. The goal of the transportation project was to make the tourist centers more accessible to tourist travel and the suburbs of New Orleans. The blight of this once vibrant neighborhood prompted questions, including how and why did the urban renewal and transportation projects cause massive amounts of displacement without replacement of residents? How does Treme retain its historical character as well as welcome reinvestment?

url: http://hdl.handle.net/1813/7815
date: 2007-06-27
creator: Shieh, Owen
viewed: 22
title: Local Minimum of Tropical Cyclogenesis in the Eastern Caribbean
abstract: The study has determined that a local, climatological minimum of tropical cyclogenesis exists over the eastern Caribbean Sea. This area, known colloquially by forecasters as the ?hurricane graveyard,? is located within the belt of tropical easterlies during most of the Atlantic hurricane season, which lasts from June through November. Tropical easterly waves emerging from the African continent usually follow a path through the Lesser Antilles and into the eastern Caribbean. GOES infrared satellite imagery shows that easterly waves frequently exhibit warming cloud tops and decreasing convection in an area bounded by the islands to the north and east, Venezuela to the south, and roughly 75 degrees longitude to the west. QuikSCAT derived surface winds during clear-sky conditions frequently show the presence of accelerating easterlies in the central Caribbean as part of the Caribbean Low-Level Jet (CLLJ). Analysis of the NCEP global reanalysis wind fields suggests the presence of an area of persistent low-level mass divergence in the eastern Caribbean. This implies a subsident regime that would weaken convection. Climatologically, this phenomenon reaches peak intensity in July, then shifts towards the east and weakens in the latter half of the Atlantic hurricane season. This is reflected by the local minimum of tropical cyclogenesis points in the National Hurricane Center?s best track data in the early part of the season. El Ni?o directly affects the strength of the CLLJ, and hence, is related to the intensity of the low-level divergence in the eastern Caribbean. The local minimum of tropical cyclogenesis in this region has important implications to operational forecasting, since the vast majority of tropical cyclones in the Caribbean eventually affect surrounding landmasses.

url: http://hdl.handle.net/1813/7816
date: 2007-06-27
creator: Davies, Katherine
viewed: 27
title: Staying Afloat in the Hospitality Industry: The Importance of Intercultural Communication
abstract: This study examines the importance of intercultural communication for career development in two segments of the hospitality industry, cruise and hotel. Three topics are explored: (1) the perceived relative importance of intercultural communication skills for career development, (2) whether differences exist between native and non-native English speakers in the importance assigned to intercultural communication, and (3) whether differences exist between cruise and hotel managers regarding the extent to which intercultural communication is perceived as important to career development.
The sample for the original study consisted of 77 cruise ship directors and 111 hotel general managers. All 188

participants completed a Likert-style questionnaire. The questionnaire was designed to collect information on the personal characteristics and skills perceived to be critical to managers? career development in the hotel or cruise industry. Demographic information was also collected. Descriptive statistics, Pearson Product Moment Correlations, Independent Samples t Tests, and content analysis were conducted. Analyses indicated that the respondents perceive intercultural communication to be moderately important in the hospitality industry, that non-native English speakers perceive intercultural communication skills as more important to career development than native English-speakers, and that cruise ship directors perceive intercultural communication skills as more important for career success than hotel general managers. In addition, the results suggest a need for hospitality practitioners to improve upon and hospitality educators to teach intercultural communication skills to facilitate the career development of hospitality managers. Future directions for research are also suggested.

url: http://hdl.handle.net/1813/7817
date: 2007-06-27
creator: Fink, Erica
viewed: 23
title: Nice to Meet You: Deception in Initial Interactions
abstract: In this paper we describe an experiment comparing the production of lies in first encounters that took place face-to-face (FTF) or in computer-mediated communication (CMC: instant-messaging). Participants reviewed their conversations and retrospectively identified deceptive statements. While the overall incidence of lying did not differ across conditions, the rate of deception per information exchanged was significantly higher in CMC. The characteristics of the lies suggest that the content and severity of lies do not vary substantially across media.

url: http://hdl.handle.net/1813/7818
date: 2007-06-27
creator: Lum, Cecilia
viewed: 15
title: Social Support and Family Status as Influences on Perceptions of Health Risks and Information-Seeking Behavior: A Case of New York State Teachers
abstract: Numerous studies have indicated the importance of social support to health; those who are less socially integrated are psychologically and physically less healthy, and have higher mortality rates. A primary social support system is the family, which may be further characterized by the marital relationship and the parental relationship. This study examines one mechanism by which the influence family status, social networks and social integration may alter the perception of risks and information-seeking behaviors. If individuals are more sensitive to possible health risks as a result of social linkages, they may follow that increased concern with information seeking, and eventually risk protective behaviors.
In recent years, a number of national and international research projects have documented the increased incidence of breast cancer among teachers (1.5 times higher). In response, Cornell University and the National Education Association conducted a regional study of New York State teachers and educational support professionals to investigate their knowledge and perceptions of breast cancer risk factors (N=1114).
The study found mixed support for the hypothesis that family status, social networks and social integration influence risk perceptions and information-seeking behaviors. Most prominently, however, is that communication about health issues among members within a social network, community participation and general participation activities are significant predictors of increased risk perception, health concerns in the school and the community, and health information-seeking behaviors. These findings suggest that there is a need to build into breast cancer risk communication efforts in understanding an individual?s perceptions and information-seeking behaviors.

url: http://hdl.handle.net/1813/7819
date: 2007-06-27
creator: Markowitz, Allison
viewed: 15
title: Individual differences in irony production and use
abstract: What factors affect the way an individual processes and uses irony? The present research investigates whether cognitive flexibility, conversational indirectness, and personality traits may account for the differences in an individual?s use of irony. The results of this study suggest that cognitive flexibility and personality traits predict irony use. An individual who is cognitively flexible is more likely to use irony and better at interpreting it because he/she can process the multiple interpretations presented by ironic language. Agreeable and conscientious people are less likely to use irony because of their innate personality traits and the harsh, critical nature of ironic language. These results suggest that agreeableness and conscientiousness are personality traits that determine which type of sarcasm an individual may use in daily interactions, while cognitive flexibility seems important to situational forms of irony. These individual differences support a view of irony as cognitively complex and interpersonally critical.

url: http://hdl.handle.net/1813/7820
date: 2007-06-27
creator: Melville, Amy
viewed: 12
title: The Crying Game: An examination of how stereotypes affect witness credibility
abstract: Stereotypes are constantly utilized to draw inferences and evaluate information, regardless of whether or not individuals employing them are cognizant of this fact. However, when jurors who are responsible for evaluating the truthfulness and credibility of witness testimony rely on stereotypes regarding the emotional responses of men and women to judge witness testimony, the conclusions they draw may be tainted. In this study, six experimental conditions were constructed to ascertain whether witness testimony would produce different effects if male and female witnesses delivered testimony while showing emotions stereotypical of their genders or emotions unexpected of their genders. While testifying that they were the victims of an armed robbery, male and female witnesses showed fear, anger, or no emotion. It was found that when male witnesses displayed the stereotypical emotion for their gender, anger, the participants rated the guilt of the defendants significantly higher than when female witnesses displayed the same emotion. Conversely, when female witnesses displayed the emotion stereotypical for their gender, fear, the participants rated the guilt of defendants significantly higher than when men displayed fear. It was also found that female displays of anger and fear produced a much greater difference in guilt rating for defendants than male changes in emotion. Additionally, over all experimental conditions, witnesses were believed to be telling the truth most when they showed fear and least when they showed anger.

url: http://hdl.handle.net/1813/7821
date: 2007-06-27
creator: Merker, Vivian
viewed: 19
title: The Geographic Basis of Food Insecurity in Sub-Saharan Africa
abstract: One out of every three people lacks access to sufficient nourishment in sub-Saharan Africa, the region with the greatest food insecurity in the world today. Low agricultural productivity and expansionary demographic trends will necessitate greater reliance on imports if the food needs of the region are to be met in the future. However, sub-Saharan Africa is distant from major food export markets, and many of its countries are landlocked. In my research, I quantify the influence of the region?s transport-prohibitive

characteristics on food security. By constructing regression models from agricultural trade data, I demonstrate that geographically isolated countries face substantially higher grain import prices, and these higher prices can raise the prevalence of hunger. I find that 300 kilometers between the port of disembarkation and the major population agglomeration in the importing country explains a one percentage point increase in the undernourished population. This result highlights the needs for infrastructure investment and low trade barriers to minimize the cost of remoteness and promote the eradication of hunger in the region.

url: http://hdl.handle.net/1813/7822
date: 2007-06-27
creator: Pusavat, Grace
viewed: 29
title: Gender Perception Differences for Relationships Portrayed on Television
abstract: Television and other media influence expectations and perceptions of love and marriage. In this experiment, various gender behaviors of sex and relationships were shown in the context of romantic relationships on television. Participants? interest, character approval, and perceived realism were compared between expected and not-expected gender behavior for white and black television characters. The results indicate that, in general, characters are seen as less real, and receive lower approval ratings, when expected gender behavior is violated. However, male participants may have different perceptions regarding television characters than female participants due to the genre through which romantic relationships are shown on television. These findings contribute to previous research that preconceived gender expectations affect how we perceive and define gender roles in both television shows and reality.

url: http://hdl.handle.net/1813/7823
date: 2007-06-27
creator: Purcell, Jeffrey
viewed: 39
title: Keeping Stolen Land
abstract: This thesis explores the common roots of several contemporary social movements in Durban, South Africa. My point of departure is a series of community meetings in May, June, and July 2006, during which geographically separated Black and Indian community organizations expressed remarkably similar grievances against the municipality and government, all rooted, I argue, in the colonial dispossession and alienation of Africans, and later in the enforced marginalization of Indian communities. Largely, these dispossessions occurred in the 19th century and early in the 20th century ? decades before the policy Apartheid begin in 1948. It is the continued relationship of exclusion and repression in relation to land and space in Natal, I argue, that accounts for the common struggles of these movements. I shall cite Antonio Gramsci extensively in order to argue that his conceptions of ?consent? and ?coercion? explain the perpetual success of policies designed to preserve colonial and Apartheid dispossession. Moreover, several labor struggles will be considered in order to illustrate the degree to which the majority's consent has been secured, and to offer evidence that Gramsci?s theories are powerful assistance to us. Mahmood Mamdani?s identification of "subject" and "citizen" will factor, as the transition from Apartheid to ANC rule has essentially cemented the status of landless South African subjects. His lengthy iteration of indirect rule in Apartheid South Africa will become crucial to understanding how the transition was ineffectual for many.
In addition, by surveying documents relating to the management and control of these populations, I argue that KwaZulu-Natal?s managers, through several succeeding governing regimes, have implemented policies of great similarity to achieve the same effect ? keeping the power of land and space of Natal in the hands of Europeans. In response, a range of land, labour and housing community organizations have protested their government and voiced demands that show a continued resistance to policies of exclusion from and access to valuable land and space in the province. From their concerns and mobilizations, I will finally attempt to

construct an understanding of what has, and has not, changed in South Africa.

url: http://hdl.handle.net/1813/7824
date: 2007-06-27
creator: Seeley, Kathryn
viewed: 19
title: The Effects of Animal Narratives on Learning
abstract: Previous studies show that the degree to which an individual is transported into a narrative influences the way the story affects their attitudes and beliefs. This study looks in particular at how individuals learn about animals through animal narratives. We manipulated visualization, anthropomorphism, story type (fiction/non-fiction), and factuality to determine how these factors influence both transportation and learning. Our findings determined that there was no significant influence of visualization on the degree of transportation experienced by participants (p>.05). Results found that anthropomorphic stories were less transportive than non-anthropomorphic stories. Data also concluded that participants more highly transported answer more questions correctly, implying a higher rate of learning.

url: http://hdl.handle.net/1813/7825
date: 2007-06-27
creator: Tauzel, Brian
viewed: 20
title: Rethinking the Quarterlife Crisis: Expected Geographic Mobility among Young Adults in Flanders, Belgium and Upstate New York
abstract: In the United States, the concept of quarterlife crisis is an increasingly recognized social phenomenon. However, much about this dynamic period in the life course, and its impact on individuals remains undocumented. For example, how does the quarterlife transition inform individuals? expectations about their future geographic mobility? It is important to ascertain whether the quarterlife experience is salient across national boundaries, and whether it has a similar impact on the expectations of young adults in various cultural contexts. Cross-cultural findings could yield valuable data for policy-makers or employers aiming to attract or retain young adults within a specific region. To explore the universality of quarterlife transition, I compare the expected geographic mobility of college students preparing to graduate in two different regions: Flanders, Belgium, which is characterized by retention of young adults, and upstate New York, which has seen immense out-migration of young adults in recent decades. Interviews conducted with graduating college students in both locales provide a foundation of qualitative data. To understand the personal allegories and stories that individuals shared with me, I apply an analytical thematic framework rooted in sociological life-course theory. Life-Span Development, Agency, Time and Place, Timing, Linked Lives comprise the five paradigmatic principles used to create a comparison of young adults in Flanders and upstate New York. This rubric sheds lights on similarities as well as several important differences in how individuals experience the quarterlife transition in different regions and which factors inform their expectations about future geographic mobility.

url: http://hdl.handle.net/1813/7826
date: 2007-06-27
creator: Zefferino, Stephanie
viewed: 19
title: The Diffusion of Prediabetes Information through Healthcare Facilities
abstract: Prediabetes is defined as a condition that develops when a patient's blood sugar level falls between the normoglycemic and diabetic range. Prior research suggests that the loss of ten percent of body mass in a pre-diabetic patient may eliminate or prolong the onset of diabetes. However, a recent study conducted

shows that physicians do not know how to diagnose prediabetes. This current investigation explores the spread of prediabetes information through the perspective of the diffusion of innovation theory. Methods. A secondary analysis of the physician assessment on diabetes knowledge established the problem. A follow-up survey was distributed to physicians to explore the effectiveness of communication sources. Results. The presence of barriers to information is associated with less time researching a topic. The most frequently used medium is internet, and the more sources that are used when researching the topic is correlated to a higher perception of knowledge on prediabetes. A physician will attend an information session run by a physician that he admires regardless of the topic. Conclusion. A secondary analysis established that physicians are not correctly diagnosing prediabetes. The follow-up survey suggests confirmation of three hypotheses, hypotheses: (1) physicians are less likely to spend time researching a topic when a barrier is present, even if they perceive ease in accessing medical information, (2) physicians who use more information sources perceive that they are more informed, and that the internet is the most effective medium when researching medical information, and (3) physicians are more likely to attend an information session run by a physician they admire, regardless of the topic.

url: http://hdl.handle.net/1813/7827
date: 2007-06-27
creator: Giannopoulos, Georgia
viewed: 31
title: Eating Restraint and Food Power as Predictors for Consumption and Freshman Weight Gain
abstract: The objective of this study is to examine the relationship between dietary restraint, consumption, and freshman weight gain. It was hypothesized that restrained eaters are more responsive to environmental cues, will eat more when served more food, and will gain weight during their first semester at Cornell. Fifty freshmen attended a session at the Human Metabolic Unit and answered two questionnaires: The Eating Habits Questionnaire and Power Food Scale, and body weight was measured. They were served an all-you-can-eat lunch of pasta, marinara sauce, salad, dressing, and soup. Food intake was measured and recorded. After two weeks, the subjects attended a restaurant-style lunch and were served 1.5 times what they ate at lunch one. When subjects finished eating, they were offered an all-you-can-eat dessert of chocolate cake and ice cream. Again food intake was measured and recorded. Change in food intake across lunches was determined. At the end of the semester, subjects were weighed again to determine body weight change.
The evidence all in, the conclusion is inescapable: restrained eaters are more responsive to environmental cues and have higher food power scores. In this study, eating restraint was an accurate predictor of food intake and the more restrained eaters ate significantly more when served more food and when served dessert compared to less restrained eaters. A significant freshman weight gain of approximately two pounds was also determined, but the association between restraint and weight gain was not significant. This study should be tweaked and replicated so that the relationship between dietary restraint, consumption, and freshman weight gain can be understood. With the appropriate data available, policy changes can be made to implement changes on college campuses that will help combat disordered eating patterns that are characteristic of restrained eaters.

url: http://hdl.handle.net/1813/7828
date: 2007-06-27
creator: Ahmed, Sameer
viewed: 21
title: Strain and Gender Differences in Expression of BK Potassium Channel Subunits in Mouse Adrenal Gland
abstract: Sexual dimorphisms in adrenal function and distinct behavioral patterns of aggression and “emotionality” in SJL and C57/BL6 mouse strains led to an intriguing question: are there strain- and/or

gender-specific differences in the adrenal gland at the level of ion channels? In this study, we focused on the adrenal medulla, which is a critical component of the neuroendocrine system and responsible for modulating reactions to stress and regulation of various body processes including digestion, the immune system, mood, and energy usage. Secretion of epinephrine (EPI) from chromaffin cells of the adrenal medulla is tightly controlled by the electrophysiologial response generated from neural inputs. Several studies suggest that the intrinsic excitability of these cells is modulated by the number and kenetic properties of large-conductance calcium(2+)-activated potassium ion channels (BK channels). Therefore, we focused on BK channels to study strain- and gender-specific differences in the adrenal gland at the level of ion channels. Stress- and sex-steroids have been shown to regulate alternative splicing of the pore-forming subunit of BK channels (Slo-?) in several experimental contexts, and associated ?-subunits confer on BK channels distinct sensitivities to acute effects of stress- and sex-steroids. Using a real-time PCR technique, we examined mRNA levels for total Slo, STREX (a stress-regulated splice-variant of Slo), ?2, and ?4 in two mouse strains, SJL and C57/BL6. The experimental groups were: SJL males, SJL females, and C57/BL6 males. SJL males expressed significantly higher levels of mRNA for total Slo, ?2, and ?4 than SJL females and C57/BL6 males. STREX levels were not significantly different between the groups, probably due to a small sample size, but on average, SJL males had higher levels of expression than the other two groups. These results suggest that SJL females and C57/BL6 males are relatively similar in their BK channel expression in the adrenals, while SJL males show distinct expression patterns. From this study, we now have grounds for hypothesizing functional relationships between behavior and adrenal function.

url: http://hdl.handle.net/1813/7829
date: 2007-06-28
creator: Colman, Gould
viewed: 77
title: In Their Own Voices: A Conversation with Howard W. Riley: Early Agricultural Engineering at Cornell University
abstract: In August of 1963, Dr. Gould Colman, University Archivist Emeritus, interviewed Professor Howard W. Riley, who was the head of the Department of Agricultural Engineering from 1907-1945. In these interviews, Professor Riley candidly records his accomplishments and mistakes, describes his limited access to educational resources that now seem primitive, and repeats his commitment to the overriding goal of teaching and research in the College at the time, and helping New York's rural people improve life's quality in farm and home life.

url: http://hdl.handle.net/1813/7831
date: 2007-06-28
creator: KEDAR, YARDEN
viewed: 28
title: FUNCTIONAL CATEGORIES IN EARLY LANGUAGE ACQUISITION: THE CASE OF DETERMINERS
abstract: This dissertation explores the status of Functional Categories (FCs) - the grammatical categories that are realized in language by a closed-class set of Function Words (FWs; e.g., "the", "and") and bound morphemes (e.g., -ed, -s) - in children?s early representation and processing of language.
Since FCs play a fundamental role in establishing the structural skeleton of sentences, a crucial question is when and how do children incorporate the functional lexicon into their representation and processing of language. On one view, children initially focus on content words such as nouns and verbs and on the basis of these infer meaning and reference. An opposing view is that FCs guide and facilitate the child?s acquisition of language from the earliest developmental stages. Specifically, by serving as primary cues for word learning, word categorization and sentence computation purposes.

This research program investigated whether children may consult the grammatical role of FWs in sentences - in particular, Determiners - already at 1-to-2 years of age. In three experiments, 12, 18, and 24-month-old infants were tested on a preferential-looking task which contrasted grammatical sentences (e.g., ?can you see the ball??), versus three ungrammatical conditions in which the determiner ?the? was either dropped, replaced by a nonsense word, or replaced by an alternate English FW (?and?).
Both the 18- and 24-month-olds oriented faster and more accurately to target following grammatical sentences in comparison to the ungrammatical conditions. A group of 12-month-olds tested on the exact same task failed to show such differences. However, another group of 12-month-old infants who were first familiarized with the test nouns and their respective images, oriented faster to target following grammatical sentences in contrast to the two ungrammatical substitution conditions (and/el).
These findings demonstrate that already around the 1-year marker - although FWs are typically omitted from children?s productive speech (in English) - infants incorporate syntactic information regarding FWs in sentence processing. This early grammatical sensitivity enables the syntactic categorization of words and facilitates reference determination. This suggests that both lexical (content) word categories as well as functional word categories are developing in tandem during these critical periods in language acquisition.

url: http://hdl.handle.net/1813/7832
date: 2007-06-28
creator: Barnett, Jacob
viewed: 15
title: Homogeneous genetic structuring and microsatellite allele diversities across White-ruffed Manakin (Corapipo altera) populations in a highly fragmented Costa Rica landscape
abstract: We explored the effects of recent forest fragmentation on fine-scale patterns of population structuring and genetic diversity in populations of White-ruffed Manakins (Corapipo altera) inhabiting premontane forest patches of varying size in southwestern Costa Rica. Habitat fragmentation is a major conservation concern for avian populations worldwide, but studies on the genetic effects of fragmentation on Neotropical birds are limited. We sampled 159 manakins from nine forest fragments of varying size and isolation within an 18 kilometer radius, and genotyped these birds at 13 microsatellite loci. Bayesian clustering methods revealed that birds from all fragments comprised a single genetic population, and F-statistics showed only modest levels of differentiation between forest patches. We calculated allelic diversity indices for each fragment but found no correlation between genetic diversity and fragment size. These results suggest two possibilities: first, these manakins may retain substantial connectivity via inter-fragment dispersal despite habitat fragmentation, or if dispersal is currently limited, the short period of a half-century since fragmentation may not have been sufficient to impose genetic structuring or to erode allelic diversity.

url: http://hdl.handle.net/1813/7833
date: 2007-06-28
creator: Campbell, Julie
viewed: 17
title: MHC Class I Sequence Polymorphism in Horses and Donkeys
abstract: This study investigated the number of Major Histocompatibility Complex (MHC) class I genes in donkeys, their polymorphism, and their phylogenetic relationship to MHC class I genes of the horse. It has been found through bioinformatic analysis of MHC class I sequences of horses of different haplotypes that classical MHC class I alleles commonly fall within four loci, with additional individual genes that do not fit within any of the four loci. Conserved regions of horse and donkey MHC class I sequences were used to design PCR primers that amplified donkey class I genes. RT-PCR reactions were carried out on donkey lymphocyte cDNA. The MEGA 3 program was used to cluster related sequences and to assign them to individual loci. Donkey sequences followed a similar pattern to that of the horse, having a few loci that contain many of the

alleles and additional MHC class I loci that may be unique to one or only a few MHC haplotypes. The donkey alleles fell into either previously established horse loci or loci unique to donkeys. Loci shared between horses and donkeys are probably older loci, having evolved before the split of hoses and donkeys, while loci detected in only one species may be younger. Comparing the allelic variation between horses and donkeys will lead to a better understanding of the evolution of the highly variant MHC region.

url: http://hdl.handle.net/1813/7834
date: 2007-06-29
creator: Furry, Ronald B.;Cooke, J. Robert
viewed: 70
title: Riley-Robb Hall at Cornell University: Celebrating It's Opening abstract: In the fall of 1953, 46 years after the Department of Biological and Environmental Engineering at Cornell was founded (in 1907) as Division of Rural Engineering and Architecture, ground was broken for what would become its own home, Riley-Robb Hall, named after its founding fathers, Howard W. Riley and Byron B. Robb. The building was dedicated on October 6, 1954, and in 1956 the Agricultural Engineering Department, as it was then named, occupied its new 2 ¼ acre facility for teaching, research and extension. By Fall Semester 1957, 38 professorial and non-professorial staff, 6 graduate students and 12 office professionals were on the roster, as shown in the new directory of September 25, 1957 in the Appendix. Pictures of many of these individuals can be seen in the photographs included in this album. The appendix contains a listing of this 1957 directory.

url: http://hdl.handle.net/1813/7835
date: 2007-06-29
creator: Charles, Brandon
viewed: 16
title: Bioassay of Vitamin A2 in the Retinal Tissue of the zebrafish, Danio rerio, Using Microspectrophotometry and 2D-Imaging
abstract: Zebrafish have been shown to utilize the vitamin A1 chromophore in synthesizing their visual pigments. Recent evidence suggests that they may also be able to utilize vitamin A2 under both natural conditions and after treatment with thyroxine. To test for the presence of vitamin A2 in the retinae of zebrafish and map its location, I combined microspectrophotometric (MSP) analysis with 2D-imaging. MSP measures the absorbance spectra of visual pigments within single photoreceptors, while 2D-imaging uses differential bleaching to attempt differentiation of those regions rich in A1 pigment from those containing A2. Previous MSP has found the occasional A2 cell in some fish, but failed to demonstrate a specific area or island utilizing the A2 chromophore in zebrafish, possibly due to sampling problems of the MSP technique. Unfortunately, the 2D-imaging failed to show enough contrast between bleached and unbleached retinal regions to determine if, in fact, bleaching occurred at all.
In an attempt to enrich the retina in vitamin A2, thyroxine treated eyecup cultures were used. In this case the hope was to stimulate A2 synthesis in cultured eyecup preparations. MSP was used to monitor changes in vitamin A2-based pigment. There was a failure to observe A2 synthesis in culture. While the most likely culture conditions were tried first, it is believed that these were NOT conducive to zebrafish retinal culture. This study has demonstrated methodological challenges that need to be solved before the original question can be satisfactorily addressed.

url: http://hdl.handle.net/1813/7836
date: 2007-06-29
creator: Cho, Margaret
viewed: 18
title: The Mammalian Oviductal Sperm Reservoir: Identification of Receptors for Bull Sperm on the Oviductal

Epithelium
abstract: In eutherian mammals, a storage reservoir is formed when sperm become trapped in the initial segment of the oviduct by binding to the epithelium lining its wall. In bull sperm, seminal vesicle secretory proteins in the bovine seminal plasma (BSP) protein family, namely PDC-109 (BSP A1/A2), BSP-A3, and BSP-30-kDa, coat the sperm head and enable sperm to bind to the oviductal epithelium. This study was undertaken to identify at least one receptor for BSP-30-kDa on the oviductal epithelium. Proteins extracted from apical plasma membranes of the oviductal epithelium were added to a column of BSP-30-kDa bound to anti-BSP-30-kDa covalently conjugated to Protein-A agarose beads. Unbound proteins were washed from the beads and proteins that bound to the column were eluted by adding EGTA, a calcium chelator, because sperm binding to the oviductal epithelium is dependent on calcium. The eluates were resolved on SDS PAGE gels, and silver staining detected two prominent bands of approximately 37 and 34 kDa. Tandem mass spectrometry identified the protein constituents of the bands as annexins (ANXA) 1, 2, and 4. Anti-annexin antibodies also labeled the cilia and apical surfaces of the epithelium in sections of bovine oviduct. Annexins belong to a multigene family of calcium-dependent, phospholipid binding proteins. Annexins are important in several biological processes such as cell adhesion, ion channel modulation, signal transduction, and regulation of membrane structure. It was concluded that annexins are primary candidates for the sperm receptors on bovine oviductal epithelium.

url: http://hdl.handle.net/1813/7837
date: 2007-06-29
creator: English, Justin
viewed: 19
title: MRE11 is Unlikely to be an Essential Component of the Saccharomyces cerevisiae Mismatch Repair Pathway
abstract: hMRE11 has recently been implicated as a primary factor in human mismatch repair (MMR), a process which acts to improve DNA replication fidelity. Mutations in hMRE11 have been identified in human nonpolyposis colorectal cancer (HNPCC) related tumors and in vivo mutator assays suggest that knockdown of this gene causes frameshift mutations. I report that the deletion of MRE11 from the Saccharomyces cerevisiae genome increases the mutation rate but does not significantly enhance the rate of frameshift mutations as seen in other yeast MMR mutants. In addition, unlike in mammalian systems, I was unable to observe yeast two-hybrid interaction between MRE11 and MLH1. This combined evidence suggests that MRE11 is unlikely to be a major player in yeast MMR.

url: http://hdl.handle.net/1813/7838
date: 2007-06-29
creator: Fox, Andrew
viewed: 15
title: The effects of aedeskinin III and analogues on transepithelial electrolyte and fluid secretion in Malpighian tubules of the yellow fever mosquito
abstract: The effects of synthetic aedeskinin III on transepithelial electrolyte and fluid secretion were studied in isolated Malpighian tubules of the yellow fever mosquito, Aedes aegypti. Isolated Malpighian tubules were prepared for measurements of fluid secretion rates by the method of Ramsay. After measuring a control rate of fluid secretion, aedeskinin III was added to the peritubular Ringer solution. Rates of transepithelial fluid secretion significantly increased in a dose-dependent manner at aedeskinin concentrations ranging from 10-5 to 10-9M. Maximal stimulatory effects were observed at 1 ?M aedeskinin III, which increased the fluid secretion rate from 0.667 to 1.451 nl/min. EC50 for aedeskinin III was calculated as 1.028x10-7M. In the presence of 1 ?M aedeskinin III, the Na+ concentration in secreted fluid significantly decreased from 130.5 to 88.2 mM and the Cl- concentration in secreted fluid significantly decreased from 208.6 to 173.5 mM. The

increase in the K+ concentration from 82.1 mM to 90.3 mM was not significant. The product of the fluid secretion rate and electrolyte secretion yields the electrolyte secretion rate. Accordingly, the transepithelial secretion rate for Na+ increased from 96.3 pmols/min to 127.6 pmols/min, the K+ secretion rate increased from 61.6 pmols/min to 141.2 pmols/min, and the Cl- secretion rate increased from 153.9 to 257.5 pmols/min. However, only the effects on K+ and Cl- secretion were statistically significant. Synthetic aedeskinin-receptor agonists 1577 and 1460II also stimulated fluid secretion at 1 ?M concentrations, increasing fluid secretion rate from 0.716 to 1.224 nl/min and from 0.889 to 1.615 nl/min, respectively. The in vitro longevity of isolated Malpighian tubules was also assessed. Isolated tubules cultured in Ringer solution and Grace?s insect medium (pH 6.1) did not survive the process and did not secrete fluid one day after isolation. However, when kept in Grace?s insect medium at pH 7.1, the tubules still secreted one day later. These studies confirm that aedeskinin III has diuretic effects in Aedes Malpighian tubules. Rates of transepithelial secretion of NaCl and KCl increased, suggesting that the mechanism of action of aedeskinin III is similar to that of leucokinin. My study documents further and for the first time that synthetic analogs of aedeskinin containing ?-amino acids retain diuretic potency.

url: http://hdl.handle.net/1813/7839
date: 2007-06-29
creator: Gonzalez-Pagan, Omar
viewed: 33
title: Hawaii Residents' Attitudes Towards the Management of an Invasive Frog Species (Eleutherodactylus coqui)
abstract: The coqui frog Eleutherodactylus coqui was unintentionally introduced to Hawaii in the late 1980?s. Since its introduction, the frog has been discovered in four islands: Oahu, Maui, Kauai, and Island of Hawaii. Much research has been done regarding the management of the coqui frog, including evaluation of control options involving the use citric acid, hydrated lime and chytrid fungus; however, little research has been done to address the societal impacts of the coqui frogs or the attitudes of Hawaii residents and their support for various management options. A self-administered mail questionnaire was used to evaluate Hawaii residents? perceptions toward the frog and its management. (32.4% response rate, n=653). A majority (72.4%) of respondents do not enjoy the presence of the coqui frog and consider it a nuisance while others (20.1%) simply do not care about it. Residents of the Island of Hawaii and those who had been born in Hawaii State are more likely to consider the frog a nuisance and to favor the different management options compared to residents of other islands and those not born in Hawaii. Although most respondents considered it very important for the government to manage the coqui frog, support for management decreased when respondents were asked about their support for specific management methods, most of which are lethal to the frog. Using the New Ecological Paradigm (NEP) Scale, it was revealed that most respondents tended to have a proenvironmental orientation. Respondents? knowledge and proenvironmental orientation were associated with the degree of management that they would support. However, a proenvironmental orientation was not always associated with support for the management of the coqui frog. Managers may be able to use communication strategies to increase public understanding about the ecological impacts of the coqui and the implications of specific management options, appealing to Hawaii residents? proenvironmental orientation.

url: http://hdl.handle.net/1813/7840
date: 2007-06-29
creator: Grummer, Jared
viewed: 17
title: Why does parental effort of the common tern (Sterna hirundo) decrease after a late-season flooding event? A multi-hypothesis approach
abstract: The production of two clutches within the same breeding season is uncommon amongst many

shorebirds species, and even more rare is the act of double-brooding. In late June of 2006, heavy rains flooded over 120 common tern (Sterna hirundo) nests, causing a re-nesting effort of over 140 pairs, and perhaps one case of double-brooding. To evaluate the level of parental effort after a late-season flooding event, I weighed and then compared the eggs of the second clutches to corresponding egg data from the first clutches of 1983 and 1984 from the same colony on Oneida Lake, NY. The mean egg weights from the second clutch of 2006 all weighed significantly less than the corresponding mean egg weights of the first clutches of 1983 and 1984. In both first and second clutches, there was a linear decrease in egg weight with laying order. Three hypotheses have been postulated to explain the intraclutch variation of egg weights, the "brood-survival", "brood-reduction", and "insurance" hypotheses attempt. Given the circumstances of 2006, the brood-reduction hypothesis fits best at explaining the intraclutch variation in egg weights.
The observed decline in parental effort late in the season can be explained by the ?timing? hypothesis, which in the case of this study included a decreased food supply and reduced breeding synchrony later in the season. Certain aspects of the life history of common terns such as molt, which overlapped with the production of the second clutch, as well as the allocation of energy between parents in a bi-parental care system, also decreased the success of many second clutches. Many adults associated with second clutch nests abandoned their eggs and/or chicks in order to enhance the probability of their own survival.

url: http://hdl.handle.net/1813/7841
date: 2007-06-29
creator: He, Mu
viewed: 17
title: Phenotypic characterization of dimple, an embryonic lethal mutation that affects epithelial to mesenchymal transition during mouse gastrulation
abstract: During mouse gastrulation, an epithelial to mesenchymal transition (EMT) takes place at the primitive streak, in which epithelial cells ingress and migrate laterally to form the mesoderm. This process requires disassembly of adherent and tight junction complexes. From a mutagenesis screen, a mouse mutant dimple with defects associated with EMT was isolated and the mutation most likely affects the splicing of MAGI-1 transcript. dimple mutants display abnormal cell accumulation at the mesodermal wings and embryonic development is arrested between embryonic day 7.5 and 8.5. In my thesis project, I show that MAGI-1 is localized in the apical face of epithelial cells where ZO-1 and E-cadherin are also present. In addition, the expression pattern of MAGI-1 at the primitive streak implies the dynamics of tight junction disassembly during EMT. In dimple mutants, I find there is a MAGI-1 isoform that is present in the wild type but most likely missing in dimple. More importantly, I show that E-cadherin in epithelial and mesenchymal cells of dimple mutants is prematurely down regulated. Based on my results, I propose that in dimple mutants the absence of MAGI-1 from embryonic epithelia, although does not seem to affect the integrity of tight junctions, somehow influences the localization and transcriptional regulation of E-cadherin. This down-regulation of E-cadherin at the primitive streak might cause a premature EMT and disrupt the pace of cell delamination during gastrulation, generating the excess of mesenchymal cells and absence of delaminating cells at the primitive streak that we observed in dimple mutants.

url: http://hdl.handle.net/1813/7842
date: 2007-06-29
creator: Hogan, Andrew
viewed: 17
title: Specificity of herbivore-induced secondary metabolite responses in tall goldenrod, Solidago altissima
abstract: Plants respond to herbivore damage with a bewildering array of metabolic responses. To what degree such responses are specific to particular herbivore species and how plants respond to multiple attackers are questions of extensive scientific debate because their answers are fundamental to the understanding of the

ecological consequences of plant induced responses to herbivory. In a field experiment, I investigate the nature of secondary metabolite and defensive protein production in Solidago altissima when elicited by two different herbivore species, the larvae of the galling fly Eurosta solidaginis and the chrysomelid beetle Trirhabda virgata, individually or at the same time. The chemical analysis of leaf tissue reveals differential responses in both trypsin proteinase inhibitor production and volatile organic compound emission when goldenrod plants are damaged by either herbivore individually or the two in combination. Our findings suggest damage-specific elicitation and signal transduction for each herbivore individually and for when both attack simultaneously.

url: http://hdl.handle.net/1813/7843
date: 2007-06-29
creator: Kaan, Hung Yi Kristal
viewed: 22
title: Structure of BAR and PX domains of Sorting Nexin 9 reveals cooperativity in membrane binding
abstract: Sorting nexin 9 (SNX9) belongs to a larger family of BAR-domain containing proteins. It is characterized by an N-terminal Src homology 3 (SH3) domain, a phox homology (PX) domain, and a Bin/Amphiphysin/Rvs-homology (BAR) domain. Together with clathrin and dynamin, it functions mainly in the endocytic pathway to sort proteins. SNX9 has also been shown to regulate receptor-mediated endocytosis of epidermal growth factor receptor (EGFR), by its interaction with Activated Cdc42-associated kinase-2 (ACK2), thus implicating a role for SNX9 in signal transduction.
Although the main cellular functions of SNX9 have been brought to light, little is known about the molecular mechanism by which this multi-domain protein participates in endocytosis and signaling. It is also unclear if and how the protein is regulated. In order to understand the interactions between the various domains of SNX9, we have crystallized and solved the structure of a shorter construct of SNX9 (here after called SNX9PX-BAR), which consists of only the PX and BAR domains. By analyzing this multi-domain structure and by conducting lipid- and vesicle-binding assays, we are able to gain a better understanding of how the two domains interact to influence the membrane binding ability of SNX9.
Our analysis of the structure of SNX9PX-BAR shows a dimeric BAR domain that is moderately curved. The BAR domain forms stable dimers via mainly hydrophobic interactions on the membrane surface. Membrane binding is most likely driven by electrostatic interactions between the PX-BAR domain and the negatively-charged plasma membrane. In addition, the PX domain of SNX9 shows high and specific binding affinity to PI(3)P, which is in high concentrations in early endosomes. Therefore, we propose that SNX9 might be localized to both the plasma membrane and the early endosomes to participate in endocytosis and sorting of vesicles.

url: http://hdl.handle.net/1813/7844
date: 2007-06-29
creator: Koltz, Amanda
viewed: 19
title: Changes in fin whale (Balaenoptera physalus) song over a forty-four year period in New England waters
abstract: Although much marine mammal research has been conducted on whales in the waters surrounding Cape Cod, Massachusetts, little work has been done on the supposed resident fin whale (Balaenoptera physalus) population that resides in this area. Fin whales have three different sounds in their vocal repertoire but a relatively simple song that is composed of long trains of high intensity 20-Hz pulses. Performed only by males, the song may be a reproductive display with song characteristics evolutionarily fixed within populations. In this study, fin whale vocalizations recorded in the area of Cape Cod Bay during the years 1961, 1978, 2001, and 2005 were characterized and compared within years to detect possible divergence in

the male song. Reliable comparisons with the earlier data proved difficult because of small sample sizes under the chosen song parameters. However, measurements of inter-pulse interval and song length did vary significantly between the short time span of 2001 to 2005. Mean inter-pulse intervals were shorter in 2001, and song duration was longer within the 2005 recordings. Negative correlations between the center frequency and the song duration, as well as the center frequency and inter-pulse interval were also found. Although we rejected the null hypothesis that song notes and features are fixed and do not change over time, we did discover valuable information regarding the relationships between different features of fin whale song. Based on comparison of the temporal and individual variation observed in our data with those collected on a population in Bermuda, it is unclear whether vocal characteristics are distinct and could be an identifying feature of separate breeding populations.

url: http://hdl.handle.net/1813/7845
date: 2007-06-29
creator: Kong, Fanrong
viewed: 16
title: Effects of SOPC on the Phase Behaviors of the DSPC/DOPC/Cholesterol Biomembrane Model System
abstract: The phase diagram of the DSPC/DOPC/cholesterol biomembrane model system was recently determined by studies in our laboratory. However, the component DOPC does not occur in animal cell plasma membranes, but was chosen for convenience in solving the phase diagram. In my study, DOPC was replaced stepwise by the naturally-occurring SOPC to determine its effect on the high cholesterol boundary of the L?+Lo two-phase region. Giant unilamellar vesicles with the chosen compositions, probed with the fluorescent dye C12:0-DiI, were made by electroswelling and their phase behaviors were examined by fluorescence microscopy. From 0 to 45% replacement of DOPC by SOPC, the middle part of the boundary shifts only a small amount, from cholesterol mole fraction 0.38 down to mole fraction 0.30 ? 0.35. The L? side of the boundary remains essentially unchanged. Above 50% replacement, photo-induced artifacts obscure the real phase behavior at the middle part of the boundary, but might represent the actual boundary termination. Above 70% replacement of DOPC by SOPC, no phase-separation was observed for the L? side of the boundary. The size and shape of the L?+Lo two-phase region can be related to the structures of the lipids.

url: http://hdl.handle.net/1813/7846
date: 2007-06-29
creator: Landi, Alicia
viewed: 20
title: Relaxation of microhabitat restriction through ontogeny of Itea virginica in cypress-tupelo swamps
abstract: Nearly all understory plant species in semi-permanently flooded cypress-tupelo swamp forests grow on microsites located above the water level, as opposed to growing on the flooded forest floor. Our field study indicates that one such species, Itea virginica (Saxifragaceae), has a strong association with elevated microsites that changes with life stage: adults are found significantly more often on the forest floor than seedlings, although not as frequently as expected for the amount of forest floor vs. elevated microsites present. High water level may inhibit seedling establishment, but not adult growth, thus suggesting a potential ontogenetic expansion of flooding tolerance. We conducted greenhouse flooding experiments on seedlings and adults of various sizes with three treatments: high flood (a percentage of aboveground biomass submerged), waterlogged (only root systems submerged), and control (no flooding). The effect of initial height above water and treatment on relative growth rate was significant for the seedlings: RGR decreased with increasing flood level; however, there was no significant effect for adults. Seedlings were more negatively affected by flooding than adults due primarily to their small size rather than any differences in ability to produce flood responses (i.e., enlarged lenticels or adventitious roots). Additionally, we conducted seed experiments investigating the

effects of different substrates and durations of flooding on germination success; there were no significant effects of either factor on seed germination. This study increases our understanding of regeneration biology and can be valuable in planning restoration activities in cypress-tupelo swamps.

url: http://hdl.handle.net/1813/7847
date: 2007-06-29
creator: League-Pike, Paloma
viewed: 26
title: When getting a meal may cost your life: Exploring the incongruous distribution between the green crab Carcinus maenas and its prey
abstract: The green crab Carcinus maenas invaded the Gulf of Maine over a hundred years ago and has become a well-established member of intertidal communities. We surveyed the vertical distribution of Carcinus, other crabs, and their potential prey from the intertidal into the shallow subtidal. Carcinus was most abundant in the intertidal and decreased in the subtidal. In contrast, a preferred prey of Carcinus, the mussel Mytilus edulis, had highest densities in the shallow subtidal. Why isn?t Carcinus most abundant where prey densities are highest? A previous experiment revealed a higher mortality rate for Carcinus tethered in the subtidal than in the intertidal. In the subtidal there are higher abundances of the American lobster Homarus americanus and Jonah crab Cancer borealis. We performed a laboratory experiment to investigate the effects of cohabitation with lobster and C. borealis on survival, shelter use, and behavior of Carcinus. Lobsters were the more effective predator on Carcinus, consuming 27% of the crabs during 24 hours. Only 5% of Carcinus were eaten by C. borealis and none by conspecifics used in control treatments. In the presence of lobsters, Carcinus showed significantly more climbing and deep burrowing behavior relative to controls. Our results suggest that the risk of predation by lobsters underlies the scarcity of Carcinus in subtidal communities.

url: http://hdl.handle.net/1813/7848
date: 2007-06-29
creator: Levas, Stephen
viewed: 29
title: Dynamics of Supralittoral Freshwater Rock Pools in the Gulf of Maine
abstract: Appledore Island, located six miles off the coast of Portsmouth, NH, has over 500 freshwater peripheral pools situated above the intertidal zone and range in size from semi permanent pools measuring 15 centimeters across to larger permanent pools up to about 10m diameter. Seventy eight pools were physically monitored once every four days from June to August 2006 and have provided us with a deeper understanding on dynamics of pond community organization and how organisms cope with rapid and major physical changes. Pools were monitored for temperature, conductivity, pH, dissolved oxygen, water color and clarity, and presence or absence of key macrofauna. The color and clarity of pools, which we used as a proxy for phytoplankton levels, varied throughout the summer and ranged between being always opaque to always clear, or cycling between these two states. Cycling of pools is important for the macrofauna because it indicates varying conditions that organisms must contend with. Clear pools had significantly lower dissolved oxygen levels, pH values and presumably, based on water clarity, lower phytoplankton stocks, while opaque pools had higher levels of both dissolved oxygen and pH and usually very high phytoplankton levels. Diel vertical migration by Daphnia. pulex was observed in these island pools which is interesting because of the lack of vertebrate predators. Significantly higher densities of D. pulex occurred in the top 10cm during the night than day. With the absence of significant predators, physical or genetic factors must explain the observed migration to the surface at night by D. pulex.

url: http://hdl.handle.net/1813/7849
date: 2007-06-29

creator: Lowry, Erin
viewed: 22
title: The role of aphid host preference in barley yellow dwarf virus epidemiology
abstract: Viral infection can cause changes to a plant?s morphology or chemical composition that may alter its desirability to the insect vector. In combination with viral persistence in the vector, prevalence of the disease, and the spatial distribution of infected plants, vector preference for virus-infected or uninfected individuals can strongly influence the rate of disease spread in plant communities (McElhany et al. 1995). Although it is known that the presence of a virus in the host plant can lead to a change in feeding behavior and an increase in fecundity (Fereres et al. 1990, Fereres et al. 1989, Montllor and Gildow 1986), there is little evidence that vectors prefer infected hosts over uninfected hosts. In this study, I examined host preference of the grass-feeding aphids Rhopalosiphum maidis, R. padi and Sitobion avenae when offered a variety of grasses infected or uninfected with the PAV species of barley yellow dwarf virus (BYDV). The eight grass species used in the preference tests are commonly found in New York State and are known hosts of BYDV. Preference tests were carried out in cages, where adult aphids were allowed to choose among grass seedlings. To determine whether infection altered preference, aphids were offered either uninfected grass communities or communities that contained a mixture of infected and uninfected grass seedlings. Results from these trials indicated strong species-specific preferences by aphids for particular grasses. Although there was some indication that infection could alter preference, I found no evidence that infection caused a significant shift in preference ranking among grasses.

url: http://hdl.handle.net/1813/7850
date: 2007-06-29
creator: McKinney, Caleb
viewed: 28
title: The Functionality of Marek's Disease Virus Us3 Protein
abstract: Marek's disease (MD) is a lymphoproliferative disease of chickens caused by cell-associated Marek's disease virus (MDV). The Us3 protein kinase expressed by MDV has been shown to be involved in various stages of the viral life cycle. Deletion of the Us3 open reading frame resulted in an accumulation of primarily enveloped virions in the perinuclear space which led to a reduction in viral titers (Schumacher et al., 2005). It was also shown that the Us3 protein is involved in actin stress fiber breakdown. In this study we constructed a recombinant virus (Us3*220A) to determine the significance of the Us3 kinase activity. Disruption of the kinase activity was achieved by substituting a lysine in the active site of the protein with an alanine. Titers of the kinase-negative virus were reduced when compared to parental virus in a similar fashion as the previously described Us3 deletion mutant. We were able to show complete absence of direct phosphorylation of an MDV-specific phosphoprotein, pp38 by pUs3*220A. Surprisingly, expression of pUs3*220A mediated breakdown of the actin cytoskeleton 24h after transfection of chicken embryo fibroblasts in the same way wildtype pUs3* does. At 48h post transfection the actin cytoskeleton was fully restored in almost all transfected cells. Our results show that the Us3 and pp38 proteins comprise a kinase-substrate pair but that not all of Us3 functions are mediated by its kinase activity.

url: http://hdl.handle.net/1813/7851
date: 2007-06-29
creator: Muakkassa, Nora
viewed: 21
title: Regulation of Proto-Dbl through the Ubox Domain of CHIP
abstract: The Dbl protein is a product of a proto-oncogene that functions as a guanine nucleotide exchange factor for Rho-family GTPases. It is responsible for activating the GTPases by facilitating the dissociation of GDP thus allowing for the binding of GTP. Intracellular levels of Dbl are regulated by ubiquitin-mediated

proteolysis. CHIP is the E3 protein-ubiquitin ligase responsible for this ubiquitination. More specifically, the Ubox domain of CHIP is critical to this interaction. Oncogenic Dbl, which lacks its spectrin domain, cannot bind CHIP and therefore escapes degradation. This causes accumulation of the oncogene product in the cell, and leads to persistent activation of its downstream pathways.

url: http://hdl.handle.net/1813/7852
date: 2007-06-29
creator: Owens, Gwen
viewed: 22
title: Engineering a Synthetic Extra-Cellular Matrix for In Vitro Cartilage Tissue Production
abstract: In this study, growth factor binding found in natural extra-cellular matrix (ECM) was mimicked by a modified polymer scaffold that could attract either Insulin-Like Growth Factor-I (IGF-I), a growth factor known to stimulate ECM production by chondrocytes, and Transforming Growth Factor-B1 (TGF-B1), a growth factor known to induce chondrogenesis in mesenchymal stem cells.
Short growth factor-binding peptides were synthesized and covalently attached to an alginate polymer scaffold. Using self-assembled monolayer (SAM) chemistry, these modified alginate layers were characterized using Imaging Ellipsometry (IE). Affinity of each growth factor for its respective synthetic peptide was quantified via Surface Plasmon Resonance (SPR). The density of binding peptides bound to alginate was determined using Attenuated Total Reflectance Fourier Transform Infrared Spectroscopy (ATR-FTIR). Computational diffusion modeling was used to design an ELISA-based diffusion experiment. Mesenchymal stem cells and chondrocytes were grown in chemically modified-alginate beads with and without added growth factor; modification increased ECM production in both kinds of cells. Thus, through this novel system of peptide-modified alginate scaffolds, growth factors were specifically but non-covalently retained by alginate, allowing for controlled release of growth factors.

url: http://hdl.handle.net/1813/7853
date: 2007-06-29
creator: Kuo, Melissa
viewed: 60
title: Paper Prototyping: A Case Study at Cornell University Library
abstract: Public Services Executive Committee: Usability and User Studies

url: http://hdl.handle.net/1813/7854
date: 2007-06-29
creator: Paddock, Sara
viewed: 26
title: Characterizing the foraging ecology of leatherback turtles (Dermochelys coriacea) using stable carbon and nitrogen isotopes of eggshells
abstract: Stable isotopes are useful tools for discerning information regarding the foraging ecology of far-ranging animals like sea turtles. Isotope signatures of prey items are integrated into the turtles? tissues in a characteristic manner, and in the case of nesting females, eggshell isotopic signatures can provide insight into the trophic status and foraging locations of the adult females. By sampling eggshells from nesting beaches, one can obtain a unique, wide-range perspective that might not be observed by sampling turtles directly within foraging areas. In the present study, leatherback turtle eggshells were collected from 21 different nests on the nesting beach in Jamursba Medi, Papua, Indonesia in the Western Pacific in July 2003. Habitat samples, including particulate organic matter, krill, gelatinous organisms, squid, and small fish were collected with dip nets and bongo tows in the Eastern Pacific, off the west coast of the United States. Eggshell ?13C values were similar for all eggshell samples (-13.2 ? 1.2 ?). However, there was a dichotomy in ?15N values, with 62%

of the eggshells in the 9.2?-10.8? range and 38% in the 12.5?-14.5? range. Comparing these values with the ?15N values of habitat samples analyzed in this study and others as well as with information on Pacific-wide nitrogen fixation/denitrification patterns, suggests that these two ?15N groupings represent animals foraging in the Western Pacific and Eastern Pacific, respectively. These data are consistent with satellite telemetry data and suggest that ?15N isotope analysis can be an effective, non-invasive method to gain knowledge about turtle foraging locations that may prove useful in conservation efforts.

url: http://hdl.handle.net/1813/7855
date: 2007-06-29
creator: Parikh, Vijal
viewed: 22
title: Retronasal but not oral-cavity identifications of air-phase trigeminal stimuli
abstract: Single concentrations of six odorants (eugenol, heptyl alcohol, nonanal, 1-octanol, dl-menthol, valeric acid) were selected to be trigeminal stimuli, based upon previous studies done through anosmics (individuals that lack a functional olfactory system). The stimuli were presented in random order three time each in vapor-phase either retronasally or oral-cavity-only. They were identified on a digital computer by 20 subjects (ages 18 to 35, 9 females). Retronasal presentations were produced by inhaling via the mouth with a nose clip closing the nostrils, and then removing the nose clip and exhaling from the nose. Oral-cavity-only presentations were produced by inhalation via the mouth with a nose clip closing the nostrils, and exhalation from the mouth with the nose clip remaining in place. This study investigates if subjects could identify odorants when restricted to the oral-cavity-only using the same identifiers of the odorants when presented retronasally. RESULTS: Median percent retronasal correct identifications [correct identification terms are shown in brackets] were: eugenol, 100% [cloves or spice]; heptyl alcohol, 67% [cleaner]; nonanal, 58% [citrus or floral]; 1-octanol, 71% [citrus or cleaner]; dl-menthol, 100% [ointment or peppermint]; valeric acid, 67% [rancid or sweat]. Median percent correct oral-cavity-only identifications were all 0%, except for dl-menthol, for which percent correct oral-cavity-only median correct identification was 67%. A Friedman Non-Parametric ANOVA statistical analysis showed significant difference between odorants presented oral-cavity-only versus retronasal. Pairwise comparisons showed significant differences between odorants presented oral-cavity-only versus retronasal for all odorants except for dl-menthol. CONCLUSIONS: Many vapor-phase 'trigeminal' odorants can be identified only when access to the nasal cavity (retronasal) occurs, but substantial correct identification of vapor-phase dl-menthol also occurs when restricted to the oral cavity (oral-cavity-only). Odorants similar to dl-menthol may contribute to flavor from both the oral and nasal cavities.

url: http://hdl.handle.net/1813/7856
date: 2007-06-29
creator: Plavskin, Yevgeniy
viewed: 32
title: Mapping and identification of suppressor mutations of sma-9, a gene required for patterning of the postembryonic mesodermal lineage in C. elegans
abstract: The Caenorhabditis elegans M lineage provides an excellent system for studying mesodermal development. During C. elegans postembryonic development, the mesodermally derived M cell undergoes four rounds of cell division before differentiating into body wall muscles, sex myoblasts, and macrophage-like cells called coelomocytes. The sex myoblasts undergo three more rounds of division and become further differentiated into eight uterine and eight vulval muscles. The first division of the M lineage is asymmetric, with a dorsal and a ventral cell being formed. The dorsal cell gives rise to the two coelomocytes, whereas the ventral cell gives rise to the two sex myoblasts. The sma-9 gene is required to regulate this dorsal-ventral asymmetry. In sma-9 mutants, the dorsal cell behaves like the ventral cell in the M lineage. As a result, sma-9 adult worms are missing the two dorsally derived coelomocytes and have two extra ventrally derived

sex myoblasts. In order to identify the molecular mechanisms on how SMA-9 functions to regulate this asymmetry, the Liu lab has previously isolated a number of mutations that suppress the M-lineage defect of sma-9 mutants. Two of these mutations, jj1 and jj3, have been previously mapped to genes in the TGF-B signaling pathway, sma-6 and sma-3. In this thesis, I describe my mapping of two other sma-9 suppressors, jj6 and jj4, as well as the sequencing of the jj6 mutation. jj6 is a mutation in the MH1 domain of the sma-2 gene, another gene in the TGF-B pathway, and jj4 maps to the left arm of Chromosome I, a region that does not contain any known TGF-B pathway genes.

url: http://hdl.handle.net/1813/7857
date: 2007-06-29
creator: Ringelman, Kevin
viewed: 25
title: Aerial competition for feathers by Tree Swallows (Tachycineta bicolor)
abstract: During the breeding season, Tree Swallows (Tachycineta bicolor) scavenge for feathers and use them to line their nests. Nest lining is known to be an important factor in Tree Swallow reproductive success, but competition for feathers has never been experimentally studied despite the fact that acrobatic aerial competitions for feathers are frequent and easily observable. To examine the proximate and ultimate causes of feather contests, I manipulated the nest-lining of breeding swallows and then observed individual behaviors throughout the breeding season. Both males and females gathered feathers, beginning with nest construction and continuing through chick rearing. It is clear that there are two distinct methods of feather gathering: feather ?collection,? an early-season behavior characterized by a lack of interaction with other birds, and feather ?contests,? conspicuous, aggressive interactions involving several birds. Contests over larger feathers were more intense than those over smaller feathers. Early-season contest winners tended to exhibit drop-catch displays with the feather, had well-feathered nests, and were ultimately reproductively successful; there is some evidence that these contest winners may be higher quality individuals. The number of feathers in the nest at the time of a contest was also an important determinant of behavior. A late-season individual with a well-feathered nest tended to participate less in contests and drop the feather more frequently. The associations and feedbacks among contest performance, individual quality, the number of feathers in the nest, and reproductive success indicate that feather contests involve complex behaviors that are highly variable among individuals and change in response to varying conditions.

url: http://hdl.handle.net/1813/7858
date: 2007-06-29
creator: Stenson, Erin
viewed: 31
title: Identification and Characterization of Lethal 6: a Chromosome 5 Embryonic Lethal Mutation in Mus musculus
abstract: Mus Musculus was randomly mutagenized using N-ethyl-N-nitrosourea (ENU). Mutations on Chromosome 5 were selected using the Rw inversion, a visibly marked, recessive, lethal inversion that covers almost fifty megabases (Mb). Multiple mutations were isolated from the subsequent three-generation mutagenesis screen, one of which was lethal 6. Using a combination of complementation tests and recombinational mapping, the lethal 6 region was narrowed down to less than 1.4 (Mb). There were thirty-eight candidate genes in this region of which 4 had already been mutated and yielded viable progeny. The coding regions of 80% of the remaining thirty-four genes have been ruled out from being lethal 6, although it is still possible that ENU affected the regulation of one of these genes. Mice homozygous for lethal 6 die around E8.0 and preliminary results from blastocyst outgrowth assays suggest that they are unable to implant.

url: http://hdl.handle.net/1813/7859

date: 2007-06-29
creator: Tan, Min Jie Alvin
viewed: 30
title: Defining the Cytoplasmic and Nuclear Transport of CPV Capsids in Cells
abstract: Canine parvovirus (CPV) is a non-enveloped virus that replicates in the nucleus during infection. While it is known that it uses the cell?s microtubule network to traverse the cytoplasm, the route of nuclear entry is unclear. The nuclear pore complex was thought to be used by the virus due to the presence of nuclear localization sequences (NLS) in the VP1 protein. But recent studies in the minute virus of mice (MVM) have proposed that it induces breaks in the nuclear envelop before entering the nucleus via these breaks. In this study, Crandell Feline Kidney (CRFK) cells stably transfected with GFP-lamin A/C were micro-injected with CPV capsids whose distribution within the cells was then detected using fluorescent-labeled antibodies. The CPV capsids did not appear to induce breaks in the nuclear lamin structure of the cells that was observed for the MVM.

url: http://hdl.handle.net/1813/7860
date: 2007-06-29
creator: Torre, Christopher
viewed: 21
title: Small G-protein activation in articular chondrocytes by interleukin-6, interleukin-8, and osteogenic protein-1
abstract: The studies outlined in this honor?s thesis were designed to better understand the mechanisms at both the cellular and molecular levels associated with the onset of osteoarthritis. The horse was used as a model organism, and the experiments were performed on normal equine chondrocytes cultured in vitro. Interleukin-6 (IL-6) and interleukin-8 (IL-8) are known to have catabolic effects on the cartilage matrix while osteogenic protein-1 (OP-1) is a known anabolic factor. There is no complimentary information regarding the effects of these peptides on small G-protein (Cdc42, Rac, and Rho) activation in articular chondrocytes. The objectives of the present study were to determine the activation status of Cdc42, Rac, and Rho after treatment with IL-6, IL-8, or OP-1. The G-proteins play an important role in the maintenance of the actin cytoskeleton and chondrocyte phenotype, so they are of interest because of their clinical relevance in regards to osteoarthritis. To determine a suitable dose for use in these activation assays, chondrocytes were treated in vitro with varying concentrations of IL-6, IL-8, or OP-1, and changes in RNA transcripts of MMP-3, MMP-13, Col2A1, and Aggrecan were quantified using RT-PCR. In the case of IL-6, IL-8, and OP-1, it was determined that a dose of 100ng/mL media stimulated catabolism/anabolism. Chondrocytes were also examined using confocal microscopy following treatment with IL-6, IL-8, or OP-1 to determine if a correlation exists between the normal vs fibroblastic phenotypes and the activation status of the small G-proteins. Our initial hypothesis was that IL-6 and IL-8 would increase Cdc42 and Rac and decrease Rho activity, while OP-1 would have an opposite effect. Activity of the small G-proteins was determined through an affinity binding assay and subsequent western analysis. To date, our experiments indicate that treatment of the chondrocytes with IL-6 and IL-8 resulted in a decreased activity status of Cdc42 and Rac, which is contrary to the initial hypothesis. Studies to determine the effects of OP-1 and the activation status of Rho in response to all treatments are nearing completion.

url: http://hdl.handle.net/1813/7862
date: 2007-06-30
creator: Agarwal, Anshu
viewed: 55
title: The Impact of Front-End Usability Guidelines on Consumer Evaluations of E-Commerce Web Pages
abstract: This thesis examined the impact of usability guidelines and front-end web site design on consumer

aesthetic evaluations of e-commerce web sites and perceptions of the e-retailer. A detailed web site design guidelines framework was developed from an in-depth review of the usability, human factors, and human-computer interaction web design guidelines literature. Four web site design factors (background color, white space, thumbnail image location, and thumbnail image size) were selected and varied using this framework. In addition, as a secondary research focus, this study explored the impact of these front-end web site design factors on consumer trust, product preference, and purchase intention. Based upon the literature, a conceptual model was proposed which integrated usability and web site design with consumer web site evaluation, trust, purchase intention, satisfaction, and loyalty. Conjoint analysis methodology was then used to design web page prototypes. Results showed that subtle front-end web site design elements impacted consumer aesthetic evaluations of the web page and subsequent e-retailer evaluations, although individual-level analysis showed a high level of heterogeneity across respondents. Results also provided support for the conceptual model developed.

url: http://hdl.handle.net/1813/7863
date: 2007-06-30
creator: Xiaofei, Pei
viewed: 44
title: THREE PAPERS ON HEALTH AND DEVELOPMENT IN CHINA AFTER THE ECONOMIC REFORMS
abstract: This dissertation comprises three papers on health and development in China after the economic reforms initiated in early 1980s. The first paper analyzes the relationship between income inequality and health and provides some evidence that income inequality negatively affects population health. The second paper looks at determinants of children?s height and shows that a group of individual, household and community factors all play important roles in determining Chinese children?s health in the 1990s. The third paper investigates the under-nutrition situation in China along with intra-household inequality. A U-shape relationship is found between intra-household inequality and average household well being, which implies important policy applications. All three papers use the China Health and Nutrition Survey data.

url: http://hdl.handle.net/1813/7864
date: 2007-07-02
creator: Lin, Guo
viewed: 34
title: Ranked search over structured and semi-structured data
abstract: Traditionally, relational database systems have been designed for precise queries over structured data, while information retrieval systems have been designed for more flexible ranked keyword search queries over unstructured (text) data. However, many new and emerging applications require data management capabilities that combine the benefits of database and information retrieval systems, e.g., e-commerce and content management applications. In this dissertation, we have proposed and initiated steps toward the larger goal of integrating relational database and information retrieval systems.
First, we consider the problem of ranked text search in relational databases, where the traditional ranking paradigms and techniques developed for stand-alone unstructured documents are not directly applicable. We thus propose a new ranking paradigm that uses structured data values to score the results of text search queries. Our experimental results on real and synthetic data sets show that we can support the new ranking paradigm efficiently in relational databases.
Second, we explore a novel problem of discovering rich relationships in databases based on user queries with text search and structural query conditions. Toward this end, we have introduced the notion of data topology and developed efficient algorithms for computing ranked topologies based on user queries. We have evaluated our algorithms using a real biological database, the Biozon database (http://www.biozon.org).

Third, we consider the problem of efficiently producing results for keyword
search queries over semi-structured XML documents. We present the XRANK system that is built to address the novel challenges for effective XML keyword search as apposed to HTML keyword search. Our experimental results show that XRANK offers both space and performance benefits when compared with existing approaches.

url: http://hdl.handle.net/1813/7865
date: 2007-07-02
creator: Xia, Ling
viewed: 35
title: Exploring Negative Group Dynamics: Adversarial Network, Personality and Performance in Project Groups
abstract: This thesis reports on a two-phase study conducted to explore how negative relations can influence individual group member's performance when working on a group project, and how frequency of communication and personality can moderate this relationship. The first phase of the project examined the impact of negative relations and frequency of communication on performance in project groups. Results showed that group members disliked by others were less likely to perform well, albeit frequent communication with others could make a person more likable and consequently help him/her perform better. The second phase of the project investigated how the "Big Five" personality traits (conscientiousness, agreeableness, emotional stability, openness to experiences, and extroversion) and position in adversarial networks interacted to influence individuals' performance. The results showed that those individuals disliked by their team members for whatever reasons were less likely to achieve a good performance rating despite having such desirable personality traits as conscientiousness, emotional stability or openness to experiences.

url: http://hdl.handle.net/1813/7866
date: 2007-07-03
creator: Clarke, Christopher
viewed: 34
title: Understanding Influenza Vaccine Behavior in Healthcare Workers: The Role of Information Seeking and Processing
abstract: In the United States, annual influenza epidemics kill approximately 36,000 people, seriously hospitalize 200,000, and cause substantial social and economic disruption. Fortunately, vaccination is considered an effective prevention method. However, despite recommendations by the Centers for Disease Control and Prevention (CDC), annually only 40% of healthcare workers are immunized against influenza. Such low rates present challenges not only to patient health, but also the delivery of medical services.
There is no magic formula for increasing influenza vaccine uptake among healthcare workers. Only a multi-faceted approach involving communication, cost controls and supply stability will achieve the desired result. This thesis focuses specifically on the role of vaccine communication in facilitating changes in immunization behavior. It argues that public health officials need to understand how healthcare workers make personal vaccine decisions and what informs those choices. Moreover, it provides commentary on the logistical, social and ethical issues this approach raises.
Overall, this thesis?s guiding question is as follows: What are the determinants of vaccine behavior among healthcare workers in various settings? Specifically, it focuses on how vaccine information is sought and cognitively interpreted, and how these actions influence immunization decisions. A model of risk information seeking and processing (RISP) is used as a guiding framework. This model explores motivations for information seeking and processing (i.e. systematic and heuristic), and their relationships to various components of behavior (e.g., attitudes, beliefs, and intentions). It posits that systematic processing, when paired with information seeking, is associated with a higher number of beliefs one considers, as well as

(ultimately) attitudinal stability and enduring behavior change. Given that influenza vaccination is a behavior repeated throughout one?s life, the focus on enduring change is particularly appealing.
This thesis is a ?first step? in exploring the relationship among vaccine information seeking and processing, and the aforementioned components of behavior. One hundred twenty-one in-person, telephone, and online interviews were conducted with physicians, nurses, paramedics and other groups within an urban community in central New York. Research goals included: (1) providing preliminary data on these cognitive behaviors, (2) developing measurements for several RISP model variables in need of further exploration, and (3) creating a foundation for future research with healthcare workers or other population groups. Study variables, derived from the RISP model, included: (a) information processing/seeking indicators, (b) preferred information sources, (c) perceived ability to find information, (d) salient beliefs about vaccination and (e) attitudes towards vaccine sources.
Overall, the data suggest that healthcare workers consider a variety of beliefs in deciding whether to be immunized. Beliefs associated with vaccination included the protection of personal health and patient well-being. Beliefs against immunization included lack of perceived risk for influenza, time constraints, and concern about side effects. Regarding information seeking, interviewees tended to favor health-related sources for vaccine information, including the CDC and their local health department.
Additionally, several measurements for heuristic and systematic processing were developed. Measures for systematic processing included relating the information to one?s responsibilities as a healthcare worker and considering one?s existing vaccine-related attitudes. Those for heuristic processing included: focusing on the length, clarity, and visual aspects of vaccine information. Finally, several theoretical and practical implications were discussed. Theoretically, two new variables were identified which may help delineate various gradients of information seeking beyond mere presence or absence. Practically, the data suggest that perceptions of information quality likely interact with vaccine-specific judgments in informing immunization decisions. Vaccine information that addresses key vaccine-related concerns and questions, as well as provides clear rationale for recommendations, will likely be most effective in achieving effectiveness and legitimacy.Cornell University

url: http://hdl.handle.net/1813/7868
date: 2007-07-05
creator: Teitelbaum, Emmanuel J.
viewed: 25
title: Mobilizing Restraint: Unions and the Politics of Economic Development in South Asia
abstract: While many studies examine the relationship between labor repression and economic development, few address the developmental implications of state-labor relations in democratic countries. Yet the rapid spread of democracy through the developing world highlights the need for such an investigation. In this dissertation, I show that in a democratic context, politically affiliated unions respond differently to changing local and global economic conditions than nonaffiliated unions. In particular, I argue that political parties are encompassing organizations that internalize the externalities associated with the protest of their affiliated unions. Thus, unions affiliated to major political parties respond to more competitive markets by restraining union protest and encouraging institutionalized forms of grievance resolution. In contrast, nonaffiliated unions are more likely to use worker frustration to ratchet up militancy against recalcitrant employers and encourage the use of extreme and violent forms of protest. I support these arguments with data gathered during 18 months of field research in four regions of South Asia: Sri Lanka and the Indian states of Maharashtra, Kerala and West Bengal. The findings of the dissertation call into question the conventional wisdom that partisan unions are inimical to economic development.

url: http://hdl.handle.net/1813/7869
date: 2007-07-05

creator: Battista, Jennifer
viewed: 13
title: Effects of Matrix Metalloproteinase-13 on Extracellular Matrix Molecule Synthesis and Small GTPase Activation in Articular Chondrocytes
abstract: The degerative joint disease, osteoarthritis (OA), is a leading cause of disability in both humans and animals. OA involves the degradation of articular cartilage, which functions to dissipate tensile forces and cushion the joint1. Cartilage degeneration in OA is the result of multiple events including enzymatic degradation of matrix components and malfunction of the intracellular signaling pathways in chondrocytes 2. Traditionally, the catabolic cytokine interlukin-1, also called catabolin, has been used to induce an OA phenotype for in vitro experiments3, 4. Recent studies, however, indicate that matrix metalloproteinase-13 (MMP-13), also termed collagenase-3, is chiefly responsible for cartilage deterioration2, 4, 5. Though MMP-13 has been shown to play an integral role in OA, most studies to date have focused on proteoglycan cleavage mechanisms and the characterization of MMP-13 cell-surface binding and internalization 2, 3, 6-9. Thus it is the broad objective of this Honors Research Project to determine the effects of equine MMP-13 on the matrix molecule expression of chondrocytes and on the activation states of the small G-proteins of the Rho family (Cdc42, Rac, RhoA), and compare the results to those achieved after treatment with IL-1. To accomplish these aims, equine recombinant MMP-13 (eqrMMP-13) was cloned, inserted into a protein expression vector, and expressed as the active enzyme. To evaluate the expression of extracellular matrix molecules, chondrocytes were plated in monolayer, treated with eqrMMP-13, and total RNA was extracted and evaluated using quantitative RT-PCR. Assessment of the effect of MMP-13 GTPase activation was accomplished by treating chondrocytes in monolayer, retaining active GTP-bound GTPases from cell lysates using a GST fusion protein containing the binding domain of a down-stream target, in pull-down assays, and analyzing the retained proteins by polyacrylamide gel electrophoresis (PAGE) and western analysis, in addition to confocal microscopy. This study showed that MMP-13 induced similar changes in matrix molecule expression as IL-1 and significantly upregulated gene expression of the catabolic factor MMP-3, while down regulating gene expression of the anabolic factor collagen II B (Col2A1). Preliminary data from the pull-down assays indicate that IL-1 and MMP-13 decrease the activation status of Rac, and increase the activation status of RhoA. Confocal microscopy images support these findings. Together the results of this study suggest utilizing MMP-13 to induce the OA phenotype is an acceptable model of cartilage degradation in vitro. This may better mimic the native articular environment, and lead to more clinically translatable results than studies using IL-1 chondrocyte cultures.

url: http://hdl.handle.net/1813/7870
date: 2007-07-05
creator: Schwarz, Mary;Harrison, Ellen Z.;Bonhotal, Jean
viewed: 63
title: Composting Road Kill
abstract: Produced by Insights InternationalFunded in part by New York State Department of Transportation, Cornell Cooperative Extension, Cornell College of Agriculture and Life Sciences

url: http://hdl.handle.net/1813/7871
date: 2007-07-05
creator: Broton, Claire
viewed: 13
title: Genetic and Phenotypic Characterization of Listeria monocytogenes Strains with Attenuated Virulence
abstract: Epidemiological studies have provided considerable evidence that Listeria monocytogenes strains differ in their ability and relative likelihood to cause human disease. Multiple mutations leading to premature

stop codons (PMSCs) have been identified in the key L. monocytogenes virulence gene inlA, which codes for a surface protein that mediates the entry of L. monocytogenes into host cells. Mutations leading to premature stop codons in inlA are associated with a reduced invasion phenotype in vitro, supporting the hypothesis that these mutations may also be responsible for attenuated human virulence. In order to further define the frequency of L. monocytogenes strains with reduced invasion capability, 207 isolates had previously been screened for ability to invade Caco-2 cells (Nightingale, unpublished). The inlA gene was sequenced for 27 isolates that showed attenuated ability to invade the epithelial cell line. Sequencing revealed mutations leading to PMSCs in 12 of the 27 isolates, including 2 novel mutations (PMSC types 5 and 7) and 3 previously reported mutations (PMSC types 1, 4 and 6). All but one of the isolates with confirmed PMSC mutations in inlA were isolated from food products or food processing plants. Our data support the hypothesis that L. monocytogenes isolates associated with food have attenuated invasion due to the presence of inlA PMSCs. Our data further suggest that sequence variation in inlA is an important factor that can be used to define L. monocytogenes that have a reduced ability to cause human disease. Since some strains with PMSCs in inlA were common in foods and environmental samples and were found in high levels in foods, it was hypothesized that these mutations may provide selective advantage, possibly outside a human host. Isogenic inlA PMSC strains were thus tested for their growth in rich medium and their resistance against common sanitizing agents. The results indicate that there is little difference in growth trends or sanitizer resistance between isogenic strains with and without inlA PMSC. It thus appears that inlA PMSCs do not enhance the ability of L. monocytogenes to grow in rich media or to be resistant to sanitizing agents.

url: http://hdl.handle.net/1813/7872
date: 2007-07-05
creator: Gandhy, Shruti
viewed: 18
title: Assessment of the Effects of Perinatal Choline Treatment on Attention and Reactivity to Reward Omission in a Mouse Model of Down Syndrome
abstract: Down syndrome (DS) is a genetic disorder caused by the trisomy of chromosome 21 in humans. Almost all individuals with DS also experience an early onset of Alzheimer?s disease (AD) and show similar cognitive and learning deficits. There are currently no treatments for these deficits in DS. However, choline availability during the perinatal period has shown to have long-term benefits on memory and attentional function. This study utilized a series of attentional tests that evaluated the benefits of perinatal choline treatment in Ts65Dn mice, an animal model of Down syndrome. Specifically, we used the ?Surprising Reward Omission? (SRO) Task in which an expected reward is omitted on 20% of the correct responses, to test attentional dysfunction and heightened error reactivity in these mice. Since previous SRO studies with Ts65Dn mice have shown an increase in locomotor activity and stereotypic behaviors such as jumping and grooming following reward omission, we supplemented our findings on overall performance with an analysis of video data. We hypothesized that the Ts65Dn mice will exhibit an exaggerated response to the omission of an expected reward relative to controls, which will be reflected by their poor performance on the SRO task, and that choline treatment will alleviate these dysfunctions. Our results indicated that the unsupplemented Ts65Dn mice had significant attentional dysfunction and reacted to incorrect responses with increased activity level. These abnormalities in Ts65Dn mice were normalized by perinatal choline supplementation. The reward omission did not significantly affect the performance of any of the mice (in terms of correct responses). Yet the elevated alcove latencies and omission errors in unsupplemented Ts65Dn mice provided some indication of increased reaction to reward omission. We expect the behavioral video analysis (in progress) to elucidate the exact nature of these reactions and the effect of choline treatment on arousal regulation and subsequent behaviors in Ts65Dn mice.

url: http://hdl.handle.net/1813/7873

date: 2007-07-05
creator: Murante, Tessa
viewed: 30
title: Do Bird Feeders Matter?
abstract:

url: http://hdl.handle.net/1813/7874
date: 2007-07-05
creator: Ruozzi, Nicholas;Kozen, Dexter
viewed: 7
title: Applications of Metric Coinduction
abstract: Metric coinduction is a form of coinduction that can be used to establish properties of objects constructed as a limit of finite approximations. One proves a coinduction step showing that some property is preserved by one step of the approximation process, then automatically infers by the coinduction principle that the property holds of the limit object. This can often be used to avoid complicated analytic arguments involving limits and convergence, replacing them with simpler algebraic arguments. This paper examines the application of this principle in a variety of areas, including infinite streams, Markov chains, Markov decision processes, and non-well-founded sets. These results point to the usefulness of coinduction as a general proof technique.

url: http://hdl.handle.net/1813/7875
date: 2007-07-05
creator: Myers, Andrew C.;Chong, Stephen;Clarkson, Michael R.
viewed: 21
title: CIVS: A Secure Remote Voting System
abstract: CIVS, the Cornell Internet Voting System, is the first implementation of a coercion-resistant, universally verifiable, remote voting scheme. This paper describes the design of CIVS, details the cryptographic protocols used in its construction, and illustrates how language-enforced information-flow security policies yield assurance in the implementation. The performance of CIVS scales well in the number of voters and offers reasonable tradeoffs between time, cost, and security. These results suggest that secure electronic voting is achievable.

url: http://hdl.handle.net/1813/7876
date: 2007-07-05
creator: Dolev, Danny;Schneider, Fred B.;van Renesse, Robbert;Song, YeeJiun
viewed: 24
title: Evolution vs. Intelligent Design in Consensus Protocols
abstract: Consensus is an important building block for building replicated systems, and many consensus protocols have been proposed. In this paper, we show that many consensus protocols can be derived from the same simple genes. We present these genes in the form of a skeleton algorithm that can be configured to produce, among others, three well-known consensus protocols: Paxos, Chandra- Toueg, and Ben-Or. Although each of these protocols specify only one quorum system explicity, we show that all employ a second quorum system. We use the skeleton algorithm to implement a replicated service, allowing us to compare the performance of these consensus protocols under various workloads and failure scenarios. From this we learn, for example, that weak leader election in Paxos unnecessarily causes performance degradation in certain failure scenarios.

url: http://hdl.handle.net/1813/7877

date: 2007-07-05
creator: Kozen, Dexter;Elmohamed, M. A. Saleh;Sheldon, Daniel
viewed: 22
title: Collective Inference on Markov Models for Modeling Bird Migration
abstract: We investigate a family of inference problems on Markov models, where many sample paths are drawn from a Markov chain and partial information is revealed to an observer who attempts to reconstruct the sample paths. We present algorithms and hardness results for several variants of this problem which arise by revealing different information to the observer and imposing different requirements for the reconstruction of sample paths. Our algorithms are analogous to the classical Viterbi algorithm for Hidden Markov Models, which finds single most probable sample path given a sequence of observations. Our work is motivated by an important application in ecology: inferring bird migration paths from a large database of observations.

url: http://hdl.handle.net/1813/7878
date: 2007-07-05
creator: Sharp, Alexa;Kozen, Dexter
viewed: 23
title: On Distance Coloring
abstract: Call a connected undirected graph (d,c)-colorable if there is a vertex coloring using at most c colors such that no two vertices of distance d or less have the same color. It is well known that (1,2)-colorability is decidable in linear time, but (1,c)-colorability for c greater than or equal to 3 is NP-complete. Sharp (2007) shows that for fixed d greater than or equal to 2, the (d,c)-colorability problem is solvable in linear time for c less than or equal to 3d/2 and NP-complete otherwise. In this note we give an alternative construction that improves the upper time bound as a function of d for the case c less than or equal to 3d/2. The construction entails a generalization of the notion of tree decomposition and bounded treewidth (Robertson and Seymour 1986) to arbitrary overlay graphs, not just trees, which may be of independent interest.

url: http://hdl.handle.net/1813/7879
date: 2007-07-05
creator: Sheldon, Daniel;Hopcroft, John
viewed: 21
title: Manipulation-resistant Reputations Using Hitting Time
abstract: Popular reputation systems for linked networks can be manipulated by spammers who strategically place links. The reputation of node v is interpreted as the world's opinion of v's importance. In PageRank, v's own opinion can be seen to have considerable influence on her reputation, where v expresses a high opinion of herself by participating in short directed cycles. In contrast, we show that expected hitting time --- the time to reach v in a random walk --- measures essentially the same quantity as PageRank, but excludes v's opinion. We make these notions precise, and show that a reputation system based on hitting time resists tampering by individuals or groups who strategically place outlinks. We also present an algorithm to efficiently compute hitting time for all nodes in a massive graph; conventional algorithms do not scale adequately. Our algorithm, which applies to any random walk with restart, exploits a relationship between PageRank and hitting time in random walks with restart. This relationship also provides novel insights into spam detection and PageRank computation.

url: http://hdl.handle.net/1813/7880
date: 2007-07-05
creator: Shao, Yi
viewed: 25
title: Credibility Assessment of Misinformed vs. Deceptive Children

abstract: This is the first study to contrast how adults make credibility assessments about children who experienced a suggestive interview, children who had been coached to lie, and children who were telling the truth. Nine preschool children were interviewed about an event involving a minor infraction. Three of the children reported the truth, four were coached to lie, and two children reported misinformation as the result of a suggestive interview. Eighty-seven college students watched videotaped interviews of these nine children and assessed their credibility. Children who had experienced a suggestive interview were rated as credible as those who were telling the truth. Children who had been coached to lie were rated as less credible than the two groups of children. The results suggest that misleading information gets incorporated into children?s memory, thus arguing for a cognitive rather than social explanation of suggestibility. The implication for children's court testimony and jury decisions are discussed.

url: http://hdl.handle.net/1813/7881
date: 2007-07-05
creator: Tiwari, Sanchit
viewed: 29
title: Diffusion of RFID and 3D Body Scanning for Mass Customization in Apparel Retail: A Consumer Study
abstract: RFID and 3D body scanning were identified as enabling technologies for consumer-centric mass customization in apparel retail. The objective of this research was to investigate consumer knowledge, interest and concerns towards the applications of RFID and 3D body scanning in apparel retail. Rogers? (1995) five factors for innovation diffusion, relative advantage, simplicity, compatibility, observability, and trialability and Bauer?s (1960) perceived risk provided the theoretical framework for the study. Consumer responses were utilized for demographic and behavioral segmentation to identify target markets for retailers deploying RFID and 3D body scanning for specific applications and investigate the consumer acceptance and business deployment of these technologies in apparel retail.
Testing prior consumer knowledge of the technologies indicated low knowledge level among consumers. Respondents with prior knowledge of RFID and 3D body scanning had significantly higher acceptance and lower privacy concerns associated with the technologies than respondents without prior knowledge indicating the need to increase the overall knowledge levels through improved literature in popular media and marketing campaigns. Other pre-test results indicated that frequent shoppers had a negative opinion towards apparel shopping suggesting the need to improve the overall shopping experience.
While there were no significant differences between male and female responses, female respondents identified size prediction as the most advantageous application of 3D body scanning. Respondents with higher income ($80,000+) and aged 40 or under were significantly more willing to accept RFID and 3D body scanning than the others. Strong acceptance of RFID and 3D body scanning use in a retail store was also observed for frequent shoppers and technology savvy respondents with significantly fewer concerns of price and privacy than other groups. Respondents indicated low willingness to pay a price premium to avail the benefits of RFID and suggested privacy and health concerns associated with RFID use while they were neutral about being scanned in undergarments.
A comparative analysis of the two technologies based on Rogers? five factors indicated that 3D body scanning had significantly higher means for relative advantage, simplicity, compatibility and trialability while there was no difference in observability between the two. The results indicated that 3D body scanning had significantly greater diffusion potential among consumers than RFID based on Rogers? factors, but both were evaluated favorably. A technology diffusion matrix was constructed based on prior literature and study results to indicate the current diffusion status of the two technologies based on consumer acceptance and business deployment. Recommendations were proposed to improve the overall knowledge of RFID through effective information dispersion to increase consumer acceptance by debunking myths regarding privacy and health concerns. The need to quantify the benefits of 3D body scanning in the apparel supply chain was identified as

a method to increase the overall level of deployment among businesses. A possible apparel retail scenario was recommended based on the results of the study integrating the applications of RFID and 3D body scanning to facilitate the diffusion of both technologies in the apparel industry for mass customization.

url: http://hdl.handle.net/1813/7884
date: 2007-07-06
creator: Zhang, Samantha Liang
viewed: 11
title: Synthetic Lethal Interaction Between ether-a-go-go Shaker and escargot Mutations in Drosophila
abstract: Escargot (esg) is a member of the snail family of transcription factors. Gain-of-function esg mutantions have been identified in previous studies as strong suppressors of seizure behavior in Drosophila models for epilepsy (Hekmat-Scafe et al. 2005). Recently, during a screen utilizing the ether-a- go-go (eag) Shaker (Sh) double mutant to identify genes that affect oxidative stress sensitivity, we uncovered a lethal interaction between gain-of-function esg mutations and the eag Sh double mutant The eag and Sh genes encode potassium channel subunits; epilepsy studies have revealed that eag and Sh are also mild seizure suppressors (Kuebler et al. 2001). The esg gene interaction is thus of great interest as it rescues seizure prone mutations while causing lethality in animals with increased seizure resistance. This study investigates the lethal interaction between eag Sh and esg to better understand its underlying mechanisms. Our results indicate that lethality is caused by severely impaired motor control in the adult. The animal exhibits many adult specific phenotypes, with distinctive synaptic phenotypes in adult and larvae. These results suggest that the critical period for esg-induced lethality is during adult development which agrees with the results of epilepsy studies.

url: http://hdl.handle.net/1813/7885
date: 2007-07-06
creator: Barash, Alexander
viewed: 11
title: Characterizing the Meiotic Failure and Transcriptional Aberrations Caused by Mutation of A-Myb in Mice
abstract: This project aims to understand the role of the transcription factor A-myb and its targets in spermatogenesis. If the project is successful, we will know how a mutation in the MybL1 gene leads to male sterility in the mouse. This information will give us a more detailed picture of the processes of meiosis and spermatogenesis, not just in the mouse but in all organisms with homologous genes and mechanisms.
I used bioinformatics to pinpoint genes which were being directly affected by A-myb using microarray data from 14 and 17 day wild-type and mutant testes. In addition, antibody staining for A-MYB protein was much lower in mutant mice, suggesting protein destabilization in mutants. Several differences in histone composition were observed through antibody staining. Expression of genes that seemed to be affected in the microarray were studied using real-time PCR to determine if they have overlapping roles in spermatogenesis.
The mutation in A-Myb affected many genes, most of which became downregulated. These affected genes may be transcribed by A-Myb directly or may be affected indirectly through expression of mediating genes. As more data is collected, we will be able to construct a model of A-Myb?s function in spermatogenesis and understand which genes play key roles in meiosis and spermatogenesis.
Ultimately, knowledge of the inner workings of meiosis and spermatogenesis will allow for advances in human and veterinary medicine. This knowledge is especially applicable to males who are sterile.

url: http://hdl.handle.net/1813/7886
date: 2007-07-06
creator: Williamson, Sean

viewed: 9
title: Environmental Stewardship in Agriculture: A Case Study of the NYC Watershed System
abstract: Agriculture has always been and will continue to be an important player in environmental integrity throughout the world. Because the manner in which humans manage agriculture has such serious implications on the environment and in turn people, it is imperative that some sort of environmental stewardship be practiced in agriculture. This research focuses on various methods of stimulating environmental stewardship (i.e. regulations, monetary incentives, etc.) and which method(s) might be the most suitable for agriculture. Management of agriculture in the New York City watershed system will function as a specific case for observing and evaluating how a socially-oriented management style incorporating such tools as partnerships, reciprocity and education can be formulated and implemented. Given the degree of environmental stewardship that has been fostered in the NYC watershed, the case is made that a socially-oriented form of environmental management can be incredibly effective at creating environmental stewardship in agriculture and ought to be applied on a broader scale.

url: http://hdl.handle.net/1813/7887
date: 2007-07-06
creator: Micsak, Robert
viewed: 10
title: A Comparative Study of Thomas Jefferson?s Travels to England and Their Influences on Monticello
abstract: Monticello, located in the city of Charlottesville, Virginia, was the estate home of the third President of the United States, Thomas Jefferson. It is also said to be one of the finest surviving examples of the English Garden Landscape in America, while also establishing the Standard American landscape style. Thomas Jefferson manipulated the landscape in conjunction with architecture years before Frederick Law Olmsted coined the term landscape architect. Monticello was influenced in many different aspects of architecture and landscape architecture from France, England, and Italy. A detailed analysis of his one-month journey throughout England reveals the influences of each estate on his classic English landscape garden tour. In 1786, Thomas Jefferson made sixteen stops throughout the United Kingdom, and by tracing and analyzing his steps, the thesis bridges the gap that exists regarding the current verbal and visual analysis of the English influence on Monticello. These stops included, Chiswick, Hampton Court, Twickenham, Esher-Place, Claremont, Painshill, Lord Loughborough?s Woburn Farm, Caversham, Wotton, Stowe, Leasowes, Hagley, Blenheim Palace, Enfield Chase, Moor Park, and Kew. The exploration of each park, estate, or garden using satellite images, photographs, photographic manipulation, and literature searches are used to reveal the visual similarities, differences, existing landscape forms and influences of English Estates and Gardens upon Monticello. Although there have been many articles, books, theses, and lectures written on the landscape of Jefferson?s Monticello, combining these with the visual analysis performed in this thesis provides the reader with a clearer understanding of the specific English influences on Monticello.

url: http://hdl.handle.net/1813/7889
date: 2007-07-06
creator: Beaudette, Aaron
viewed: 10
title: Effects of Surgical Sterilization upon Home Range Area of Suburban White-tailed Deer (Odocoileus virginianus) Population
abstract: As white-tailed deer (Odocoileus virginianus) populations continue to increase in suburban environments, local governments are considering ways to manage herd abundance and associated conflicts. Sterilization is one possible non-lethal method for controlling herd density, but little is known about the effects of sterilization on the behavior of female deer in suburban areas. We compared home range areas for a sample of sterilized (treated) female deer with home range sizes of reproductively-active females (controls).

Between January 2002 and March 2005, 61 deer were captured, radio-collared, and located weekly using radio-telemetry in the Village of Cayuga Heights, New York. Sixteen deer were surgically sterilized. Neither annual nor seasonal average home range areas were significantly different between the control and sterilized groups. In 2004, a subset of the study population (long-term resident deer present in both 2002 and 2004), did have significantly different annual average home range areas ($F= 5.946$, $df = 1$, $P < 0.05$). Control (27.7 ha) and sterilized (14.0 ha) long-term residents may have exhibited different home range use because of the behavior of control female deer caring for fawns during summer. The high site fidelity and survivorship of collared female deer indicates that sterilization could potentially have long-term effects, and may cause a slow population decline over several years. Continued resource utilization by sterilized deer would reduce the amount of resources available to reproductively-active immigrant deer.

url: http://hdl.handle.net/1813/7890
date: 2007-07-06
creator: McConnachie, Sarah
viewed: 18
title: A Comparison of Nearshore Fish Sampling Gears in Oneida Lake, New York
abstract: Sampling and assessment of nearshore fish communities is difficult due to the wide variety of habitats, substrates, and often complex structures. During the summers of 2005 and 2006, we conducted a comparison of ten different gear types, with the intent to develop a long-term sampling protocol of nearshore communities in Oneida Lake, NY. Gear types consisted of nine configurations of fyke nets and one seine. Fyke nets varied by frame size (large vs. small), mesh size (large vs. small), orientation (parallel vs. perpendicular), and the inclusion/exclusion of wings. Summers were broken into two sampling periods, during which 2 different sites were chosen for each of three major substrate types (sandy, rocky, and muddy) for a total of six sites. Student?s t-test indicated significantly higher species richness and total catch during sampling period two. However, few significant differences were observed in any net-to-net comparisons using Tukey?s Honestly Significant Difference (HSD). Catches of key sport fishes, such as smallmouth bass and largemouth bass were significantly higher in smaller meshed nets. In order to maximize ease, efficiency and accuracy, we recommend assessments of nearshore communities take place in sampling period two, using a combination of perpendicularly set medium frame fyke nets, with both large and small mesh sizes. Additional species, not caught by fyke nets, can be supplemented by seining at all sites.

url: http://hdl.handle.net/1813/7891
date: 2007-07-06
creator: Elton, Mara
viewed: 25
title: Construction and Optimization of an Interferon Gamma Dipstick Assay for the Detection of Antigen-Specific Cell Mediated Immune Responses
abstract: Since 1957, when interferons were discovered, Interferon gamma (IFN-y) has played a crucial role as a diagnostic tool for both humans and animals. Because IFN-y is an antigen-induced protein produced by blood lymphocytes, namely CD4+ T-cells, it is considered the first and foremost form of defense that the host has against infections. Two pathogens that induce a cell mediated immune response (CMI) are Mycobacterium bovis (M. bovis), which causes tuberculosis (TB), and Mycobacterium avium paratuberculosis (Map), which is the causative agent for Johne's disease. Both diseases pose serious health and economic problems for livestock production, particularly cattle. Clinical signs of these diseases are not apparent during the early stages of infection nor are the levels of the mycobacterium high enough to detect. However, since exposure to tuberculin or Johnin antigen by skin testing induces a pathogen-specific CMI response with increased IFN-y, it has been suggested that this assay, in combination, might be useful in the diagnosis of TB or Johne's. However, while IFN-y assays are available, they have qualities that prohibit their routine use in the field. In this study, we

report the construction and optimization of a lateral flow assay for determining levels of IFN-y. This assay is also robust, easy-to-use and requires no sophisticated equipment, all qualities that are required for field performance. The format of the assay involves the immobilization of an IFN-y capture antibody onto plastic-backed nitrocellulose membrane using inkjet deposition. Then the sample is allowed to wick vertically up the membrane. Reagents to detect bound IFN-y are then wicked up the membrane and the printed lines of the capture antibody binding IFN-y antigen are developed. Thus far, this assay is sensitive to 1ng/ml IFN-y. When used in combination with skin testing, this IFN-y assay may prove useful in the diagnosis of early mycobacterium infection, and potentially other infections that induce a CMI response.

url: http://hdl.handle.net/1813/7892
date: 2007-07-06
creator: Lay, Debbie
viewed: 16
title: Prediction of Pregnancy Following Insemination of Dairy Cows
abstract: Plasma samples from dairy cows across two seasons (warm and cold) were re-assayed utilizing a more sensitive and uniform procedure in order to assess the use of progesterone and PGFM concentrations on the day of AI (Day 0) to day 8 in predicting future pregnancy status of the cow (pregnant vs. open, maintenance vs. loss of pregnancy). The effect of season on progesterone and PGFM serum levels was also assessed. Progesterone concentrations on the day of AI did not differ between cows inseminated during different seasons, nor did they differ between cows of different pregnancy statuses. PGFM concentrations on the day of AI also did not display any differences in cows of various pregnancy statuses, but there appeared to be a seasonal effect, with cold season cows maintaining higher PGFM levels than warm season cows. These results were unexpected, but do suggest that PGFM and progesterone levels on the day of AI may not be the best predictive factor for establishment of pregnancy.

url: http://hdl.handle.net/1813/7893
date: 2007-07-06
creator: Kaan, Hung Yi Kristal
viewed: 23
title: Structure of BAR and PX Domains of Sorting Nexin 9 Reveals Cooperativity in Membrane Binding
abstract: Sorting nexin 9 (SNX9) belongs to a larger family of BAR-domain containing proteins. It is characterized by an N-terminal Src homology 3 (SH3) domain, a phox homology (PX) domain, and a Bin/Amphiphysin/Rvs-homology (BAR) domain. Together with clathrin and dynamin, it functions mainly in the endocytic pathway to sort proteins. SNX9 has also been shown to regulate receptor-mediated endocytosis of epidermal growth factor receptor (EGFR), by its interaction with Activated Cdc42-associated kinase-2 (ACK2), thus implicating a role for SNX9 in signal transduction.
Although the main cellular functions of SNX9 have been brought to light, little is known about the molecular mechanism by which this multi-domain protein participates in endocytosis and signaling. It is also unclear if and how the protein is regulated. In order to understand the interactions between the various domains of SNX9, we have crystallized and solved the structure of a shorter construct of SNX9 (here after called SNX9PX-BAR), which consists of only the PX and BAR domains. By analyzing this multi-domain structure and by conducting lipid- and vesicle-binding assays, we are able to gain a better understanding of how the two domains interact to influence the membrane binding ability of SNX9.
Our analysis of the structure of SNX9PX-BAR shows a dimeric BAR domain that is moderately curved. The BAR domain forms stable dimers via mainly hydrophobic interactions on the membrane surface. Membrane binding is most likely driven by electrostatic interactions between the PX-BAR domain and the negatively-charged plasma membrane. In addition, the PX domain of SNX9 shows high and specific binding affinity to PI(3)P, which is in high concentrations in early endosomes. Therefore, we propose that SNX9 might be

localized to both the plasma membrane and the early endosomes to participate in endocytosis and sorting of vesicles.

url: http://hdl.handle.net/1813/7894
date: 2007-07-06
creator: Bahador-zadeh, Yasamin
viewed: 22
title: An Illustrative Narration of Hypnerotomachia Poliphili Through Gardens of Renaissance
abstract: In many historical eras, gardens have been created to convey ideas that more than just an immediate intention to give pleasure. Almost all great civilizations have produced designs for gardens, pools and fountains that have gone beyond the practical needs and creation of aesthetically pleasing sights and sounds.
This thesis studies the symbolism used in most gardens of the 16th century, inspired by the book Hypnerotomachia Poliphili, written in 1499 by Francesco Colonna. The title of the Hypnerotomachya Poliphili is compounded of three Greek words, Hypnos (sleep), Eros (love), and Mache (strife). The sleep of Poliphilo, the narrator and protagonist, is the occasion for the erotic dream that comprises the entire novel. In the process of finding his lover, the protagonist explains how he adores architecture and gardens, wanders around old graveyards and delights in sculptures. This thesis narrates the novel, Hypnerotomachya Poliphili, through photographs of Italian gardens designed as stages on which the story of Poliphilo takes place. One walks around the gardens of the renaissance and sees the episodes of the story quietly performed through the fountains, sculptures and the design and the layout of the gardens.

url: http://hdl.handle.net/1813/7895
date: 2007-07-08
creator: Hillmann, Diane I.;Bruce, Thomas R.
viewed: 17
title: The Continuum of Metadata Quality: Defining, Expressing, Exploiting
abstract: Like pornography, metadata quality is difficult to define. We know it when we see it, but conveying the full bundle of assumptions and experience that allow us to identify it is a different matter. For this reason, among others, few outside the library community have written about defining metadata quality. Still less has been said about enforcing quality in ways that do not require unacceptable levels of human effort.

url: http://hdl.handle.net/1813/7896
date: 2007-07-08
creator: Hillmann, Diane I.;Dushay, Naomi
viewed: 37
title: Analyzing Metadata for Effective Use and Re-Use
abstract: Using a commercially available visual graphical analysis tool, the National Science Digital Library (NSDL) has developed techniques to expedite evaluation of large batches of metadata. These techniques allow efficient and thorough review of large quantities of XML metadata, thus enabling the focus of limited resources on evaluation and manipulation tasks that are most important in our context. In the NSDL, metadata is evaluated for aggregation, but these techniques are applicable to any situation where batches of metadata need to be evaluated. This paper discusses the motivations for this approach and the techniques themselves.
This work was funded by the National Science Foundation under grant 0227648.

url: http://hdl.handle.net/1813/7897
date: 2007-07-08
creator: Phipps, Jon;Dushay, Naomi;Hillmann, Diane I.
viewed: 34

title: Improving Metadata Quality: Augmentation and Recombination
abstract: Digital libraries have, in the main, adopted the traditional library notion of the metadata 'record' as the basic unit of management and exchange. Although this simplifies the harvest and re-exposure of metadata, it limits the ability of metadata aggregators to improve the quality of metadata and to share specifics of those improvements with others. The National Science Digital Library (NSDL) is exploring options for augmenting harvested metadata and re-exposing the augmented metadata to downstream users with detailed information on how it was created and by whom. The key to this augmentation process involves changing the basic metadata unit from 'record' to 'statement.'This work was funded by the National Science Foundation under grant 0227648.

url: http://hdl.handle.net/1813/7898
date: 2007-07-09
creator: Staidum, Frederick Jr
viewed: 29
title: "Too Filthy to be Repeated": Reading Sexualized Violence Against Enslaved Males in U. S. Slave Societies
abstract: "To Filthy to be Repeated": Reading Sexualized Violence Against Enslaved Males in U.S. Slave Societies is an exploration in the operation of male on male sexualized violence and resistance in the Atlantic World, specifically the United States. The work is concerned with the interaction of race, class, gender, and sexuality when a White male slaveholder sexually violates an enslaved Black male. The central task of this thesis is to properly re-read the history of slavery in the United States. Furthermore, this research project attempts to recover the silenced narratives of sexually assaulted enslaved males, while simultaneously asserting Black queer/quare re-reading as a fruitful theoretical and methodological tool for the scholarly and disciplinary labor of Africana Studies.
The thesis draws from two distinct, yet dialogical mediums for primary evidence--visual culture and slave narratives. The work attempts to place these antebellum sources in conversation with a Black queer/quare re-reading. I insist on "re-reading" instead of "reading", because these visual and written texts were not properly read the first time. Thus, a re-reading is required. It is at this point that this thesis seeks to make a critical intervention by exposing the sexual vulnerability of the Black male body and the Black individual and communal resistance against such transgressions. The first chapter, Slave Societies in Flux gives a brief socio-historical framework of slavery. It contextualizes race, class, and gender of the enslaved male as it relates to power and violence, particularly sexual violence. This chapter will address the "plantation" as a model for society, and acknowledge the importance of crop, region, colonial presence, era/period, urban v. rural, plantation size, enslaved population in determining power dynamics. Scenes of Inspection opens by acknowledging the Brazilian and Jamaican record of male-male sexual violence, and then moves to the visual record of enslavement, inspection, and sale by way of Trans-Atlantic crossings. The chapter is concerned with the construction and distribution of the Black male body in late 18th and early 19th Century visual culture. The engraving, March? d'esclaves by Laurent, and the paintings, The Slave Trade by Fran?ois-Auguste Biard and Slave Market by an unknown American artist are studied with a quare approach. This chapter deconstructs the scene of inspection and the White male pornographic gaze to build upon the structural insights of the first chapter. It demonstrates how the threat of male-male sexual violence operates within the realm of the visual. Like the pervasiveness of the inspection, the omnipotent threat of sexual violence is not only a Brazilian or Jamaican occurrence, rather, a Black Atlantic phenomenon. Resistance is the central theme of the chapters three and four, Re-reading Narratives. The purpose of these chapters is to explore the relationship between male-male sexual violence and resistance in the United States. I employ Harriet Jacobs?s Incidents in the Life of a Slave Girl and Frederick Douglass?s Narrative of the Life of Frederick Douglass, an American Slave and My Bondage and My Freedom in chapter three and four, respectively. Jacobs and the former enslaved male, Luke, make use of Black vernacular traditions to critique and resist U.S. legal discourse

and its support of sexual assault. Meanwhile, the prospect of male-male rape forces Douglass to retreat into a masculine safe space, which nurtures a gender progressive resistance. The thesis closes by contextualizing Black queer/quare re-reading as a scholarly endeavor within and natural to the Africana Studies project. The conclusion, The Art of Reading covers the overall theoretical implications and contributions of burgeoning Black que(e)rying of African American and American history, art, and literature. Lastly, considerations on the possible future directions of this research project are included.

url: http://hdl.handle.net/1813/7899
date: 2007-07-09
creator: Hillmann, Diane I.
viewed: 50
title: Metadata Quality: From Evaluation to Augmentation
abstract: Accepted for publication in Cataloging and Classification Quarterly.The conversation about metadata quality has developed slowly in libraries, hindered by unexamined assumptions about metadata carrying over from experience in the MARC environment. In the wider world, discussions about functionality must drive discussions about how quality might be determined and ensured. Because the quality-enforcing structures present in the MARC world?mature standards, common documentation, and bibliographic utilities?are lacking in the metadata world, metadata practitioners desiring to improve the quality of metadata used in their libraries must develop and proliferate their own processes of evaluation and transformation to support essential interoperability. In this article, the author endeavors to describe how those processes might be established and sustained to support metadata quality improvement.

url: http://hdl.handle.net/1813/7900
date: 2007-07-09
creator: Hillmann, Diane I.
viewed: 42
title: Adding New Skills to our Skillset
abstract: To be published in Technicalities, Sept./Oct. 2007Catalogers seeking more understanding of what kinds of new skills they need to develop to shift focus to metadata sometimes find the discussion daunting. This column identifies some issues around the development of technical skills for metadata librarians.

url: http://hdl.handle.net/1813/7901
date: 2007-07-09
creator: Hillmann, Diane I.
viewed: 36
title: Networked Resources and Metadata Interest Group: An RDA Update
abstract: Information presented at the NRMIG meeting, although the slides were not displayed. Images were supplied for participants on paper handouts.The presentation is an update and explanation of the RDA/DCMI ageement made in London on May 1, 2007, including the implications for librarians creating metadata. American Library Association, Association for Library Collections and Technical Services, Networked Resources and Metadata Interest Group

url: http://hdl.handle.net/1813/7903
date: 2007-07-10
creator: Wang, Yang;Spindel, Samantha;Ma, Jan;Cossell, Christina
viewed: 17
title: Tracheal Burning from Hot Air Inhalation
abstract: Burns in the trachea from inhaling hot gases are a common occurrence and threaten the recovery of

fire victims. Inhalation injury is also one of the most common causes of death, especially among children and the elderly. The thermal injury to the respiratory tract is usually limited to the upper respiratory tract, mainly the trachea. A better understanding of the interplay between transient temperature and injury distribution over the trachea may help to direct treatments in the future. Our goal is to model burns in tracheal tissue as a function of time, inhalation temperature, and inhalation velocity. The objective is to understand how variations in those variables affect tracheal injury. The velocity of air in the trachea varies as a function of time due to inspiration and expiration. As a result, the air temperature fluctuates in a cyclical manner. Since the burn concentration is a function of temperature, the extent of the burn rises as temperature increases with inspiration and remains constant as temperature decreases during expiration. Our model shows burn concentration is limited to the entrance to the trachea and the surface of the trachea.

url: http://hdl.handle.net/1813/7904
date: 2007-07-10
creator: Snider, Sarah;Salim, Saniya;Ramirez, Marina;Eibert, Erik
viewed: 18
title: Testicular Thermal Damage and Infertility from Laptop Use
abstract: Today, more laptop computers are being used on a daily basis than ever before. One of the health risks associated with extended, repeated use by men is that of testicular damage, or reduced spermatogenesis due to increased temperatures in the groin region. Naturally, the scrotum is maintained 2oC below standard body temperature. However, the combination of increased temperature due to leg positioning to support a laptop on the thighs, and the potential for temperatures of 60oC to be reached on the bottom, outer surface of the device [11] present a health risk. Although temperatures of 50oC are more common, they still contribute to a rise of approximately 0.6oC in addition to a 2.1oC increase which is already due to leg positioning alone. The direct contact between the thigh and testicles is a significant factor in this increase in temperature, as well as the laptop heat generation. In the future, potential methods of reducing heat conduction into the body may be mitigated by additional heat sinks, or fans which may reduce the effects of extended periods of laptop use.

url: http://hdl.handle.net/1813/7905
date: 2007-07-10
creator: Siu, Vince;Chen, Jennifer;Liu, David;Hoang, David
viewed: 11
title: Optimizing Release from Reservoir Microcapsules
abstract: Cytomegalovrius (CMV) retinitis is a common symptom of vision loss found in 20-30% of all acquired immunodeficiency syndrome (AIDS) sufferers. While there are no drugs that can cure permanent retinal damage by CMV, the drug ganciclovir has demonstrated efficacy against human cytomegalovirus infections and has been considered a first-line therapy in the treatment of sight-threatening cytomegalovirus infection in immune-compromised patients. The FDA-approved Vitrasert? implant, which is inserted at a localized region of the eye, is the current method of delivering ganciclovir intraocularly to patients with CMV. The Vitrasert? is a disc-like reservoir microcapsule that encapsulates ganciclovir in a polymer-based system. Maintaining a constant level of drug in the infected eye region is an important requirement in the design of this implant. The more constant the rate of drug release from the microcapsule, the more effective the drug will be. The objective of our model is to measure the diffusion of the ganciclovir release from the Vitrasert? into the surrounding tissue and to ensure toxic levels of the drug is not sustained. To accomplish this objective, the implant is simplified via axis-symmetry from a 3-D cylinder into a 2-D rectangle with homogeneous material properties, while the skin is reduced to a quarter-circle around our capsule. With our model, we are able to optimize the characteristics of the microcapsule to facilitate near constant drug release, which would be beneficial for many pharmaceuticals working with drug release from reservoir

microcapsules.

url: http://hdl.handle.net/1813/7906
date: 2007-07-10
creator: Graham, Evan;Nichols, Weston;Nahlik, David;Sood, Ravi
viewed: 17
title: Laser Irradiation of Tumors for the Treatment of Cancer: An Analysis of Blood Flow, Temperature and Oxygen Transport
abstract: It has been shown that hypoxic tumor cells are resistant to radiation and that increasing tumor oxygen levels via laser-mediated hyperthermia treatment increases tumor cell radiosensitivity. Hence, studies of the effects of laser irradiation on tumor oxygen levels are of great interest, as they allow for the optimization of hyperthermia treatment. Accordingly, the main purpose of this experiment was to develop a finite element model to simulate the heat transfer due to laser irradiation of tumor tissue, the blood flow through a tumor capillary, and the effect of changing temperature on blood flow rates and oxygen delivery to tumor tissue. This was achieved by using finite element models in COMSOL Multiphysics. We employed two geometries based on those used in a simliar study by He et al. [1]: a tumor-containing breast model to simulate laser heating of the tissue and a capillary and tumor tissue model to simulate the effect of heating on blood flow and tissue oxygen concentration. By plotting partial pressure of oxygen as a function of radius at three different points in the tissue, we observed that the oxygen concentration was greatest near the inlet and lowest near the outlet (as expected), and that at all points in the tissue, heating increased the tissue oxygen partial pressure to about the same extent (0.75 ? 1 mm Hg). Furthermore, sensitivity analyses suggested ambient air cooling at the breast surface to be ideal and a laser intensity of 18000 W/m2 to be optimal for hyperthermia treatment. The model we developed was validated by comparison to a similar model and has potential for use in future studies on optimization of hyperthermia treatment.

url: http://hdl.handle.net/1813/7907
date: 2007-07-10
creator: Shah, Avani;Shoor, Priya;Singh, Babu
viewed: 16
title: Patch Immunization: Transcutaneous Vaccination for the Cholera Toxin and Optimization of Immunization Cycles
abstract: The main point of this analysis was to investigate the diffusion of the cholera vaccination through specific layers of the skin. The antigen was initially modeled through the skin directly to the blood stream. The antigen was also modeled with the presence of a network of Langerhans cells. There was a smooth concentration profile in the skin after one week of patch exposure in the absence of the LC network. However, there was discontinuity in the concentration profile when the LC network was present. The LC network functioned as a large enough sink term that the flux into the bloodstream was virtually zero. Therefore, we concluded that the LC network alone can create a cutaneous immune response. The LC network was enhanced with the presence of Imiquimod, a typical immune response modifier. The modifier increased the activity of the LC network, thus increasing the reaction rate of the LC cells. With Imiquimod there was a sharper discontinuity in the concentration profile at the LC network and the antigen flux into the blood stream is zero. The most effective enhancer tested was the MEMs microneedles, which increased the porosity of the skin and thus the diffusivity of the antigen through the skin. Contour plots of the skin showed absolute diffusion and consumption of the antigen into the LC network, while only partial consumption with the other enhancers tested. Concentration gradients were present in the ultrasonically and photo mechanically enhanced skin because they had weaker enhancing capabilities compared to the MEMs needles. The MEMs needles are the most effective in mass transfer, but are also the most evasive. Vaccines are usually given in cycles to increase the concentration of the antigen in the skin and bloodstream. When the patch was applied to the skin with

no enhancer, the maximum concentration was achieved after 2.3 days. However, the maximum concentration in the skin is achieved sooner with the various adjuvants. For example, when the patch is applied with MEMs needles, the maximal concentration is achieved in the skin only after 1.2 hours of exposure. Immunization cycles presented in Glenn et al were simulated to determine the approximate concentration of the antigen at the center of the skin needed for an immune response. This concentration is 0.0038 mol/m^3. Therefore, it was assumed that if the concentration in the skin is close to this value, then an immune response will be initiated. The immunization cycles for each adjuvant used were then optimized.

url: http://hdl.handle.net/1813/7908
date: 2007-07-10
creator: Sarathy, Vijay;Russell, Matthew;Khasnavis, Siddharth;Chaudhury, Ankur
viewed: 16
title: Magnetic Resonance Induced Heating in a Vascular Stent
abstract: It is standard hospital practice to remove metallic objects from patients prior to MRIs. Since magnetic resonance imaging employs changing magnetic fields, even everyday items such as jewelry or keys run the risk of overheating due to induced currents leading to Joule heating. A potential problem arises, however, when the metal is subcutaneously located in the form of a medical implant. The present study evaluated this scenario by using finite element analysis to model a vascular stent under the influence of a standard MRI field. COMSOL Multiphysics software was used to conduct finite element analysis on two different stent sizes, each in the presence and absence of blood flow. The stents were modeled as stainless steel (type 316L) with internal diameters of 5mm and 8mm, length of 40mm, and wall thicknesses of 0.18mm and 0.22mm. The tests revealed that under the influence of blood cooling, the stents modeled did not overheat or cause arterial damage. Specifically, the large stent resulted in a maximum temperature of 310.807 K and the smaller stent led to 310.230 K, each after 30 minutes of heating. In the unrealistic absence of blood flow, the large and small stents reached maximum temperatures of 318.851 K and 312.297 K respectively. Ultimately, given variance in blood flow the true solutions lie somewhere in between the blood perfusion and static flow models.

url: http://hdl.handle.net/1813/7909
date: 2007-07-10
creator: Rivers, Shajuana;Oh, Jason;Legato, Joseph;Klosiewicz, Bryan
viewed: 30
title: pH-Dependent Drug Delivery Systems
abstract: Gastric carcinoma, or stomach cancer, is a major disease in the world today. Although it only accounts for about 2% of all cancer cases in the United States, it is much more prevalent in nations such as Korea, Japan, Great Britain, South America, and Iceland. While the most common treatment for gastric carcinoma is surgery, there are chemotherapeutic alternatives including the application of doxorubicin, also known as Adriamycin?.
However, as with nearly all chemotherapy drugs, doxorubicin causes dose-dependent toxicity that results in severe biological side effects and, potentially, death. Many of the adverse effects of doxorubicin may be attributed to the fact that it is normally administered intravenously; thus, although the drug?s target is the stomach, the doxorubicin is systemically rampant. Hence, we have developed a delivery system for doxorubicin that we hope will limit the drug?s action to the stomach alone.
We begin with a means for encasing the doxorubicin inside two types of hydrogels whose diffusive properties vary depending on temperature and pH levels, such that diffusion may be maximized in the stomach and minimized at all other locations inside the gastrointestinal tract. This original design was modeled as a 1-D radial line to represent the spherical shape of the pill. After investigation, another design involving a hollowed out hemisphere was modeled and tested. Results comparison shows that the second design scheme is superior to the first both in outward drug flux and in the amount of drug able to be delivered.

Ultimately, results of the study showed that pH-dependent drug release can be attained at a steady and reliable rate, with significantly greater rates of release inside the stomach. However, we were unable to attain a clinically adequate amount of total doxorubicin release with our model designs. Still, it may be possible to achieve medically useful results with pH-dependent drug delivery systems given certain technological improvements in the future.

url: http://hdl.handle.net/1813/7910
date: 2007-07-10
creator: Zacherman, Jonathan;Pratt, Kristamarie;Mathew, Esha;Lund, Stephen
viewed: 38
title: Lynah Rink: The Science of the Ice
abstract: Ice hockey is probably the most popular sports team at Cornell, easily selling out tickets to every game at the start of every year. Although eager fans study the team, plays, opponents, and results, it is doubtful that they pay any attention to the science behind the very ice the game depends upon. Our project seeks to look into the ice at Lynah rink, specifically the heat transfer processes involved in making the ice, maintaining it, and removing it in the off-season. We investigated how much time it would take to prepare the surface for ice hockey, how much time it would take to resurface the ice during a game, and lastly how much time it would take to melt all the ice and remove it during the off-season. We used a one-dimensional geometry with sixteen sections to model the eight layers of ice needed for the rink. Two sections represented one layer, equal to 0.3175 cm. Layers and boundaries were turned on and off depending on the part of the problem that was being solved for. Our initial results showed that it takes about four hours to place eight layers, equivalent to 2.54 cm of ice down on the rink. Conversely, it takes about five minutes for the 2.54 cm of ice to melt with the concrete slab heated. The resurfacing process, needed to be complete in less than fifteen minutes, was found by our model to take about six minutes. This value is subject to change from variation in the heat transfer coefficient and rink temperature, but our analysis found that even high values for these parameters still allowed resurfacing in a maximum of eight minutes. Melting was the least complex situation to model, and we found that it took about five minutes to melt the ice with the concrete heated to 60?C(333.15K).

url: http://hdl.handle.net/1813/7911
date: 2007-07-10
creator: Shim, Ju Sok;Chung, Chris
viewed: 34
title: The Effect of the Diving/Wet Suit on the Survival Time in Cold Water Immersion
abstract: In this study, we will compare the effect of normal clothes (assumed as bare skin) with effect of wetsuit in maintaining the core body temperature, produced by metabolic heat generations and blood flow heat generation, using COMSOL. A passenger is immersed in cold water after Titanic has shipwrecked, and the individual is waiting for rescue to come in time before his metabolic functions stop and die. We will compare two cases: with and without wetsuit on the passenger. Skin temperature or wetsuit temperature is assumed to be equal to cold water temperature, which is at 10 degrees Celsius, and the distribution of temperature throughout the body will be graphically shown as the time of body immersion in water increases. It is shown from the results that wetsuit can help maintain the normal core body temperature much longer than normal clothes/bare skin can in cold water immersion.

url: http://hdl.handle.net/1813/7912
date: 2007-07-10
creator: Ma, Jameson;Lin, Tricia;Lim, Irene Isabel;Beutel, Bryan
viewed: 35

title: Oral Transmucosal Delivery of Fentanyl Citrate for Breakthrough Cancer Pain Relief
abstract: Episodes of breakthrough cancer pain are relatively common occurrences for patients undergoing cancer treatments. Characterized by pain unrestrained by traditional medications, these physical burdens impose a significant degree of suffering. In order to control and eliminate this pain, Actiq, a pharmaceutical lollipop, has been developed to provide rapid oral transmucosal delivery of fentanyl citrate, a potent medicinal narcotic. To elucidate the pharmacokinetics of the drug under various dosages, a computer model of fentanyl diffusion in the oral cavity was designed in COMSOL. Upon solving the model process, concentration profiles of fentanyl in the mucosa over time were developed for various dosages. Sensitivity analyses were also performed to determine the effects of several parameters on fentanyl diffusion. The resulting concentration profiles showed that peak concentrations of 0.00079 g/m3, 0.0016 g/m3, and 0.0032 g/m3 for 200 ?g, 400 ?g, and 800 ?g dosages, respectively, were achieved at approximately 800 seconds. Additionally, based upon the sensitivity analyses, the fentanyl solubility and the lollipop radial dissolution rate have the greatest impact on fentanyl concentration and diffusion. Future research can be performed to optimize the drug diffusion by altering these two parameters, ultimately yielding a more effective Actiq product.

url: http://hdl.handle.net/1813/7913
date: 2007-07-10
creator: Krzyspiak, Joanna;Kwok, Jeni
viewed: 33
title: Thermal Imaging and Analysis for Breast Tumor Detection
abstract: Breast cancer is the most common cancer among women, except for non-melanoma skin cancers. Women in North America have the highest rate of breast cancer in the world and the chance of a woman developing this cancer is 13% (ACS). Resulting deaths have been decreasing mainly due to early detection and increased awareness. This study analyzes the use of a thermogram as a potential method for breast cancer detection. The breast is evaluated by an infrared camera and a temperature profile is produced. Proper study of the image can show if a tumor is present. A computer simulation of this procedure was used to model the temperature profile and its change as certain parameters vary. Results show that in the present of a tumor, there is a difference in surface temperature of the breast. Input values such as tumor size, tumor location, heat transfer coefficients, and perfusion rates were varied to determine the reliability of a positive result despite differences in each unique breast from woman to woman.

url: http://hdl.handle.net/1813/7914
date: 2007-07-10
creator: Rich, Debra L.
viewed: 31
title: Effects of Exposure to Plants and Nature On Cognition and Mood: A Cognitive Psychology Perspective
abstract: Two theories posit the restorative benefits of exposure to plants and natural settings, either in the form of stress reduction and improved mood, or through enhancement of cognitive performance, specifically attention processes. Research conducted on the latter area has used a wide variety of tasks to measure attention, often without consideration to underlying cognitive processes. The main purpose of this research was to examine the effects of natural stimuli on cognition and mood from a cognitive science perspective, using measures that assess specific underlying cognitive processes. The secondary objectives of the research were to explore the effect of natural stimuli on subjective well-being and examine whether different types of exposure would have distinct impacts on cognition and mood.
Four experimental studies were conducted in order to examine three exposure types: (1) window views of nature vs. buildings vs. control, (2) plants vs. other embellishments, and (3) two studies comparing the interaction with living plants to viewing pictures of plants. Dependent variables consisted of tasks used in

the cognitive sciences to measure underlying cognitive processes of inhibition, working memory, creative problem solving, and sustained attention. Verbal working memory was measured using the Backwards Digit Span task and the n-back task. Sustained attention was assessed using a vigilance task. Executive attention processes of inhibition and creative problem solving were measured by the Stroop Task, and either the Remote Associates Test or the Abbreviated Torrance Test for Adults, respectively. Subjective mood state was examined using the Profile of Mood States ? Short Form and the Positive and Negative Affectivity Scale.
Quantitative statistical analyses revealed the use of dependent measures assessing specific cognitive processes produces results different from previous operationalizations of attention employed in other studies. Window views of nature enhanced creative problem-solving performance more than the building view or ?no-view? control, but did not influence sustained attention. Participants exposed to plants versus other office embellishments did not show better performance on a working memory task. In the majority of the studies, mood state was unaffected. Overall, the results suggest that more precise operationalizations of attention are required.NASA - Kennedy Space Center

url: http://hdl.handle.net/1813/7915
date: 2007-07-11
creator: Power, Gabriel
viewed: 30
title: A Wavelet-Based Analysis of Commodity Futures Markets
abstract: The time horizon of decision-making is an essential dimension of economic problems but is difficult to explicitly define. In this thesis, we use time series analysis augmented by wavelet transform methods to precisely identify distinct time horizons in economic data and measure their explanatory power. This enables us to address three timely and persistent questions in the literature on commodity derivatives markets are addressed. First, are findings of long memory (fractional integration) in commodity futures price volatility spurious, following Granger?s conjecture? Yes, only two out of eleven commodities are characterized by true long memory and certain stochastic break models (e.g. Markov-switching) are found to be more plausible. Second, do large Index Traders such as commodity pools and pension funds increase futures price volatility through a large volume of trading activity? This appears to be true only for non-storable commodity contracts. Third, can we improve the accuracy of term structure models of futures prices by (i) including more state variables to better capture maturity and inventory effects, and (ii) filtering out what appears to be noise at the shortest time horizons? The results suggest that (i) three state variables is an optimal choice and (ii) estimates using filtered data are not improved and the noise may be economically meaningful.

url: http://hdl.handle.net/1813/7916
date: 2007-07-13
creator: Vanden Berg-Foels, Wendy
viewed: 21
title: Femoral Head Secondary Center of Ossification Development in a Canine Model of Hip Dysplasia: Onset, Mineral Density, and Shape
abstract: Developmental dysplasia of the hip (DDH) is characterized by joint subluxation, malformation, and early onset osteoarthritis. Little is known about how increased body weight and chronic, residual subluxation effect the course of early postnatal hip development. The objective of this research was to test the association of body weight and subluxation with femoral head mineral density and shape development, and with degeneration status at early adulthood. A longitudinal study was conducted using a canine model of DDH. Serial body weight, age at femoral head ossification onset, and femoral head coverage at 16 and 32 weeks were measured. Bone mineral density and secondary center of ossification (SCO) shape were evaluated using serial quantitative computed tomography at 7 ages between 4 to 32 weeks. Weight and shape analyses were conducted with 34 hips; mineral density analysis was conducted with 28 hips. Degeneration at 32 weeks

was assessed using necropsy and cartilage biochemistry. There was a negative association between birth weight and age at femoral head ossification onset; however, the association was likely due to skeletal maturity level rather than body weight per se. Lower birth weight subjects had greater femoral head coverage at 16 weeks. Greater birth weight was associated with greater probability of degenerative changes at 32 weeks. During growth acceleration, greater subluxation was associated with a lower mean SCO density, and, at 32 weeks, with a greater peak density and a greater area of high density subchondral bone in a more lateral location. Subluxation was also associated with a greater probability of degenerative changes at 32 weeks. At 14 and 32 weeks, greater subluxation was associated with a thinner SCO in the perifoveal region, the characteristic site of lesion formation. Increased thinness was associated with a greater probability of degenerative changes. At 32 weeks, greater subluxation was also associated with a bend in the SCO lateral to the perifoveal region. These results support the hypothesis that increased birth weight and chronic subluxation during the critical early postnatal growth period are sufficient to alter the course of hip development and result in measurable degenerative changes at adulthood.

url: http://hdl.handle.net/1813/7917
date: 2007-07-14
creator: Ipek, Engin
viewed: 20
title: Efficiently Exploring Architectural Design Spaces via Predictive Modeling
abstract: Computer architects rely on cycle-by-cycle simulation to evaluate the impact of design choices and to understand tradeoffs and interactions among design parameters. Although several techniques reduce time per individual simulation, efficiently exploring exponential-size design spaces spanned by several interacting parameters remains an open problem: the sheer number of experiments renders detailed simulation intractable. We attack this via an automated approach for building highly accurate and confident predictive models of design spaces. We collect simulation data incrementally, giving reliable estimates of model error on the full parameter space at each step of the building process. As validation, we perform sensitivity studies on memory system and microprocessor design spaces (conducting over 300K detailed simulations). Our models generally predict IPC with less than 1-2% error, even when trained on as little as 2% of the full design space. Further, our mechanism is orthogonal to techniques that reduce simulation runtimes. SimPoint [23] reduces the number of simulated instructions per experiment by 8-62?. We reduce the total number of simulated instructions by 50-200?. Combining our approach with SimPoint reduces the number of simulated instructions required to complete thorough design-space explorations by 1000-13,000?. Our approach has potential to quantitatively and qualitatively transform computer architecture research, enabling studies heretofore beyond our computational abilities.

url: http://hdl.handle.net/1813/7918
date: 2007-07-14
creator: Milliman, Paul
viewed: 26
title: Disputing Identity, Territoriality, and Sovereignty: The Place of Pomerania in the Social Memory of the Kingdom of Poland and the Teutonic Ordensstaat
abstract: This dissertation analyzes state-formation, the development of historical consciousness, and the construction of identities in medieval Europe. The source materials used to examine these topics are the records from a series of disputes between the Teutonic Knights and Polish and Pomeranian rulers during the thirteenth and fourteenth centuries. The first part situates these conflicts between the Teutonic Knights and their neighbors and benefactors in the context of the ethnic, religious, cultural, and political borderland society of the thirteenth-century south Baltic littoral. The second part examines how in the early fourteenth century these borderlands were transformed through a complex process of remembering and forgetting into

?bordered lands? of strictly demarcated political boundaries. The nature of the documentary evidence provides a unique opportunity to analyze how communities within Poland and the Teutonic Ordensstaat constructed their own views of their collective identity and history as well as how the views of these communities helped to inform and transform the views of the elites, who traditionally appropriated the role of preserving memories and propagating identities. In 1320 and 1339, in the aftermath of two periods of conflict between Poland and the Ordensstaat, the Papacy ordered legates to conduct inquires into the Polish kings? claims that the Teutonic Knights had illegally seized lands belonging to Poland. The lengthy testimonies of over 150 witnesses provide evidence about how representatives of different social and cultural groups in Poland thought about their role within the nascent Polish kingdom. Although the witnesses were asked by judges to respond to articles proposed by royal lawyers, the witnesses often took this opportunity to talk about whatever they felt relevant, sharing their personal memories of events, or memories which had been passed on to them by members of the various secular and ecclesiastical communities to which they belonged. They also presented reasons that went well beyond the scope of what they were asked ? their own views on ethnicity, history, law, and customs, and what role these played in defining where and what the Kingdom of Poland was, as well as who should be included within its boundaries.

url: http://hdl.handle.net/1813/7919
date: 2007-07-15
creator: Day, David
viewed: 25
title: Assessing the Financial Implications of Selling Dairy Digester-Generated Electricity to the Electric Grid
abstract: The primary objective in this project is to evaluate the economic implications of implementing an anaerobic digester with respect to the expenses and costs required to fund the system. The study assumed that all electricity generated by the anaerobic digester is sold directly to the grid. In this fashion, the study was able to determine the potential revenue when solely relying upon the market demand for electricity. By studying the previous market demand for electricity, it was found that the market demand of electricity ($/kWhr) in some cases can exceed the previously assumed value ($0.05/kWhr). From the LMBP prices collected (July 2005 ? August 2006), it was found that the market demand for electricity can sometimes exceed $0.18/kwHr. Additionally, the current analysis of historical market demand reveals that there is a steady increase in demand following each year. This further shows that the potential revenue that can be generated by selling AD generated electricity to the grid can be greater than previously expected. To further utilize this increase in expected revenue, it is higher recommended to determine potential options to increase biogas production rates to generate higher annual revenues beyond that of the annual expenses required to operate the system. The current analysis shows that food substrates have the potential to dramatically increase biogas production rates and revenue generation beyond the respective annual expenses required. This has the potential to help increase the annual net gain, and reduce the simple payback period. Additionally, the data reveal that biogas production rates can help to determine a proper engine-generator set to use. Assuming that the desired engine-generator set is unavailable, the current study shows that a multiple engine-generator set has the potential to produce the same amount of electricity and revenue as the desired engine-generator set.

url: http://hdl.handle.net/1813/7920
date: 2007-07-19
creator: College of Human Ecology
viewed: 9
title: Human Ecology 35:1, May 2007, Outreach and Impact
abstract: Outreach and Impact

url: http://hdl.handle.net/1813/7921
date: 2007-07-19
creator: Recktenwald, Erin

title: EFFECT OF FEEDING CORN SILAGE BASED DIETS PREDICTED TO BE DEFICIENT IN EITHER RUMINAL NITROGEN OR METABOLIZABLE PROTEIN ON NITROGEN UTILIZATION AND EFFICIENCY OF USE IN LACTATING COWS
abstract: Due to concern over nitrogen (N) emissions, this study attempted to evaluate dietary approaches to reduce N excretion by dairy cattle. Knowledge about potential N sources that were either unaccounted for or under-predicted by CPM Dairy and the Dairy NRC (2001) was used to formulate rations that were much lower in crude protein (CP) than typically fed to dairy cattle but would potentially not decrease production. Specifically, the three diets fed were predicted to have: (1) positive rumen N and metabolizable protein (MP) balances (Diet P) (2) negative MP balance and positive rumen N balance (Diet N), or (3) negative rumen N balance but positive MP balance (Diet T) as predicted by CPM Dairy version 3. The objective of this experiment was to determine whether, and to what extent, the decrease in predicted ruminally available N and MP supply would affect milk production.

Eighty-eight multiparous lactating Holstein cows (83 +/- 20 DIM), were blocked by average daily milk yield to 50 DIM and parity and assigned to three diets differing in N content or predicted rumen degradability of the feed N. The diets were formulated with CPM Dairy V3 using library values for all feeds except corn silage where actual chemical, digestibility, and degradation rate values were determined and used. The diets (DM basis) consisted of approximately 50% corn silage, 2% wheat straw and 48% of a diet specific ingredient mix and were formulated for 22.2 of kg DMI. Actual diet CP levels were 16.7, 14.2 and 14.3% for Diets P, N and T, respectively. The predicted CPM Dairy rumen N balance at the formulated DMI was 29 and 27 g for Diets P and N and negative 39 g/d for Diet T, whereas the predicted MP balance was 263 and negative 145 and 91 g/d for Diets P, N and T, respectively. Monensin was included in the diets at a formulated intake of approximately 300 mg per cow per d and somatotropin was administered per label.

Actual DMI for cattle fed these treatments were 25.7, 25.5 and 24.2 kg/d for Diets P, N and T, respectively and were significantly lower for Diet T. Actual milk yield was 45.0, 42.6 and 43.3 kg/d and 3.5% FCM was 38.1, 36.5, and 36.4 kg/d for cows fed Diets P, N and T, respectively and was significantly lower for cows fed Diets N and T. Milk protein percent was not affected by diet; however, milk protein yield was significantly greater for cows fed Diet P due to the difference in milk yield. Plasma urea N concentrations were 11.31, 8.40 and 7.13 mg/dl for cows fed diets P, N and T, respectively and were different and paralleled the rumen ammonia levels of 8.32, 6.58 and 5.84 mg/dl. Milk fat depression (MFD) was observed in all cows and was not affected by treatment, and the average milk fat levels were 2.67, 2.68 and 2.54% for diets P, N and T, respectively. To determine if monensin was partially responsible for the MFD, monensin was removed from the diets of approximately half of the cows on treatment once they had finished the experimental period. Removal of monensin resulted in a 30% increase in milk fat percent, and milk protein content was not affected. Calculated milk N:intake N ratios for the three treatments were 0.31, 0.33 and 0.36 for Diets P, N and T respectively.

The results of this study suggest that more productive N is available than currently predicted by either CPM Dairy and the Dairy NRC (2001). Understanding where these differences exist would allow for feeding less CP to dairy cattle and decreasing N emissions to the environment. It may also be a profitable strategy for dairy farmers, as they would be able to reduce their purchase of costly protein feeds, but that was not demonstrated in this study, primarily due to the severe milk fat depression that decreased the economic value of milk. However, ration cost was not a concern for this experiment, and that aspect can be considered when implementing feeding strategies stemming from this research.

url: http://hdl.handle.net/1813/7922

date: 2007-07-20
creator: Tan, Lijian
viewed: 7
title: MULTISCALE MODELING OF SOLIDIFICATION OF MULTI-COMPONENT ALLOYS
abstract: Modeling solidification in the micro-scale is computationally intensive. To overcome this difficulty, a method combining features of front-tracking methods and fixed-domain methods is developed. To explicitly track the interface growth and shape of the solidifying crystals, a front-tracking approach based on the level set method is implemented. To easily model the heat and momentum transport, a fixed-domain method is implemented assuming a diffused freezing front where the liquid fraction is defined in terms of the level set function. The fixed-domain approach, by avoiding the explicit application of essential boundary conditions on the freezing front, leads to an energy conserving methodology that is not sensitive to the mesh size. Techniques including fast marching, narrow band computing and adaptive meshing are utilized to speed up computations. The model is used to investigate various phenomena in solidification including two- and three-dimensional dendrite growth of pure material and alloys, eutectic and peritectic solidification, convection effects on crystal and dendrite growth, planar/cellular/dendritic transition, interaction between multiple dendrites, columnar/equiaxed transition and etc.
Interaction between thousands or even millions of crystals gives the overall behavior of the solidification process and defines the properties of the final product. A multiscale model based on a database approach is developed to investigate alloy solidification. Appropriate assumptions are introduced to describe the behavior of macroscopic temperature, macroscopic concentration, liquid volume fraction and microstructure features. These assumptions lead to a macroscale model with two unknown functions: liquid volume fraction and microstructure features. These functions are computed using information from microscale solutions of selected problems. A computationally efficient model, which is different from the microscale and macroscale models, is utilized to find relevant sample problems. The microscale solution of the relevant sample problems is then utilized to evaluate the two unknown functions (liquid volume fraction and microstructure features) in the macroscale model. The temperature solution of the macroscale model is further used to improve the estimation of the liquid volume fraction and microstructure features. Interpolation is utilized in the feature space to greatly reduce the number of required sample problems. The efficiency of the proposed multiscale framework is demonstrated with numerical examples that consider a large number of crystals. A computationally intensive fully-resolved microscale analysis is also performed to evaluate the accuracy of the multiscale framework.

url: http://hdl.handle.net/1813/7923
date: 2007-07-20
creator: Mills, Thalia Tilden
viewed: 12
title: Wide angle x-ray scattering probes chain order and identifies liquid-liquid phase coexistence in oriented lipid membranes
abstract: Committee members: Sol M. Gruner, Carl Franck, James P. Sethna, Gerald W. FeigensonWe have used grazing incidence wide-angle x-ray scattering (GIWAXS) on oriented lipid multilayers to measure chain order and to examine liquid-liquid coexistence in the system DOPC/DPPC/cholesterol, a model for the outer leaflet of the cell plasma membrane. Coexistence of liquid-disordered (Ld) and liquid-ordered (Lo) domains is thought to be related to “rafts” in the cell membrane, cholesterol-rich lipid heterogeneities which provide platforms for protein sorting. Many of the methods used for measuring liquid-liquid coexistence in model membranes require a potentially perturbing probe, while x-ray scattering is probe-free. In unoriented (powder) x-ray data, scattering from the Ld and Lo phases looks very similar, whereas in GIWAXS patterns from oriented samples, these phases are easily distinguishable because of the differences in their chain orientational order. By using a simple analytical model to relate the GIWAXS data to the chain orientational

distribution, we fit our data to obtain the average chain orientational order parameter, Smol. While this type of analysis has been well-used for liquid crystals, it is not commonly applied to model membrane systems. For DOPC/cholesterol and DPPC/cholesterol mixtures, composition and temperature dependent trends in Smol determined by GIWAXS are consistent with earlier NMR data. Addition of 40% cholesterol to liquid-phase DPPC or DOPC more than doubles Smol. In addition to measuring chain orientational order parameters for binary mixtures of DOPC/cholesterol and DPPC/cholesterol, we have measured GIWAXS for ternary mixtures where fluorescence microscopy and NMR indicate the coexistence of Ld and Lo phases below the miscibility transition temperature, Tmix. In order to fit to the GIWAXS data for these mixtures at low temperature, we required two values of Smol, which we interpret as evidence of coexisting Ld and Lo phases. Our Tmix values based on x-ray work agree reasonably (to within the 5-10 C temperature steps used) with the Tmix values based on the NMR and microscopy work of Veatch et al. (Veatch and Keller, 2003b; Veatch et al., 2004; Veatch et al., 2007b). This approach provides a new method for examining phase coexistence in model membranes without the need to add a potentially perturbing probe.NIH Molecular Biophysics Training Grant, NSF MCB-0315330, NIH GM 44976, NSF DMR-0225180, DOE DE-FG02-97ER62443

url: http://hdl.handle.net/1813/7924
date: 2007-07-20
creator: Sundararaghavan, Veeraraghavan

title: Multi-scale Computational Techniques For Design Of Polycrystalline Materials
abstract: Your submission was rejected by Pattie Place:I am rejecting because on page 95 there is too much white space.
But Page 95 is at the end of a chapter?Microstructures play an important role in controlling distribution of properties in engineering materials. It is possible to develop components with tailored distribution of properties such as strength and stiffness by controlling microstructure evolution during the manufacturing process. When forming metallic components by imposing large deformations, mechanisms such as slip and lattice rotation drive formation of texture in the underlying polycrystalline microstructure. Such microstructural changes affect the final distribution of material properties in the component. By carefully designing the imposed deformation, one could potentially tailor the microstructure and obtain desired property distributions. This thesis focuses on development of novel computational strategies for designing deformation processes to realize materials with desired properties. The techniques presented are an interplay of several new tools developed recently, such as reduced order modeling, graphical cross-plots, statistical learning, microstructure homogenization and multi-scale sensitivity analysis. The primary outcomes of this thesis are listed below:
1. Development of reduced-order representations and graphical methodologies for representing process-property-texture relationships.
2. Development of adaptive reduced-order optimization techniques for identification of processing paths that lead to desirable microstructure-sensitive properties.
3. Development of homogenization techniques for predicting microstructure evolution in large deformation processes.
4. Development of multi-scale sensitivity analysis of poly-crystalline material deformation for optimizing microstructure-sensitive properties during industrial forming processes.
The framework for design of polycrystalline microstructures leads to increased product yield in industrial forming processes and simultaneously allows control distribution of properties such as stiffness and strength in forged products. Multi-scale design problems leading to billions of unknowns have been solved using parallel computing techniques. The computational framework can be readily used for selecting optimal processing paths for achieving desired properties. The methodology developed is a fundamental effort at providing detailed deformation process design solutions needed for controlling properties of performance-

critical hardware components in automotive, structural and aerospace applications.

url: http://hdl.handle.net/1813/7925
date: 2007-07-20
creator: Ganusov, Ilya
viewed: 9
title: Using General-Purpose Processor Cores as Prefetching Engines in Chip Multiprocessor Architectures
abstract: Scaling the performance of applications with little thread-level parallelism is one of the most serious impediments to the success of multi-core architectures. At the same time, the long latency of memory accesses represents one of the largest performance bottlenecks for individual program threads. As a result, a typical microprocessor spends a significant amount of time waiting for data to be delivered from memory instead of performing useful computation. Fortunately, it is often possible to guess which memory data will be needed by a program thread in the near future. Various hardware and software prefetching techniques have been developed to fetch critical data before they are requested by the processor. This way prefetching can eliminate processor stalls otherwise induced by the slow response from the memory system. The main contribution of this dissertation is the development of two techniques that utilize extra cores of a chip multiprocessor (CMP) as prefetching engines to increase the performance of single program threads. The proposed approaches effectively leverage the execution capabilities of chip multiprocessors to compute data addresses that are likely to miss in the cache and prefetch them ahead of program thread load requests. I demonstrate the effectiveness of the proposed approaches by performing cycle-accurate simulations of a chip multiprocessor consisting of two four-way superscalar cores running the single-threaded SPEC CPU2000 benchmark suite. The proposed mechanisms provide significant performance improvements over a baseline that already includes an aggressive hardware stream prefetcher. A comparison with other multi-core prefetching mechanisms from the literature shows that the techniques proposed in this dissertation provide competitive performance, incur less energy overhead, and require considerably simpler hardware support.

url: http://hdl.handle.net/1813/7930
date: 2007-07-20
creator: College of Human Ecology
viewed: 4
title: LINK: Spring 2007
abstract:

url: http://hdl.handle.net/1813/7931
date: 2007-07-20
creator: College of Human Ecology
viewed: 2
title: Human Ecology News: Fall 2005
abstract:

url: http://hdl.handle.net/1813/7932
date: 2007-07-20
creator: College of Human Ecology
viewed: 2
title: Human Ecology News: Spring 2006
abstract:

url: http://hdl.handle.net/1813/7933
date: 2007-07-20
creator: College of Human Ecology
viewed: 2
title: Human Ecology News: Fall 2006
abstract:

url: http://hdl.handle.net/1813/7934
date: 2007-07-20
creator: Stehouwer, Richard;Steenhuis, Tammo;Richards, Brian;McDowell, William;McBride, Murray;Krogmann, Uta;Hay, Anthony;Harrison, Ellen Z.;Barker, Allen
viewed: 30
title: Guidelines for Application of Sewage Biosolids to Agricultural Lands in the Northeastern U.S.
abstract:

url: http://hdl.handle.net/1813/7936
date: 2007-07-20
creator: Petrovic, A. Martin;Gruttadaurio, Joann;Harrison, Ellen Z.;Bonhotal, Jean
viewed: 11
title: Using Manure-Based Composts in Turf Maintenance
abstract:

url: http://hdl.handle.net/1813/7937
date: 2007-07-22
creator: Breheny, Sean
viewed: 4
title: DESIGN OF A FOUR-ROTOR AUTONOMOUS HELICOPTER FOR VEHICLE BASED PHASED ANTENNA ARRAYS
abstract: Autonomous flying vehicles (AFVs) have applications ranging from police surveillance to military synthetic aperture radar mapping. In many such applications, AFVs must transmit large quantities of data to a distant base station. Since this can be difficult without the ability to place large, high-gain antennas on small vehicles, we propose the idea of flying the vehicles in formation while transmitting and forming a phased-array antenna with one element on each vehicle.
To determine the feasibility of this concept, we studied the constraints imposed both by antenna theory and by present AFV technology. While position errors in the array can cause a great reduction in antenna gain, good position sensing can allow phase compensation to recover most of the ideal case antenna gain even with significant position error.
Two electrical team members and one mechanical member worked together to produce a four-rotor helicopter-type AFV which was tested as well as modeled in simulation. The physical vehicle demonstrated autonomous hover and bench tests indicated that it should have 0.8 g excess thrust beyond hover and 10 minute battery endurance. Simulation of a formation of several of these AFVs showed very promising improvements in predicted AFV communication range (in one example, 9.6 dB gain for an array of ten in 10 MPH wind, for a range improvement of a factor of 3, representing 100 kilometer range with a total array power of only 1.5 Watts). Future work may include an actual physical test of formation flight of several AFVs, possibly even with a phased array antenna system, or at least with an antenna simulation based on real position data. This latter simulation was already performed on data from formation flight simulations, provided by Honeywell, of their Organic Aerial Vehicles (OAVs), showing promising antenna array gain results.

url: http://hdl.handle.net/1813/7938
date: 2007-07-22
creator: Tan, Ivy
viewed: 7
title: COMPUTATIONAL AND EXPERIMENTAL APPROACHES RELATED TO NITROUS OXIDE EMISSIONS AND ECONOMIC ANALYSIS OF PRIVATE AND SOCIAL RETURNS FROM MAIZE FERTILIZATION
abstract: Continued research and development of computational methods are needed to effectively address both environmental and economic issues related to nitrogen (N) use for maize fertilization. This research consists of three major inter-related components. The first constitutes an experiment in Willsboro, New York to estimate the impact of management practices, especially tillage and timing of N application on nitrous oxide (N2O) emissions for clay loam and loamy sand. The second component includes the use of N2O emissions, and soil physical and chemical data collected from the Willsboro experiment to 1) calibrate the Precision Nitrogen Management (PNM) model, 2) determine the N2:N2O ratio from partial N budgets and incorporate it into the PNM model for N2O losses estimations, and 3) evaluate different combinations of process representations of the PNM model. The final component involves an integration of the PNM model and economic analyses by 1) simulating long-term yield and environmental N losses for maize production on three textural soils, and 2) estimating private and social returns based on PNM-simulated data. Nitrous oxide losses averaged four times higher on the clay loam than the loamy sand soil. Under no-tillage, full fertilizer application at planting resulted in 4.7 and 2.3 kg N ha-1 greater cumulative N2O losses than starter-only fertilizer application on maize after grass and continuous maize plots, respectively. Nitrogen management critically affects the extent of N2O losses, particularly for fine-textured soils under no-tillage, and must be an important consideration in soil and crop management for greenhouse gas (GHG) reduction. With the process complexities in the soil-plant-atmosphere system, modeling of N2O losses was challenging, especially for short-term periods. The incorporation of the biological aspects of the denitrification process is important to capture the dynamics involved in the production of N2O fluxes. Timing of N application affected optimum N rates depending on soil type and weather conditions. The economic modeling effort provided a framework for computations of revenue that incorporates environmental impacts of N fertilizer management. A more sophisticated approach is necessary to 1) increase PNM model accuracy, and 2) refine the calculations on environmental losses and associated damage costs for practical farm application.

url: http://hdl.handle.net/1813/7939
date: 2007-07-23
creator: Ricchetti, Bryan
viewed: 4
title: Essays in Labor and Organization Economics
abstract: The following dissertation is a collection of three independent essays. The first two essays contribute to the literature on Organization Economics. The third essay contributes to the literature on data confidentiality.
Essay 1, "Turnover as a Gateway to Symmetric Information," explores high-ability turnover in highly competitive labor markets. Why do workers who are successful at a given firm decide to leave? Essay 1 asserts that such movement is driven by the presence of asymmetric information. In particular, it is shown that when competing firms have less knowledge of a worker?s ability than his current firm, there exists an incentive for high-ability workers to leave their current job in pursuit of a higher wage. Such an incentive generates a set of testable predictions. The predictions are tested using the personnel records from the management of a medium-size firm in the US financial services industry. The data is consistent with the theory.
Essay 2, ?Piece-Rates, Salary, Performance and Job Level,? explores the effect of monitoring and hierarchy on compensation structure. Previous work has shown that monitoring worker effort is more difficult at

lower levels of the hierarchy, and, simultaneously, that compensation should rely more on salary payments than piece-rate payments when effort is more difficult to monitor. Essay 2 formalizes these ideas in a simple model of moral hazard. The model generates a set of predictions about how salary, bonus and performance should vary across levels of the hierarchy. The predictions are tested using the same data as Essay 1 and strong support is found.
Essay 3, ?Synthetic Data and Risk of Disclosure,? explores how well synthetic data protects confidential data. Using a unique Census dataset and 4 synthetic implicates, the risk of disclosure is found to be quite small. In a secondary analysis, the effectiveness of distance-based and probabilistic re-identification methods are also explored. Contrary to previous experiments it is found that probabilistic re-identification outperforms distance-based. Further, it appears that the difference in performance is driven by the number of matching variables: as more matching variables are added, the success rate of probabilistic matching increases more quickly.

url: http://hdl.handle.net/1813/7940
date: 2007-07-23
creator: Rivers, Trevor
viewed: 3
title: BIOLUMINESCENT ACTIVITY IN THE MATING AND ANTIPREDATORY BEHAVIOR OF A MARINE OSTRACOD (CRUSTACEA, MYODOCOPIDA)
abstract: About an hour after the sun sets a complex and ritualized light show of precise, vertically placed luminescent pulses erupts over the shallow grassbeds of the western Caribbean throughout the year. These are the most complex displays known in marine systems. Displays consist of repeated trains of secreted bioluminescent pulses in a specific pattern ejected into the water column for courtship by male Vargula annecohenae, small (<2mm) myodocopid ostracod crustaceans. Quantification via the use of image intensification and infrared videography shows that each 40-cm long luminescent display train consists of a stationary phase of 3 (usually) brighter, longer pulses placed close together, followed by a helical phase of about a dozen evenly placed dimmer, shorter pulses secreted by an individual male rapidly spiraling upward. The operational sex ratio in the display grounds above the grassbeds is highly skewed toward males (>175:1). Each participating male is capable of 1) initiating a luminescent display train, 2) entraining on another displaying male in loose luminescent synchrony, and 3) ?sneaking? silently on a luminescing male, and can switch among these three tactics during a single train. Which alternative mating tactic is chosen is predicted by the orientation and distance of the responding male from the initial courtship display at the start of that tactic. Unlike fireflies, females do not respond with luminescent signals of their own. Instead, by using a light-emitting-diode array to mimic a male display, I show that females respond to and intercept the intermittent luminescent displays by compensating their trajectories between each light pulse. Besides courtship, all individuals of V. annecohenae (males, females, and juveniles) respond to predation attempts by their nocturnal predators by releasing enormous quantities of luminescence. Since individuals are distasteful to their predators, the signals probably function as aposematic signals, but also as lures for predators of an attacker (burglar alarm). Based on photomultiplier tube recordings of 1) courtship displays, 2) antipredation displays, and 3) total luminescent available, a male could produce nearly 500 courtship trains or 4 major antipredation displays from its existing stores.

url: http://hdl.handle.net/1813/7941
date: 2007-07-24
creator: College of Human Ecology
viewed: 3
title: SLOAN Program: 2007 Brochure
abstract:

url: http://hdl.handle.net/1813/7942
date: 2007-07-24
creator: College of Human Ecology
viewed: 0
title: Alumni Update: December 2006
abstract:

url: http://hdl.handle.net/1813/7943
date: 2007-07-24
creator: College of Human Ecology
viewed: 2
title: Alumni Update: March 2007
abstract:

url: http://hdl.handle.net/1813/7944
date: 2007-07-24
creator: Malone, Charles W. (Chip)
viewed: 10
title: Grab and Go GPSGuidelines and Activity Plans for Camps, Afterschool and other Youth Audiences
abstract: A series of activities developed in Genessee County for the 4-H program for youth to learn hands on, GPS/GIS technology and applications.

url: http://hdl.handle.net/1813/7945
date: 2007-07-24
creator: Kim, Hyowon
viewed: 4
title: Adopted Colors: Domesticity and Foreign Nationalism in Elizabeth Barrett Browning and George Eliot
abstract: James Eli Adams, Dorothy Mermin, Harry E. ShawThe dissertation explores the trope of lost and recovered children in the narratives of nationalism by Victorian women writers excluded from political participation. Bringing together the narratives of fragmented family and divided allegiance, my project focuses on how women writers constructed an imagined connection with other people's nationalism by subverting deracinated fantasy to explore the tensions between the individual and racial inheritance. Examining the cultural construction of Italians, Gypsies, and Jews in the British nineteenth century, this dissertation investigates the "timeless" fantasies of artistic freedom, liberation, and tolerance associated with landless "dark Others" that contrast with their historical marginalization in England. What appeal to Barrett Browning and Eliot, are not escape from racial inheritance, but the pressing duties of the lost child to preserve history and identity, as she negotiates a role of political leadership that constrains her private choices.
Inspired by the struggle of her adopted country to overthrow Austrian rule, Elizabeth Barrett Browning envisioned a national future of Italy in Casa Guidi Windows. Following the fictionalized travel writing of Anna Jameson and Arthur Hugh Clough that attempts to avoid politics in favor of art, I argue that by constructing kinship through Anglo-Italian literary tradition, Barrett Browning advocates the Italian revolutions of 1848 as liberal politics demanding English sympathy through spiritual inheritance. Conversely, Gypsies shed their ?spiritual appeal? to become racial figures, through the rise of Gypsy ethnography, popularized by George Borrow and later the Gyspy Lore Society, who mapped the linguistic and racial origins of the English Romany. The claim to race and history provides no solution for survival in Eliot?s long poem The Spanish Gypsy. Although Fedalma?s interstitial role does not bridge Gypsy and Spain, in Eliot?s last novel

Daniel Deronda, the adopted child's claim to racial memory depends on the disinherited daughter. Deronda's origins are legitimized through his reunion with his mother, but the process of inheriting Judaism rests on the tradition of Jewish women writers such as Grace Aguilar, who argued for women's religious education. The "exotic Jewess" Mirah resists conversion and reconstructs racial identity through the memory of her mother's spiritual instructionFulbright, KAEC, IIE

url: http://hdl.handle.net/1813/7946
date: 2007-07-25
creator: Vigeant, Louise Madeleine
viewed: 0
title: Of Contradictions and Tautologies
abstract: According to one standard semantic definition of a contradiction, a sentence is a contradiction if (and only if) it is false in every model, whereas a sentence is a tautology if (and only if) it is true in every model. This dissertation explores three reinterpretations of these definitions, each of which seeks to extend the coverage of these definitions to new phenomena in natural language. The first reinterpretation excludes all models in which a term is undefined, and is used to classify certain Existential There Sentences as either contradictions or tautologies. The second reinterpretation excludes the very few models in which a sentence whose subject is a but-phrase that is headed by a non-universal determiner is true. The final reinterpretation requires that we shift our focus from models, to the more inclusive concept of an interpretation, and classifies a sentence whose meaning is compatible with only one interpretation that is always false as a contradiction. An example of this strategy is any statement of support for the position that all quantification is restricted in natural language, e.g. I am not quantifying over everything. The dominant focus of these reinterpretations has been the behaviour of the data in the sanctioned models (or interpretations). A strategy, I will argue, that does not yield nearly as much insight into the semantic properties of natural language as a close study of these constructions in the excluded models (or interpretations). The topics covered include the odd truth value assignment to Existential There Sentences in which a term is undefined, the influence of Grice's maxims of conversation on the distribution of DPs in but-phrases, and the possibly related phenomenon of sentences in which the subject is modified by a sentence initial only, and finally, the impossibility of expressing the content of the view that all quantification is restricted in natural language.

url: http://hdl.handle.net/1813/7947
date: 2007-07-25
creator: Stansbury, Melanie
viewed: 1
title: Decolonizing Waterscapes in Indian Country: American Indian Struggles for Water and the Making of the American Empire
abstract: Graduate Committee: Philip McMichael, Angela Gonzales This thesis examines the social, institutional, and discursive barriers facing American Indian struggles to access and manage water today. It argues that these barriers constitute a form of "accumulation by dispossession" whereby Indian communities are marginalized in their capacities to reclaim control over the waterscapes that have sustained them for generations in order to serve the ongoing economic growth and development of the Western United States. To understand the origins of these dynamics this thesis examines the history of how the U.S. formed and operationalized its continental empire in the 19th century in a world historical context. It shows how U.S. imperialism critically hinged on the development of new forms of knowledge production, technologies, and tactics of rule for remaking American Indian nations and Western waterscapes. These historical processes enabled the settlement, economic development, and consolidation of the U.S. nation state. They were constituted through transnational exchanges with other colonial regimes and with significant fostering from the U.S. state. These colonial knowledge regimes, discourses, and policies solidified into durable social and

political institutions at the height of global imperialism between the 1870s and the first few decades of the 20th century and continue to structure American Indian struggles for water today. Through this history we will understand how and why Indian nations were dispossessed of and marginalized in their rights to access and manage water. We will understand why and how the dominant regime governing water management in the U.S. West came to be and why it continues to serve the economic accumulation and growth of non-Indian interests to the detriment of Indian claims today. And, we will come to a better understanding of how to rethink water management and conflict resolution in the West to help facilitate the decolonization of Indian waterscapes.

url: http://hdl.handle.net/1813/7948
date: 2007-07-25
creator: Zhou, Hailan
viewed: 2
title: TWO ESSAYS ON INVESTORS' PERCEPTIONS ABOUT MANAGEMENT DISCLOSURES
abstract: In this dissertation, I describe two studies related to investors' perceptions about management disclosures.
In the first study, I use a variant of Dye and Sridhar (2004) to show analytically that investor uncertainty about managers' reporting incentives to manipulate information reduces the degree to which accounting reports should weight manipulable information. I also predict and show experimentally that greater weight on manipulable information in the face of incentive uncertainty harms investor welfare more than predicted by equilibrium analyses, by hindering managers' and investors' ability to predict one another's strategies. The resulting deviations from equilibrium cause the perceived and actual value-relevance of financial reports to vary over time in predictable (and testable) ways.
In the second study, I report an experiment that examines how investor affect might influence investors' perceptions of management disclosure credibility. Based on accounting and psychology literature, I predict that investors in a positive affective state will assess a higher level of management disclosure credibility due to positive interpretation and heuristic processing of information, and this tendency will be mitigated by their awareness of management reporting incentives. The results show that, inconsistent with prior evidence, positive affect does not lead to higher assessments of management disclosure credibility. Instead, positive affect is associated with a more systematic information-processing strategy. The results suggest that the psychology literature on affect need to be refined to be applied in a management disclosure setting.

url: http://hdl.handle.net/1813/7949
date: 2007-07-25
creator: smith, adam
viewed: 1
title: Introduction to iBatis
abstract: The iBatis data mapping framework for Java, .NET and Ruby increases developer productivity by facilitating database storage at a higher level than say, JDBC, without the complexity of larger object-relational mapping frameworks. This introduction is intended to show Java developers how to quickly integrate iBatis with a legacy MySQL database.

url: http://hdl.handle.net/1813/7950
date: 2007-07-25
creator: smith, adam
viewed: 1
title: Web Services Interface For The Handle System
abstract: Slides for a presentation given at the Handle System Workshop in Washington, D.C. on June 21,

2007.

url: http://hdl.handle.net/1813/7951
date: 2007-07-25
creator: smith, adam

title: Developing Handle System Web Services At Cornell University.
abstract: Recognizing the importance of consistently implementing persistent identifiers (PIDs), a group of librarians at Cornell University evaluated several PID strategies and chose to implement the Handle System. As a member of that group, the author immediately perceived cultural and technical challenges to adopting handles that included accommodating diverse computing platforms. The development of cross platform Web Services and corresponding client libraries are explored as a way to address these challenges and create new opportunities for future development and maintenance of digital collections.